TEST REPORT

FCC ID: 2ADYY-K15SDA

Product: Laptop Computer

Model No.: K15SDA

Trade Mark: TECNO

Report No.: WSCT-ANAB-R&E250100005A-BT

Issued Date: 12 February 2025

WSCT

Issued for:

TECNO MOBILE LIMITED

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

WSCT

Issued By:

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

> TEL: +86-755-26996192 FAX: +86-755-86376605

WSCT

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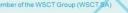
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STATES OF ORIGINAL INCOME.			
8 Test Setup Photographs	0		
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Report No.: WSCT-ANAB-R&E250100005A-BT

Test Certification

Product: Laptop Computer

WSET

Model No.:

K15SDA

Additional

Model:

TECNO

Applicant:

TECNO MOBILE LIMITED

World Standardization Certification & Testing Group (Shenzhen) Co., ltd.

Address:

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25

SHAN MEI STREET FOTAN NT HONGKONG

Manufacturer:

TECNO MOBILE LIMITED

Address:

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25

SHAN MEI STREET FOTAN NT HONGKONG

Date of Test:

02 January 2025 to 11 February 2025

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.

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Tested By: W5 Nang

Xiang

Checked By:

(Qin Shuiquan)

WSET

(Wang Xiang)

WSCT

Approved By:

(Li Huaibi)

WSCT

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World Standardization Certification & Testing Group (Shenzhen) Co., ltd.

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Test Result Summary 2.

	TARE CTO ALCO	TAPE PER	MARCE CT.	140
/	Requirement	CFR 47 Section	Result	
	Antenna Requirement	§15.203/§15.247 (c)	PASS	
<i>[7</i> °	AC Power Line Conducted Emission	W5 ET §15,207	PASS PASS	1
_	Conducted Peak Output Power V5.77 Power	§15.247 (b)(1) §2.1046	W5 PASS	W
67 °	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 PASS	W
$\overline{\ }$	Dwell Time	§15.247 (a)(1)	PASS	
CT°	Radiated Emission	§15.205/§15.209 W-§2.1053, §2.1057 W-5 ET	PASS _{V5LT}	_
	Band Edge	§15.247(d) §2.1051, §2.1057	PASS	

Note:

- 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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W5C1

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W5CT

EUT Description 3.

			/
	Product Name:	Laptop Computer W5 [7] W5 [7]	V5 CT
\times	Model :	K15SDA	
WSCI	Trade Mark:	TECNO WSET WSET	
ZWELI	Software version:	Windows 11	
	Hardware version:	N156ERB01_MB_V11	
	Operation Frequency:	2402MHz~2480MHz ^{W5} [7] W5 [7]	V5 CT
X	Channel Separation:	1MHz	
WSET	Number of Channel:	79 WSET WSET WSET	
	Modulation Type:	GFSK, π/4-DQPSK, 8-DPSK	\setminus
	Modulation Technology:	FHSS WSCT WSCT	NS ET
	Antenna Type:	Integral Antenna	
	Antenna Gain:	2.08dBi	
WSCT	WSET	Adapter1: E065-1R200325VU W5 [7] INPUT: 100-240V~50/60Hz 1.5A	
	EUT Dower Beting	OUTPUT: 20.0V===3.25A 65.0W Rechargeable Li-ion Polymer Battery: K15S	\times
	EUT Power Rating	Nominal Voltage: 11.55V W5 T	NS ET
\times	X	Rated Energy: 70.00Wh Limited Charge Voltage: 13.2V	
WSCT	Remark: W5 [T	N/A. WSET WSET WSET	
			\ /

WS C		W5CT [®]	W5 ET	W5CT	W5CT"
X	X	X	X	X	
V5 CT	W5 CT	W5 CT	WSET	W5 CT°	

W5C1

W5 ET

W5 E1



W5 C

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World Standardization Certification & Testing Group (Shenzhen) Co., ltd.



W5 CT



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Configuration differences

W5 CT

Configuration/ Processor	CPU
K15SDA (AMD	LuB R5-5625U 5600U 5600H/:LuC
	5800U TDP 15W(5600H TDP with
Lucienne)	30w)
K15SDA (AMD	R5-7430U/R7-7730U
Barcelo-R)	K3-74300/K7-77300

Note: All models were tested, with the main test model being the K15SDA (R5-7430U)

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ADD: 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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WSET WSET

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Report No.: WSCT-ANAB-R&E250100005A-BT

W5 CT

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

Operatio	pperation requestly each of charmer for or on, 1174-bar on, obt on						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
	W5 CT		WSET		WS ET		WISCT
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
<u>/</u> `		<u></u>		/		/	
184	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		- \
Remark:	Channel 0 3	9 &78 ha	ve heen tes	ted for G	$FSK \pi/4-DC$	DPSK 8F)PSK

modulation mode.

W	SET	WSET	WSCT	WSET	WSCT
WSCT	WSET	WSET	$\langle \hspace{0.1cm} \rangle$		
	VSET .	WSET	WSET	WSET	WSCT
WSCT	WSCT	WSET	$\langle \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$\langle \hspace{0.1cm} \rangle$	
	HII	WSET	WSLT	WSCT	WSCT
WSET	WSET	WSCI	$\langle \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$\langle \hspace{0.1cm} \rangle$	
	HII	WSET	WSET	\times	X
X	X	X	\times	Zation	WSET

lding A-B, Baoli'an Industrial Park, No. 58 and 60, Tangtou Avenue, FAX: 0086-755-86376605

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4. Genera Information

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.

4.2. 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.

0	Equipment	Model No.	Serial No.	FCC ID	Trade Name
	Adapter	E065-1R200325VU	1	1	TECNO

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.

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World Standard zation Certification& Testing Group(Shenzhen) Co.,Ltc

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5. Facilities and Accreditations

5.1. Facilities

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

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.2.ACCREDITATIONS

CNAS - Registration Number: L3732

China National Accreditation Service for Conformity Assessment, The test firm Registration

Number: L3732

FCC - Designation Number: CN1303

World Standardization Certification & Testing Group(Shenzhen) CO., LTD. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Designation Number: CN1303.

ANAB - Certificate Number: AT-3951

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

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W5 CT

Measurement Uncertainty

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

W5 CT	No.	Item	MU
	1	Duty Cycle and Tx-Sequence and Tx-Gap	±1%
	2	Dwell Time and Minimum Frequency Occupation	±1.2%
	3	Medium Utilisation Factor	±1.3%
X	4	Occupied Channel Bandwidth	±2.4%
W5ET	5	Transmitter Unwanted Emission in the out-of Band	±1.3%
	6	Transmitter Unwanted Emissions in the Spurious Domain	±2.5%
	7	Receiver Spurious Emissions	±2.5%
$\overline{}$	8	Conducted Emission Test	±3.2dB
X	9	RF power, conducted	±0.16dB
W5 CT	10	Spurious emissions, conducted / W5 [7]	±0.21dB
	11	All emissions, radiated(<1GHz)	±4.7dB
	12 W 5 r	All emissions, radiated(>1GHz)	±4.7dB
/	13	Temperature	±0.5°C
	14	Humidity	±2.0%
4			

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5.4. MEASUREMENT INSTRUMENTS

	3.4. WEASU		\wedge				
	NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.	'5 C 1
X	Test software		EZ-EMC	CON-03A	-	X-	
r i	Test software	- /	MTS8310	WSCT	- /	15 TT	
	EMI Test Receiver	R&S	ESCI	100005	11/05/2024	11/04/2025	
	LISN	AFJ	LS16	16010222119	11/05/2024	11/04/2025	
	LISN(EUT)	Mestec	AN3016	04/10040	11/05/2024	11/04/2025	'5 C 1
<	Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	11/05/2024	11/04/2025	
<u> </u>	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	
	Pre Amplifier	H.P. <i>ET</i>	HP8447E 5 /	2945A02715	11/05/2024	11/04/2025	75 E I
/	Pre-Amplifier	CDSI	PAP-1G18-38		11/05/2024	11/04/2025	
1	Bi-log Antenna	SCHWARZBECK	VULB9168	01488	11/05/2024	11/04/2025	
<u> </u>	9*6*6 Anechoic	ET V	VS CT L	W.S CT	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	
\langle	System-Controller	ccs	N/A	N/A	N.C.R	N.C.R	
C i	Turn Table	ccs	V5 / 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	EMCO	6502W51	00042960	11/05/2024	11/04/2025	15 C T
1	Horn Antenna	SCHWARZBECK	BBHA 9170	1123	11/05/2024	11/04/2025	
	Power meter	Anritsu	ML2487A	6K00003613	11/05/2024	11/04/2025	
5	Power sensor	Anritsu	MX248XD	WSU	11/05/2024	11/04/2025	
	Spectrum Analyzer	Keysight	N9010B	MY60241089	11/05/2024	11/04/2025	X





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6. Test Results and Measurement Data

6.1.W5 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. 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(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 Integral Antenna. it meets the standards, and the best case gain of the antenna is 2.08dBi.

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Conducted Emission 6.2.

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$\overline{}$	6.2.1. Test Specification	WSET	W5CT W5CT	A
X	Test Requirement:	FCC Part15 C Section 15.207		
WSET	Test Method:	ANSI C63.10:2014 W5 []	WSET	
	Frequency Range:	150 kHz to 30 MHz	\times	
	Receiver setup:	RBW=9 kHz, VBW=30 kHz, Swe	eep time=auto	
WSET	Limits:	Frequency range (MHz) Quasi- 0.15-0.5 66 to 0.5-5 56 5-30 60	Limit (dBuV) peak Average 56* 56 to 46*	
		Reference Plane	X	
\bigvee	WSET WSE	40cm 80cm L	ISN W5 C7	7
WSET	Test Setup:	Test table/Insulation plane	iver	7
	WSET WSE	Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m	WSCI	
	Test Mode:	Refer to item 4.1		
W5 ET	WSET	 The E.U.T is connected to ar impedance stabilization ne provides a 50ohm/50uH coup measuring equipment. 	twork (L.I.S.N.). This bling impedance for the	7
WSET	Test Procedure:	 The peripheral devices are also power through a LISN that proceeding impedance with 500 refer to the block diagram photographs). 	orovides a 50ohm/50uH hm termination. (Please of the test setup and	7
	WSET WSE	3. Both sides of A.C. line are conducted interference. In order emission, the relative positions the interface cables must be a ANSI C63.10:2014 on conductions.	der to find the maximum so of equipment and all of hanged according to	
X	Test Result:	PASS	Single WS.C7°	cho









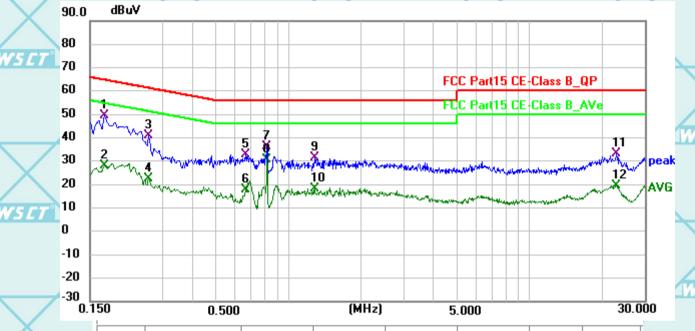
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6.2.2. Test data(worst case)

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)

The worst mode is GFSK



	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	7
	1 *	0.1725	28.98	20.71	49.69	64.84	-15.15	QP	
	2	0.1725	7.37	20.71	28.08	54.84	-26.76	AVG	
7	3	0.2625	20.38	20.65	41.03	61.35	-20.32	QP	
_	4	0.2625	2.01	20.65	22.66	51.35	-28.69	AVG	7
	5	0.6630	12.42	20.53	32.95	56.00	-23.05	QP	
	6	0.6630	-2.61	20.53	17.92	46.00	-28.08	AVG	
	7	0.8160	15.72	20.59	36.31	56.00	-19.69	QP	
	8	0.8160	9.94	20.59	30.53	46.00	-15.47	AVG	
	9	1.2839	10.73	20.65	31.38	56.00	-24.62	QP	
7	10	1.2839	-2.40	20.65	18.25	46.00	-27.75	AVG	
	11	22.9424	12.56	20.46	33.02	60.00	-26.98	QP	
	12	22.9424	-0.95	20.46	19.51	50.00	-30.49	AVG	

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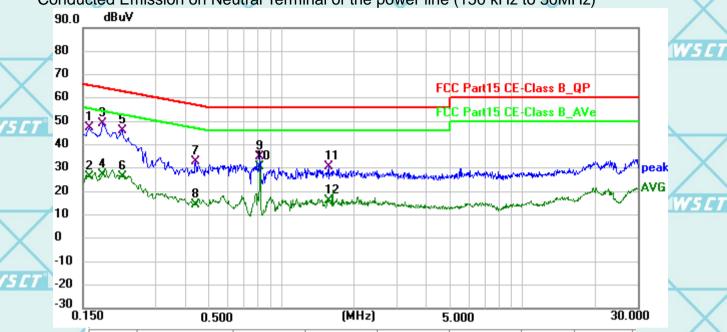






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Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



7	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	_/
	1	0.1590	26.48	20.72	47.20	65.52	-18.32	QP	
	2	0.1590	5.69	20.72	26.41	55.52	-29.11	AVG	
	3 *	0.1815	28.29	20.70	48.99	64.42	-15.43	QP	7°
	4	0.1815	6.47	20.70	27.17	54.42	-27.25	AVG	
/	5	0.2175	25.48	20.68	46.16	62.91	-16.75	QP	
V.	6	0.2175	5.68	20.68	26.36	52.91	-26.55	AVG	
	7	0.4380	12.28	20.55	32.83	57.10	-24.27	QP	
	8	0.4380	-6.10	20.55	14.45	47.10	-32.65	AVG	
	9	0.8160	14.34	20.59	34.93	56.00	-21.07	QP	
	10	0.8160	9.92	20.59	30.51	46.00	-15.49	AVG	
	11	1.5765	9.88	20.64	30.52	56.00	-25.48	QP	
	12	1.5765	-4.59	20.64	16.05	46.00	-29.95	AVG	
						- 5		The same of the sa	

Note1:

Freq. = Emission frequency in MHz

Reading level $(dB\mu V)$ = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement ($dB\mu V$) = Reading level ($dB\mu V$) + Corr. Factor (dB)

Limit (dBµV) = Limit stated in standard

 $Margin (dB) = Measurement (dB\mu V) - Limits (dB\mu V)$

Q.P. =Quasi-Peak AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

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6.3. Maximum Conducted (Average) Output Power

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6.3.1. Test Specification

X	X	X X X	
	Test Requirement:	FCC Part15 C Section 15.247 (b)(3)	
5 <i>C T</i> °	Test Method:	ANSI C63.10:2014	
S E T	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.	WSET
	Test Setup:	Spectrum Analyzer EUT	WSCT
X	Test Mode:	Transmitting mode with modulation	
SET	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.	WSCT
	Test Result:	PASS	
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6.3.2. Test Data

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	GFSK mode					
	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
0	Lowest	7.29	20.97	PASS		
1	Middle	7.24	20.97	PASS		
	Highest	7.77	20.97	PASS		

Pi/4DQPSK mode					
	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result	
	Lowest	9.075	20.97	PASS [7]	
	Middle	9.05	20.97	PASS	
	Highest	10.01	20.97	PASS	
		W STATE OF THE STA			

8DPSK mode					
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
Lowest	9.68	20.97	PASS		
Middle	9.67	20.97	PASS		
Highest	W5 [T 10.21	20.97	75 CT PASS		

Test plots as follows:

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6.4. 20dB Occupy Bandwidth

6.4.1. 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 [T] W5 [T]	
	Limit:	N/A	\times
X	Test Setup:	Spectrum Analyzer EUT	WSET
WSET	Test Mode:	Transmitting mode with modulation	
W5 ET	Test Procedure:	 The testing follows ANSI C63.10:2014 Measurement Guidelines. 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. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤ RBW≤5% of the 20 dB bandwidth; VBW≥3RBW; Sweep = auto; Detector function = peak; Trace = max hold. Measure and record the results in the test report. 	WSET
	Test Result:	PASS	

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6.4.2. Test data

Toot channel	-20dB Occupy Bandwidth (MHz)				
rest charmer	GFSK	π/4-DQPSK	8DPSK	Conclusion	
Lowest	0.954	1.361	1.345	PASS	
Middle	0.959 _{W5}	1.363	1,345	PASS	
Highest	1.019	1.361	1.345	PASS	
	Middle	Test channel GFSK Lowest 0.954 Middle 0.959	Test channel GFSK π/4-DQPSK Lowest 0.954 1.361 Middle 0.959 1.363	Test channel GFSK π/4-DQPSK 8DPSK Lowest 0.954 1.361 1.345 Middle 0.959 1.363 1.345	

Test plots as follows: W5 CT W5 C7 W5 C1 W5 C1 W5 C1 W5 CT W5 E1 WS CT WSET WSE W5 CT W5 CT WS ET W5E1 W5C1 W5E W5 E W5 C W5 CI W5 CT

W5C1 WS ET WS CT W5 E1

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-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1 SCPI **+** Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) Center Freq: 2.480000000 GHz Avg|Hold: 100/100 Radio Std: None Trig: Free Run Gate: Off #IF Gain: Low Align: Auto Mkr3 2.480672000 GHz

WSET

Spectrum Analyzer 1
Occupied BW KEYSIGHT Input: RF Ref LvI Offset 4.33 dB Ref Value 24.33 dBm -19.63 dBm Scale/Div 10.0 dB Center 2.480000 GHz #Res BW 30.000 kHz Span 2 MHz Sweep 2.67 ms (10001 pts) #Video BW 91.000 kHz 2 Metrics Measure Trace Trace 1 Occupied Bandwidth 1.1935 MHz 15 C Total Power -917 Hz 1.345 MHz 99.00 % -20.00 dB Transmit Freq Error % of OBW Power x dB

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6.5. Carrier Frequencies Separation

6.5.1.	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 [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
WSET	Test Setup:	Spectrum Analyzer EUT W557	
	Test Mode:	Hopping mode	
WS CT	Test Procedure:	 The testing follows ANSI C63.10:2014 Measurement Guidelines. 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. Set to the maximum power setting and enable the EUT transmit continuously. Enable the EUT hopping function. Use the following spectrum analyzer settings: 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. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Record the value in report. 	WSET
	Test Result:	PASS	

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6.5.2. Test data

	WSIT	WSCT	/S/T	/S/T°	WSCT
		GFSK mo	ode		
	Test channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result	
ĺ	Lowest	0.994	0.636	PASS	
	Middle	1.012	0.639	PASS	X
	Highest	0.946	0.679	PASS	Wester

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	Pi/4 DQPSK mode					
0	Test channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result		
	Lowest 1.166		0.907	PASS		
Middle		0.99	0.909	PASS		
	Highest	W5 [] 0.67	5 CT 0.907	SET PASS		

W5 ET

	8DPSK mode						
		Carrier Frequencies Separation (MHz)	Limit (MHz)	Result			
		0.84	0.897	PASS			
		1.182	0.897	PASS			
1	Highest	WSCI		PASS			

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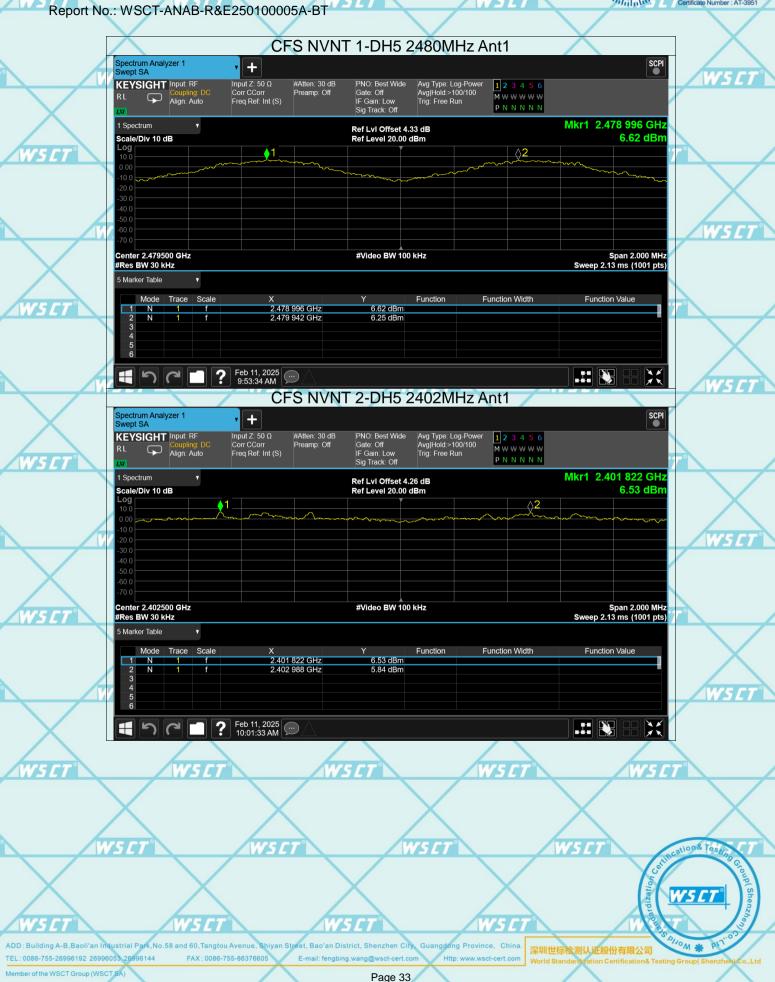
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Span 2.000 MHz Sweep 2.13 ms (1001 pts)



WSET Report No.: WSCT-ANAB-R&E250100005A-BT CFS NVNT 2-DH5 2441MHz Ant1 Spectrum Analyzer 1 Swept SA SCPI **+** Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off Avg Type: Log-Power Avg|Hold:>100/100 Trig: Free Run KEYSIGHT Input: RF Alian: Auto PNNNNN Mkr1 2.440 996 GHz Ref Lvl Offset 4.28 dB Ref Level 20.00 dBm 5.51 dBm Scale/Div 10 dB

Center 2.441500 GHz #Res BW 30 kHz

Function Value Function Width Function 2.440 996 GHz 2.441 986 GHz ? Feb 11, 2025 ** CFS NVNT 2-DH5 2480MHz Ant1 Spectrum Analyzer 1 Swept SA SCPI + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) Avg Type: Log-Power Avg|Hold:>100/100 Trig: Free Run KEYSIGHT Input: RF #Atten: 30 dB Preamp: Off M₩₩₩₩₩ Align: Auto PNNNN Mkr1 2.479 158 GHz 1 Spectrum Ref LvI Offset 4.33 dB Ref Level 20.00 dBm 6.28 dBm Scale/Div 10 dB

#Video BW 100 kHz

Span 2.000 MHz Sweep 2.13 ms (1001 pts) Center 2.479500 GHz #Res BW 30 kHz #Video BW 100 kHz Function Width Function Value 2.479 158 GHz **?** Feb 11, 2025 10:08:20 AM **

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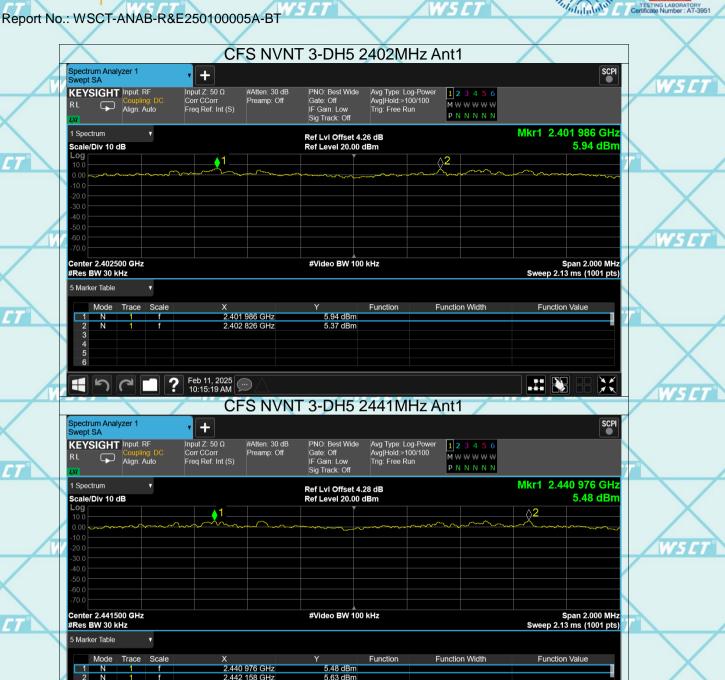
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Report No.: WSCT-ANAB-R&E250100005A-BT







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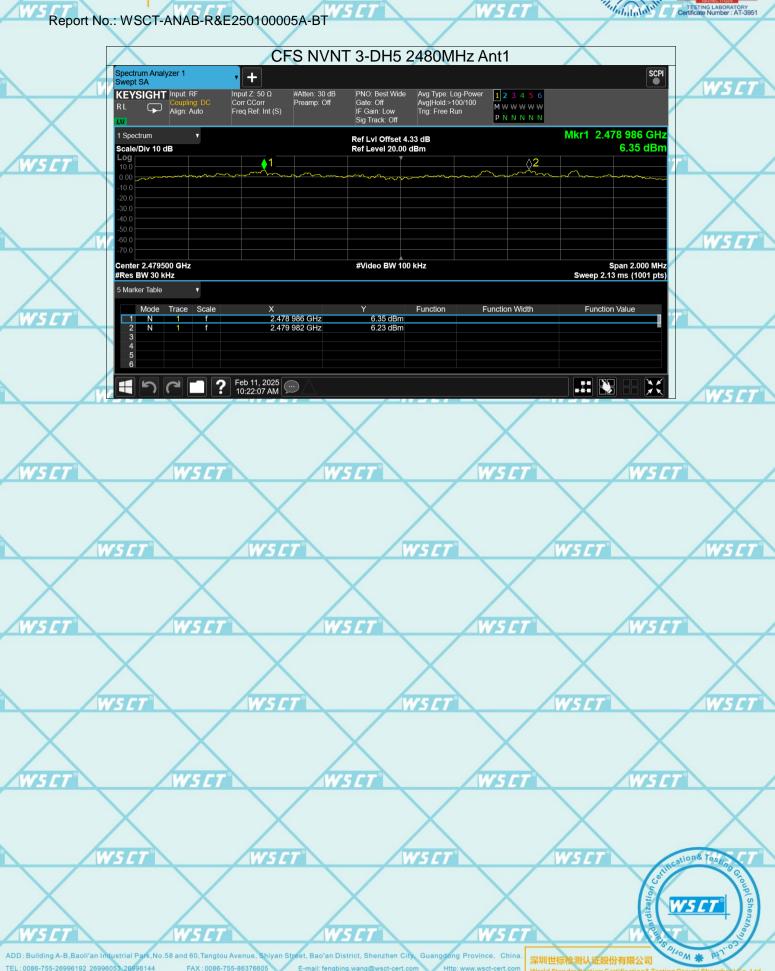
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6.6. Hopping Channel Number

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6.6.1. Test Specification

WSCT	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)	
ZW36/	Test Method:	ANSI C63.10:2014	
WS CT	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 CT
	Test Mode:	Hopping mode	
WSET	Test Procedure:	 The testing follows ANSI C63.10:2014 Measurement Guidelines. 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. Set to the maximum power setting and enable the EUT transmit continuously. Enable the EUT hopping function. 	WSET
WSET		 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. 6. The number of hopping frequency used is defined as the number of total channel. 	WSCT
	Test Result:	7. Record the measurement data in report. PASS	We co
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6.6.2. Test data

_	Mode	Hopping channel numbers	Limit	Result	W5ET
	GFSK, P/4-DQPSK, 8DPSK	79	15	PASS	
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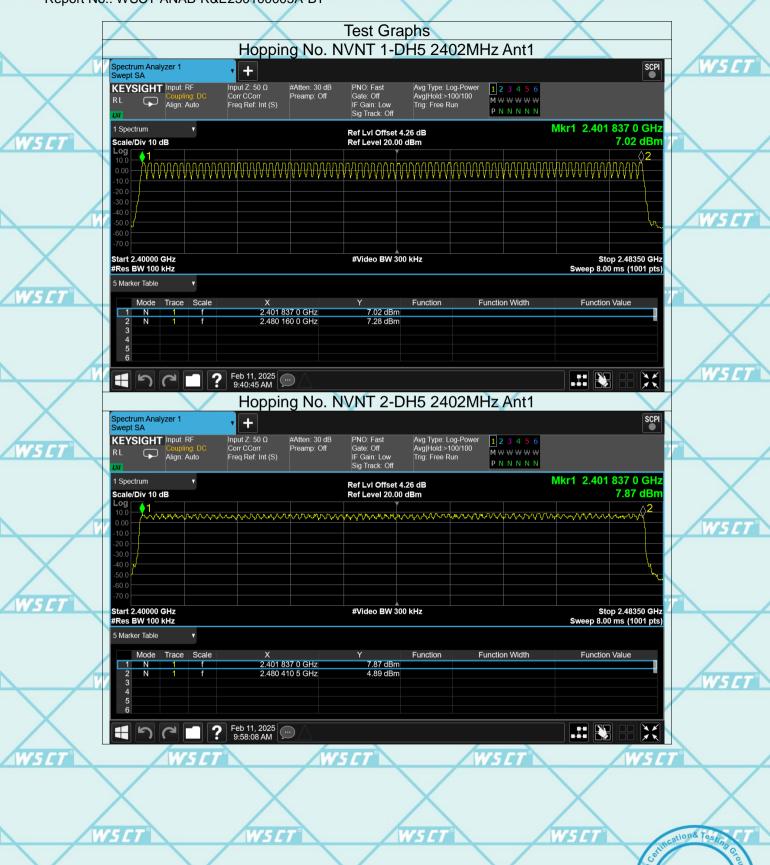
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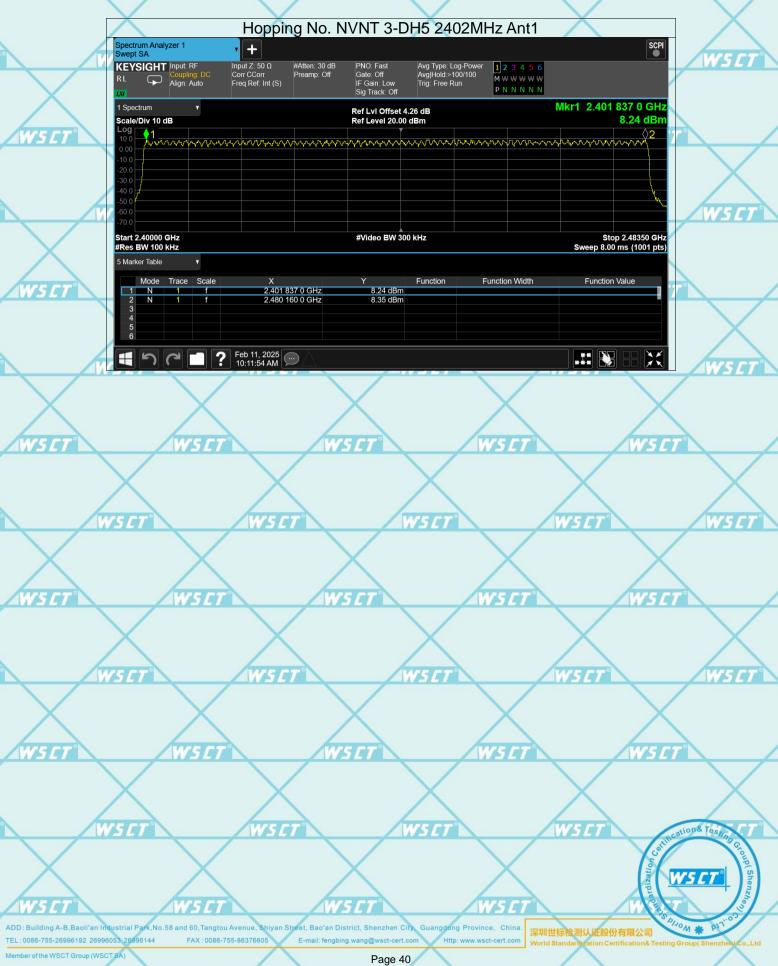
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6.7. **Dwell Time**

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X	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)	
W5 ET	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.	WSLT
X	Test Setup:	Spectrum Analyzer EUT	
W5 CT	Test Mode:	Hopping mode W5 [T] W5 [T]	
WSCT	Test Procedure:	 The testing follows ANSI C63.10:2014 Measurement Guidelines. 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. Set to the maximum power setting and enable the EUT transmit continuously. Enable the EUT hopping function. 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 >> 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. Measure and record the results in the test report. 	WSCT
	Test Result:	PASS	
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6.7.2. Test Data

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	Mode	Frequency	Pulse Time	Total Dwell Time	Burst	Period Time	Limit	Verdict
		(MHz)	(ms)	(ms)	Count	(ms)	(ms)	
	1-DH1	2402	0.383	121.411	317	31600	400	Pass
3	1-DH1	2441	0.383	122.177	319	31600	400	Pass
	1-DH1	2480	0.383	121.794	318	31600	400	Pass
	1-DH3	2402	1.639	262.24	160	31600	400	Pass
	1-DH3	2441	1.639	276.991	169	31600	400	Pass
	1-DH3	2480	1.639	265.518	162	31600	400	Pass
1	1-DH5	2402	2.887	320.457	111	31600	400	Pass
Ţ	1-DH5	2441	2.887	297.361	103	31600	400	Pass
	1-DH5	2480	2.887	297.361	103	31600	400	Pass

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

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

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

For DH5, With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit (0.4×79) (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

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