TEST REPORT

FCC ID	2ADE3IDATAP1MINI								
Test Report No:	TCT240301E009								
Date of issue:	May 11, 2024								
Testing laboratory:	SHENZHEN TONGCE TESTI	ING LAB							
Testing location/ address:	2101 & 2201, Zhenchang Fac Fuhai Subdistrict, Bao'an Dist 518103, People's Republic of								
Applicant's name: :	WUXI IDATA TECHNOLOGY	COMPANY LTD.							
Address:		Floor 11, Building B1, Wuxi Binhu National Sensing, Information Center, No.999 Gaolang East Road, Wuxi, China							
Manufacturer's name :	WUXI IDATA TECHNOLOGY COMPANY LTD.								
Address:	Floor 11, Building B1, Wuxi Binhu National Sensing, Information Center, No.999 Gaolang East Road, Wuxi, China								
Standard(s) :	FCC CFR Title 47 Part 15 Subpart C Section 15.247 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013								
Product Name:	New Mobile Computer								
Trade Mark:	iData								
Model/Type reference :	iData P1 mini								
Rating(s):	Refer to EUT description of pa	age 3							
Date of receipt of test item	Mar. 01, 2024								
Date (s) of performance of test:	Mar. 01, 2024 ~ May 11, 2024	4							
Tested by (+signature) :	Aaron MO	Aaron Angace							
Check by (+signature) :	Beryl ZHAO	Boy 2 TCT							
Approved by (+signature):	Tomsin	Tomsines &							

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1. General Product Information

1.1. EUT description

Product Name:	New Mobile Computer		(\mathbf{c}^{\ast})
Model/Type reference:	iData P1 mini		
Sample Number:	TCT240301E009-0101		
Bluetooth Version:	V4.2 (This report is for BDR+EDR)	S.	
Operation Frequency:	2402MHz~2480MHz		
Transfer Rate:	1/2/3 Mbits/s		
Number of Channel:	79		
Modulation Type:	GFSK, π/4-DQPSK, 8DPSK		
Modulation Technology:	FHSS		
Antenna Type:	Internal Antenna		
Antenna Gain:	1.38dBi		
Rating(s):	Adapter Information: MODEL: TPA-141A050200UU01 Input: AC 100–240V, 50/60Hz, 0.3A Output: DC 5.0V, 2.0A Rechargeable Li-ion Battery DC 3.85V	J.	

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

None.

1.3. Operation Frequency

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz	
	2403MHz	C 21	2423MHz	41	2443MHz	61	2463MHz	
		<u> </u>	🤇		🤍			
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz	
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz	
			9	8				
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz	
19	2421MHz	39	2441MHz	59	2461MHz		-	
Remark: Channel 0, 39 & 78 have been tested for GFSK, π /4-DQPSK, 8DPSK modulation mode.								

Report No.: TCT240301E009



2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247 (b)(1)	PASS
20dB Occupied Bandwidth	§15.247 (a)(1)	PASS
Carrier Frequencies Separation	§15.247 (a)(1)	PASS
Hopping Channel Number	§15.247 (a)(1)	PASS
Dwell Time	§15.247 (a)(1)	PASS
Radiated Emission	§15.205/§15.209	PASS
Band Edge	§15.247(d)	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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3.1. Test environment and mode

Operating Environment:							
Condition	Conducted Emission	Radiated Emission					
Temperature:	21.3 °C	23.5 °C					
Humidity:	44 % RH	56 % RH					
Atmospheric Pressure:	1010 mbar	1010 mbar					

Test Mode:

Engineer 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(Z axis) are shown in Test Results of the following pages. DH1 DH3 DH5 all have been tested, only worse case DH1 is reported.

3.2. 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.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
	2	1		

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.



4. Facilities and Accreditations

4.1. Facilities

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

• FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC Registration No.: 10668A-1
- SHENZHEN TONGCE TESTING LAB
- CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China TEL: +86-755-27673339

4.3. 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 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB



5. Test Results and Measurement Data

5.1. Antenna requirement

Standard requirement: FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

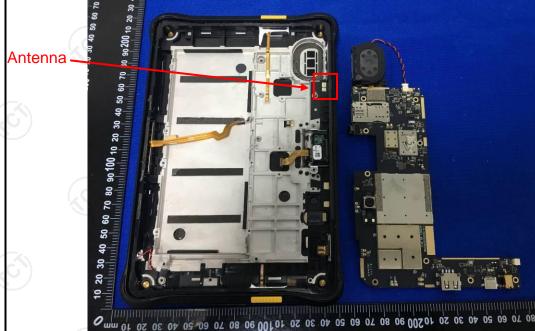
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 internal antenna which permanently attached, and the best case gain of the antenna is 1.38dBi.



5.2. Conducted Emission

5.2.1. Test Specification

 Test Procedure: impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main 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). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum 	Test Requirement:	FCC Part15 C Section 15.207								
Receiver setup: RBW=9 kHz, VBW=30 kHz, Sweep time=auto Limits: Frequency range Limit (dBuV) Quasi-peak Average 0.15-0.5 66 to 56* 0.5-5 56 40cm 5-30 60 50 Reference Plane 40cm Filter Ac power Fest Setup: Reference Plane Remark: E.U.T E.U.T Exposed Remark: ENT Exposed Exposed Charging + Transmitting Mode 1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50UH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50UH coupling impedance for the measuring exposed with 500ch termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10.2013 on conducted measurement.	Test Method:	ANSI C63.10:2013								
Limits: Frequency range Limit (dBuV) (MHz) Quasi-peak Average 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50 Reference Plane Image: Colspan="2">ENT Reference Plane Image: Colspan="2">ENT Reference Plane Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2">Colspan="2"Co	Frequency Range:	150 kHz to 30 MHz	(C ¹)	(\mathbf{c})						
Limits: Quasi-peak Average 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50 Reference Plane Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2"C	Receiver setup:	RBW=9 kHz, VBW=30) kHz, Sweep time	e=auto						
Limits: 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50 Reference Plane Image: Solar power Test Setup: Reference Plane Image: Solar power Reference Plane Image: Solar power Test table/Insulation plane Remark EWI Remark EWI Test table/Insulation plane Remark EWI Remark EWI Test Mode: Charging + Transmitting Mode 1. 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. 2. The peripheral devices are also connected to the main 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 conducted interference. In order to find the maximum emission, the re		Frequency range	Limit (dBuV)						
0.5-5 56 46 5-30 60 50 Reference Plane Image: transmitting the second		(MHz)	Quasi-peak	Average						
5-30 60 50 Reference Plane Image: Setup: Image: Setup: Stabilization plane Remark: ENT rest table/Insulation plane Remark: ENT rest table/Insulation plane Test Mode: Charging + Transmitting Mode 1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. Test Procedure: Set of A.C. line are clocked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all o the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.	Limits:	0.15-0.5	66 to 56*	56 to 46*						
Test Setup: Reference Plane Image: Parage Image: Parage Test Mode: Charging + Transmitting Mode 1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the mair power through a LISN that provides a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the mair power through a LISN that provides a 500hm/50uH coupling impedance of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		0.5-5	56	46						
Test Setup: Image: E.U.T is power is table/Insulation plane Plane is table/Insulatis table/Insulation		5-30	60	50						
Test Setup: Image: Test table/Insulation plane S0cm LISN Test Mode: Charging + Transmitting Mode 1. 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. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance for the measuring 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 conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		Referenc	e Plane							
 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. The peripheral devices are also connected to the main 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). Both sides of A.C. line are checked for maximum emission, the relative positions of equipment and all o the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. 	Test Setup:	E.U.T AC power 80cm LISN Test table/Insulation plane Filter AC power Remark EMI Receiver E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network								
 Test Procedure: impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main 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). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all o the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. 	Test Mode:	Charging + Transmittir	ng Mode	C.						
	Test Procedure:	 provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main 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 conducted interference. In order to find the maximum emission, the relative positions of equipment and all of 								
				-						

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5.2.2. Test Instruments

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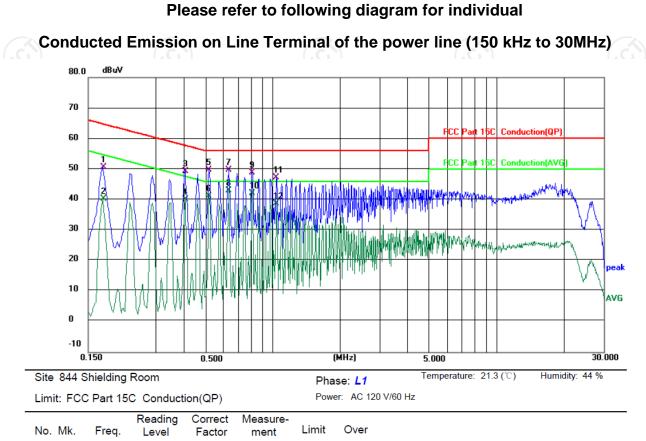
	Conducted Emission Shielding Room Test Site (843)											
(Equipment	Manufacturer	Model	Serial Number	Calibration Due							
0	EMI Test Receiver	R&S	ESCI3	100898	Jun. 29, 2024							
	Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Jan. 31, 2025							
	Line-5	Line-5 TCT		/	Jul. 03, 2024							
	EMI Test Software	Shurple Technology	EZ-EMC	1	1							



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5.2.3. Test data

TCT通测检测 TESTING CENTRE TECHNOLOGY



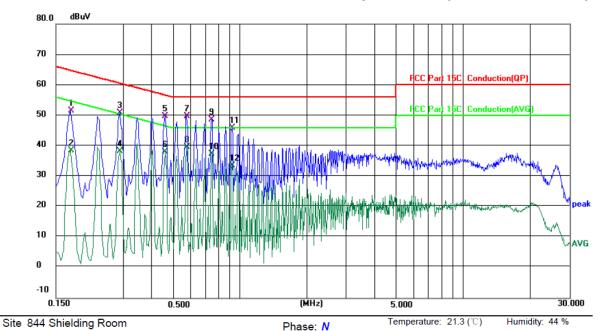
No. Mk.	Freq.	Level	Factor	ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1739	40.69	10.02	50.71	64.77	-14.06	QP	
2	0.1739	30.24	10.02	40.26	54.77	-14.51	AVG	
3	0.4060	39.98	9.42	49.40	57.73	-8.33	QP	
4	0.4060	30.75	9.42	40.17	47.73	-7.56	AVG	
5	0.5180	40.46	9.32	49.78	56.00	-6.22	QP	
6	0.5180	31.95	9.32	41.27	46.00	-4.73	AVG	
7	0.6340	40.56	9.22	49.78	56.00	-6.22	QP	
8 *	0.6340	33.68	9.22	42.90	46.00	-3.10	AVG	
9	0.8100	39.71	9.06	48.77	56.00	-7.23	QP	
10	0.8100	32.98	9.06	42.04	46.00	-3.96	AVG	
11	1.0420	38.41	8.86	47.27	56.00	-8.73	QP	
12	1.0420	29.91	8.86	38.77	46.00	-7.23	AVG	

Note:

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 $(dB\mu V)$ = 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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Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)

	5				FIIG	Se. //			
Limit: F	CC Part 15	C Conduct	ion(QP)		Pow	er: AC 12	0 V/60 Hz		
No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	0.1739	41.64	10.00	51.64	64.77	-13.13	QP		
2	0.1739	28.41	10.00	38.41	54.77	-16.36	AVG		
3	0.2900	41.06	9.83	50.89	60.52	-9.63	QP		
4	0.2900	28.33	9.83	38.16	50.52	-12.36	AVG		
5	0.4620	40.37	9.35	49.72	56.66	-6.94	QP		
6	0.4620	28.70	9.35	38.05	46.66	-8.61	AVG		
7 *	0.5779	40.57	9.24	49.81	56.00	-6.19	QP		
8	0.5779	30.27	9.24	39.51	46.00	-6.49	AVG		
9	0.7500	39.45	9.09	48.54	56.00	-7.46	QP		
10	0.7500	28.28	9.09	37.37	46.00	-8.63	AVG		
11	0.9260	37.08	8.92	46.00	56.00	-10.00	QP		
12	0.9260	24.58	8.92	33.50	46.00	-12.50	AVG		

Note1:

TCT通测检测 TCT通测检测

> 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 $(dB\mu V)$ = 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.

Note2:

Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (Highest channel and GFSK) was submitted only.

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5.3. Conducted Output Power

5.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)		
Test Method:	KDB 558074 D01 v05r02		
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.		
Test Setup:	Spectrum Analyzer EUT		
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.		
Test Result:	PASS		

5.3.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	\bigcirc 1	



5.4. 20dB Occupy Bandwidth

5.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)			
Test Method:	KDB 558074 D01 v05r02			
Limit:	N/A C			
Test Setup:	Spectrum Analyzer EUT			
Test Mode:	Transmitting mode with modulation			
Test Procedure:	 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. 			
Test Result:	PASS			

5.4.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	/	/





5.5. Carrier Frequencies Separation

5.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)				
Test Method:	KDB 558074 D01 v05r02				
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, 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, provided the systems operate with an output power no greater than 125 mW.				
Test Setup:	Spectrum Analyzer EUT				
Test Mode:	Hopping mode				
Test Procedure:	 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. 				
Test Result:	PASS				

5.5.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	1(0)	1

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5.6. Hopping Channel Number

5.6.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	KDB 558074 D01 v05r02
Limit:	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Setup:	Spectrum Analyzer EUT
Test Mode:	Hopping mode
Test Procedure:	 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 = 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. The number of hopping frequency used is defined as the number of total channel. Record the measurement data in report.
Test Result:	PASS
5.6.2 Tost Instruments	

5.6.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	1	/

5.7. Dwell Time

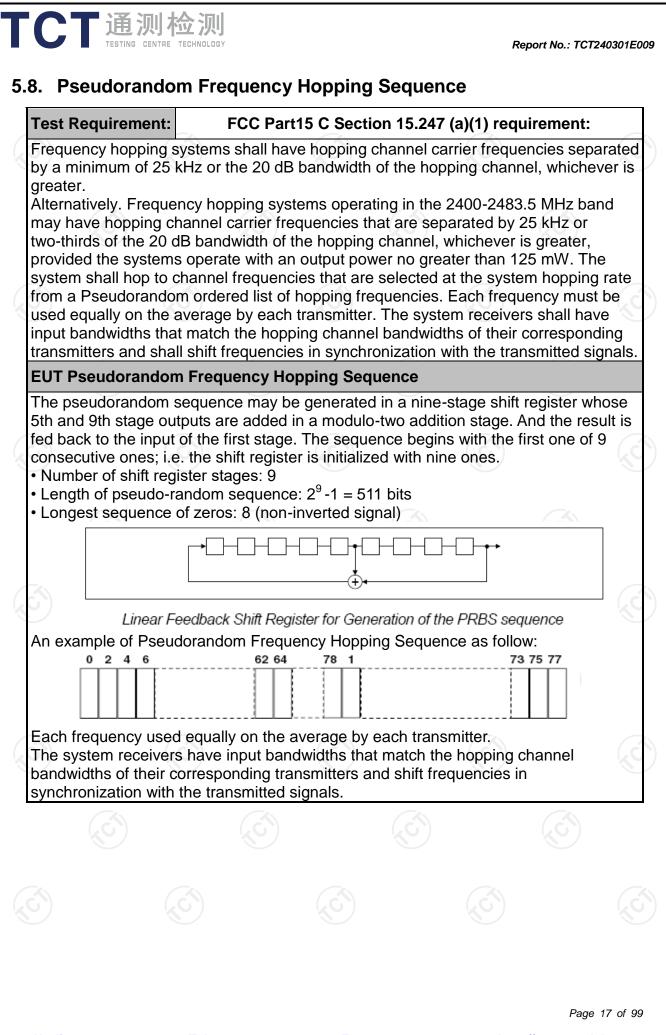
5.7.1. Test Specification

TCT 通测检测 TESTING CENTRE TECHNOLOGY

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)			
Test Method:	KDB 558074 D01 v05r02			
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.			
Test Setup:	Spectrum Analyzer EUT			
Test Mode:	Hopping mode			
Test Procedure:	 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. 			
Test Result:	PASS			

5.7.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	3 1	





5.9. Conducted Band Edge Measurement

5.9.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB 558074 D01 v05r02
Limit:	In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.
Test Setup:	Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	 Set to the maximum power setting and enable the EUT transmit continuously. Set RBW = 100 kHz (≥1% span=10MHz), VBW = 300 kHz (≥RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used. Enable hopping function of the EUT and then repeat step 2 and 3. Measure and record the results in the test report.
Test Result:	PASS

5.9.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB	1	1
(\mathcal{S})	(G)		(G)	(\mathcal{G})



5.10. Conducted Spurious Emission Measurement

5.10.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB 558074 D01 v05r02
Limit:	In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.
Test Setup:	Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	 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. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. Measure and record the results in the test report. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

5.10.2. Test Instruments

Name	Manufacturer	Model No.	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jun. 28, 2024
Combiner Box	Ascentest	AT890-RFB		



5.11.1. Test Specification

TCT通测检测 TESTING CENTRE TECHNOLOGY

Test Requirement:	FCC Part15	C Section	n 15.209			8
Test Method:	ANSI C63.10):2013				
Frequency Range:	9 kHz to 25 0	GHz				6
Measurement Distance:	3 m				R.)
Antenna Polarization:	Horizontal &	Vertical				
	Frequency 9kHz- 150kHz	Detector Quasi-pea		VBW 1kHz		Remark si-peak Value
Receiver Setup:	150kHz- 30MHz	Quasi-pea		30kHz		si-peak Value
	30MHz-1GHz Quasi Above 1GHz Pe		k 120KHz 1MHz 1MHz	300KHz 3MHz 10Hz	P	si-peak Value eak Value erage Value
		T Car			•	
	Frequen 0.009-0.4		Field Str (microvolts 2400/F(/meter)		asurement nce (meters) 300
	0.490-1.7	2400/F(24000/F			<u> </u>	
	1.705-3	0	30			30
	30-88	100		3		
Limit:	88-216		150 200		- kë	3 3
	Above 9		500			3
	Frequency Above 1GHz	(micr	Id Strength ovolts/meter) 500 5000	Distan (meter 3 3		Detector Average Peak
Test setup:	30MHz to 1GHz	- 3m 4m - 3m - 4m - 1m -		RF	Antenna T Search Antenna Test eiver	
						Page 20 of s

CT通测检测 TESTING CENTRE TECHNOLOGY	Report No.: TCT240301E0
	AE EUT ATIENNA TOWER Horn Antenna Ground Reference Plane Test Receiver
Test Mode:	Transmitting mode with modulation
Test Procedure:	 The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10:2013 Measurement Guidelines. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings:

Test re			(2) Set RBW= for f>1GH Sweep = = max ho 3) For avera correction 15.35(c). I On time = Where N length of Average Level + 2 Corrected	being meas =120 kHz f z ; VBW≥F auto; Dete old for peak age measu n factor me Duty cycle N1*L1+N2 1 is numbe type 1 puls Emission I 20*log(Duty Reading: /	ugh to fully sured; or f < 1 GH BW; ector function rement: us ethod per = On time/ *L2++Nn er of type 1 ses, etc. _evel = Pea	z, RBW=1 on = peak; e duty cycl 100 millise -1*LNn-1+ pulses, L1 ak Emission actor + Cab	e MHz Trace e conds Nn*Ln is n
Ś		Ś		Ś				(C)
<u>Hotline:</u>	<u>400-6611-</u> 1	140 Tel: 86	<u>-755-2767</u>	3339 Fax:	<u>86-755-2767</u>	<u>3332 http</u>	Page ://www.tct-la	22 of 99 1 b.com

5.11.2. Test Instruments

TCT通测检测 TESTING CENTRE TECHNOLOGY

	Radiated Em	ission Test Site	e (966)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESIB7	100197	Jun. 29, 2024
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 29, 2024
Pre-amplifier	SKET	LNPA_0118G- 45	SK2021012 102	Jan. 31, 2025
Pre-amplifier	SKET	LNPA_1840G- 50	SK2021092 03500	Jan. 31, 2025
Pre-amplifier	HP	8447D	2727A05017	Jun. 27, 2024
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jul. 02, 2024
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 01, 2024
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 01, 2024
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 02, 2025
Antenna Mast	Keleto	RE-AM	1	
Coaxial cable	SKET	RC-18G-N-M		Jan. 31, 2025
Coaxial cable	SKET	RC_40G-K-M	/	Jan. 31, 2025
EMI Test Software	Shurple Technology	EZ-EMC		1

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5.11.3. Test Data

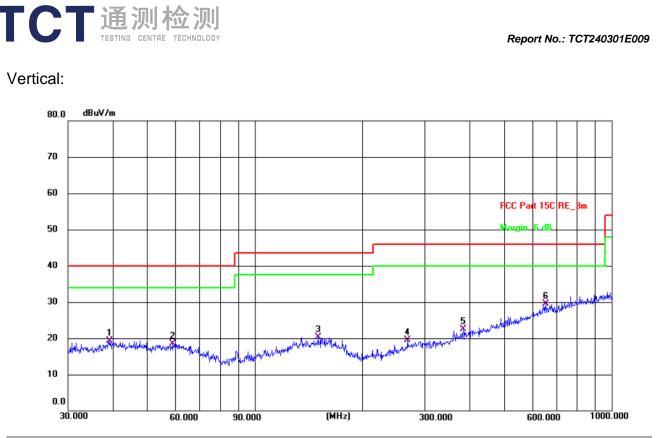
Please refer to following diagram for individual



Site #2 3m Anechoic Chamber Polarization: Horizontal

Limit: F	FCC Part 15C R	E_3m	Power: DC 3.85 V								
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark		
1 *	35.8746	6.68	13.48	20.16	40.00	-19.84	QP	Ρ			
2	62.4313	5.82	13.29	19.11	40.00	-20.89	QP	Ρ			
3	116.1321	6.04	12.48	18.52	43.50	-24.98	QP	Ρ			
4	174.4241	6.17	13.65	19.82	43.50	-23.68	QP	Ρ			
5	279.0436	5.12	14.24	19.36	46.00	-26.64	QP	Ρ			
6	408.9459	5.60	17.19	22.79	46.00	-23.21	QP	Ρ			

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Site #2 3m Anechoic Chamber Polarization: Vertical Temperature: 23.5(C) Humidity: 56 %

Limit: F	FCC Part 15C R	RE_3m			F				
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	P/F	Remark
1	39.2991	5.33	14.04	19.37	40.00	-20.63	QP	Ρ	
2	59.0251	5.05	13.51	18.56	40.00	-21.44	QP	Ρ	
3	150.5378	5.36	14.91	20.27	43.50	-23.23	QP	Ρ	
4	268.4852	5.77	13.74	19.51	46.00	-26.49	QP	Ρ	
5	383.9318	5.92	16.53	22.45	46.00	-23.55	QP	Ρ	
6 *	654.2318	6.48	22.94	29.42	46.00	-16.58	QP	Ρ	

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

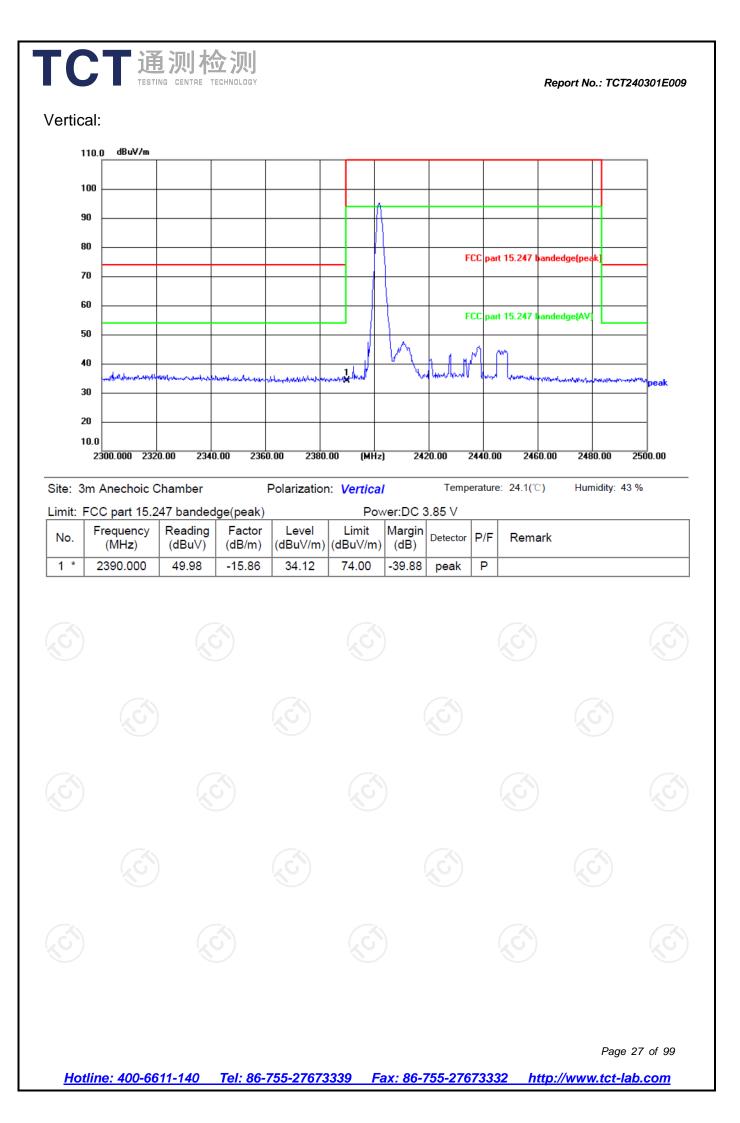
2. Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK) and the worst case Mode (Highest channel and GFSK) was submitted only.

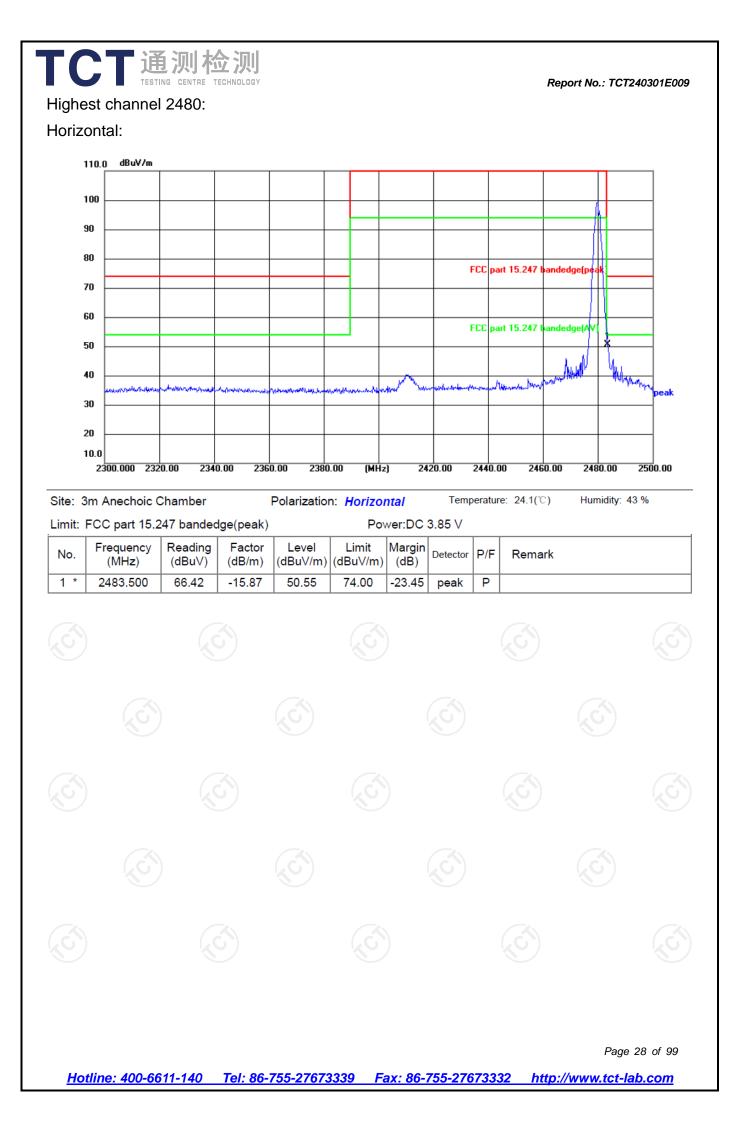
- 3. Freq. = Emission frequency in MHz
 - Measurement ($dB\mu V/m$) = Reading level ($dB\mu V$) + Corr. Factor (dB) Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
 - Limit ($dB\mu V/m$) = Limit stated in standard
 - Over $(dB) = Measurement (dB\mu V/m) Limits (dB\mu V/m)$

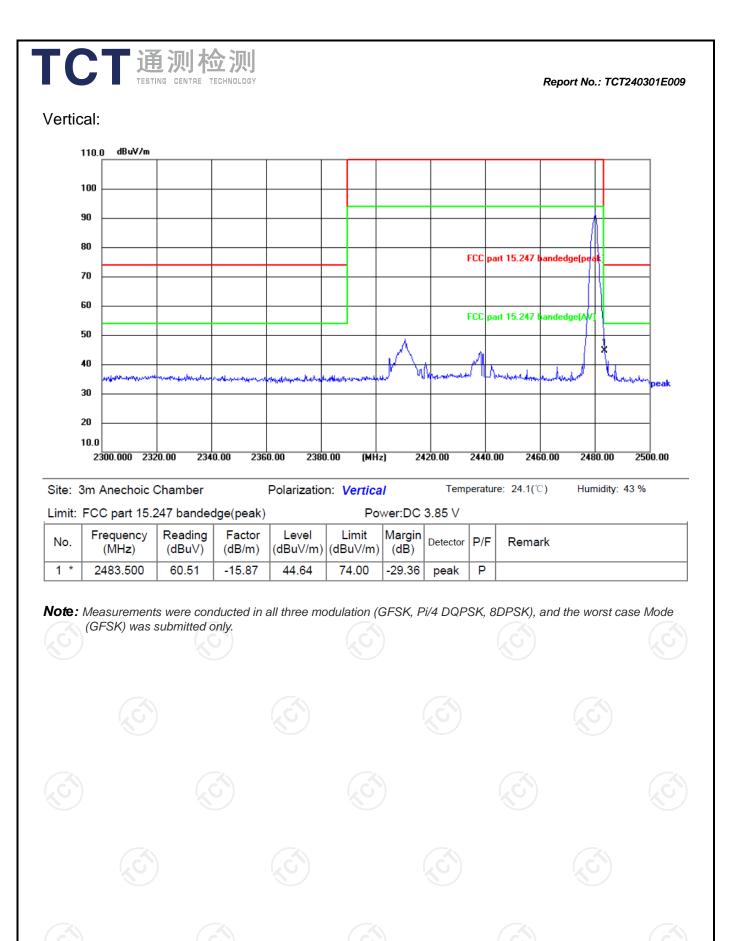
* is meaning the worst frequency has been tested in the test frequency range.

TCT通测检测 TESTING CENTRE TECHNOLOGY Report No.: TCT240301E009 Test Result of Radiated Spurious at Band edges Lowest channel 2402: Horizontal: 110.0 dBuV/m 100 90 80 FCC part 15.247 bandedge(peak 70 60 FCC part 15.247 bandedge(AV) 50 40 when a first Williamsness 30 20 10.0 2300.000 2320.00 2340.00 2360.00 2380.00 (MHz) 2420.00 2440.00 2460.00 2480.00 2500.00 Site: 3m Anechoic Chamber Polarization: Horizontal Temperature: 24.1(°C) Humidity: 43 % Limit: FCC part 15.247 bandedge(peak) Power:DC 3.85 V Level Limit Frequency Reading Factor Margin No. Detector P/F Remark (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) 1 * 2390.000 56.58 40.72 -15.86 74.00 -33.28 Ρ peak Page 26 of 99

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Above 1GHz

Modulation	Type: GF	SK							
Low channe	el: 2402 N	IHz							
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4804	Н	44.34		0.66	45.00		74	54	-9.00
7206	Н	33.83		9.50	43.33		74	54	-10.67
	Н								
	.G`)		(.C)		(.G`)		(.c.)	
4804	V	45.87		0.66	46.53		74	54	-7.47
7206	V	36.24		9.50	45.74		74	54	-8.26
	V								

Middle cha	nnel: 2441	MHz		KC KC) ((<u>v</u>)		Z
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4882	H	45.21		0.99	46.20		74	54	-7.80
7323	KCĤ)	34.12	-1,0	9.87	43.99	<u>0</u> -)-	74	54	-10.01
	H								
4882	V	45.06		0.99	46.05		74	54	-7.95
7323	V	35.48		9.87	45.35		74	54	-8.65
<u> </u>	V			'	- /				

High chann	nel: 2480 N	ЛНz							
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Peak	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4960	H	44.59		1.33	45.92		74	54	-8.08
7440	Н	34.50		10.22	44.72		74	54	-9.28
	Н								
<u>c</u>				((\mathbf{G})		(.c)
4960	V	43.78		1.33 🔍	45.11		74	54	-8.89
7440	V	32.82		10.22	43.04		74	54	-10.96
	V								

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

2. Margin (dB) = Emission Level (Peak) (dB μ V/m)-Average limit (dB μ V/m)

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

5. Data of measurement shown "----"in the above table mean that the reading of emissions is attenuated more than 20 dB

below the limits or the field strength is too small to be measured.

6. Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (GFSK) was submitted only.

7. All the restriction bands are compliance with the limit of 15.209.

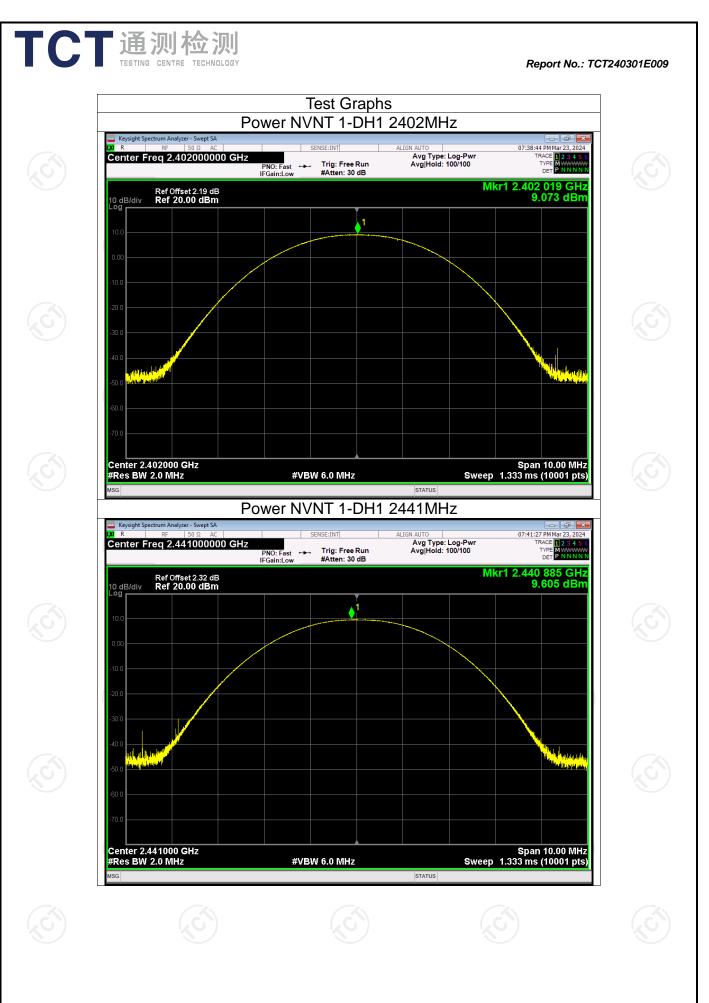


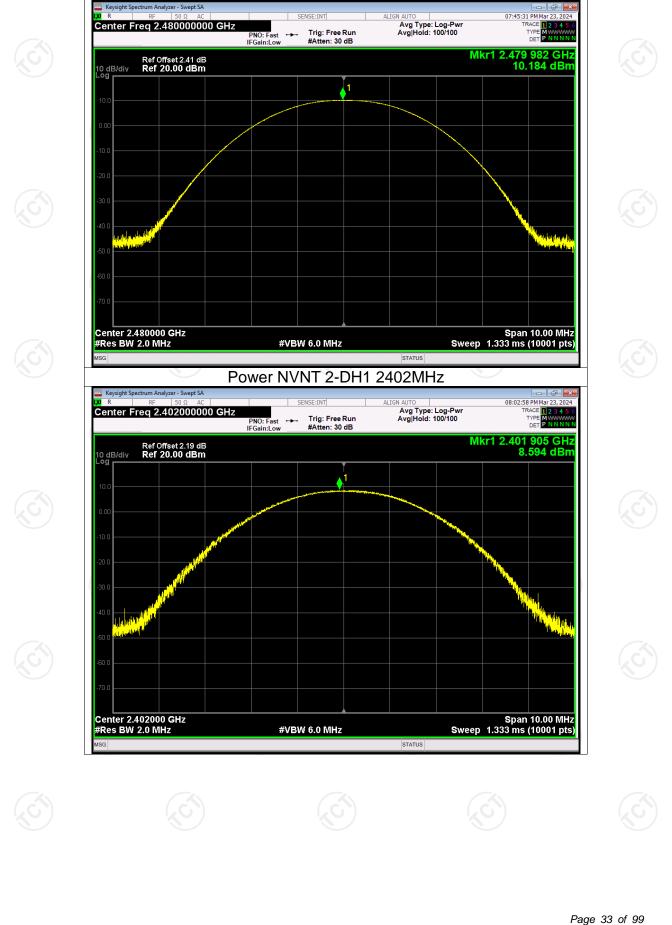
Appendix A: Test Result of Conducted Test

	Maximum Conducted Output Power											
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict							
NVNT	1-DH1	2402	9.07	30	Pass							
NVNT	1-DH1	2441	9.61	30	Pass							
NVNT	1-DH1	2480	10.18	30	Pass							
NVNT	2-DH1	2402	8.59	21	Pass							
NVNT	2-DH1	2441	9.14	21	Pass							
NVNT	2-DH1	2480	9.54	21	Pass							
NVNT	3-DH1	2402	8.14	21	Pass							
NVNT	3-DH1	2441	9.17	21	Pass							
NVNT	3-DH1	2480	9.45	21	Pass							



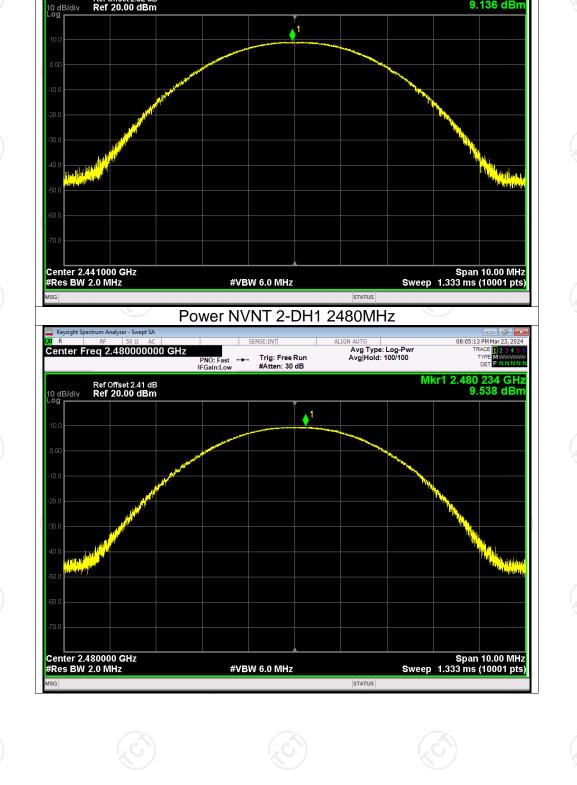
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Power NVNT 1-DH1 2480MHz

Report No.: TCT240301E009



K/R

Keysight Spectrum Analyzer - Swept S

Center Freq 2.441000000 GHz

Ref Offset 2.32 dB Ref 20.00 dBm

Power NVNT 2-DH1 2441MHz

Trig: Free Run #Atten: 30 dB

PNO: Fast +++

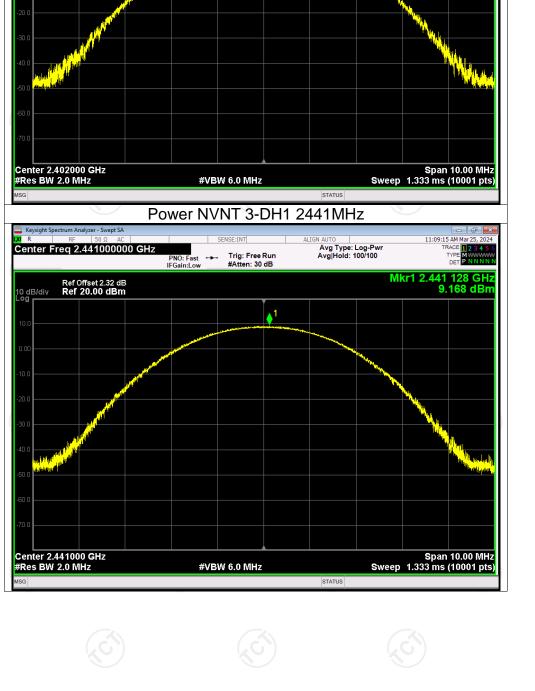
Avg Type: Log-Pwr Avg|Hold: 100/100

Report No.: TCT240301E009

08:03:46 PM Mar 23, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N

TYPE

Mkr1 2.440 951 GHz 9.136 dBm



Power NVNT 3-DH1 2402MHz

▲1

Avg Type: Log-Pwr Avg|Hold: 100/100

K/R Center Freq 2.402000000 GHz Trig: Free Run #Atten: 30 dB PNO: Fast +++ Ref Offset 2.19 dB Ref 20.00 dBm 10 dB/div Log

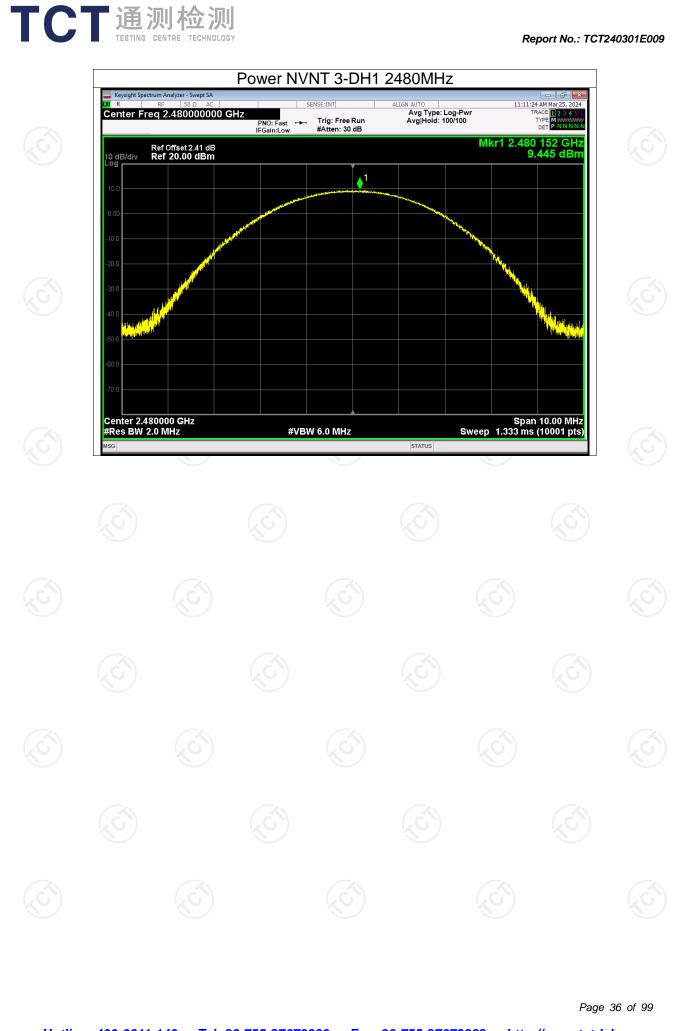
Keysight Spectrum Analyzer - Swept S

Report No.: TCT240301E009

11:48:54 AM Mar 25, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N

TYPE

Mkr1 2.402 128 GHz 8.144 dBm



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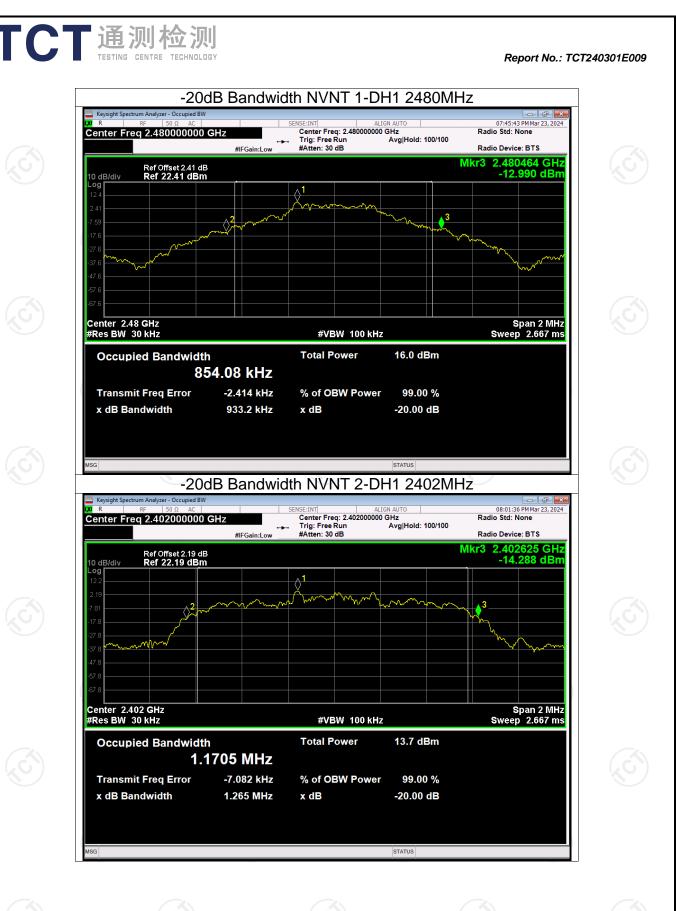
-20dB Bandwidth								
Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict				
NVNT	1-DH1	2402	0.945	Pass				
NVNT 🚫	1-DH1	2441	0.877	Pass				
NVNT	1-DH1	2480	0.933	Pass				
NVNT	2-DH1	2402	1.265	Pass				
NVNT	2-DH1	2441	1.251	Pass				
NVNT	2-DH1	2480	1.253	Pass				
NVNT	3-DH1	2402	1.262	Pass				
NVNT	3-DH1	2441	1.261	Pass				
NVNT	3-DH1	2480	1.257	Pass				



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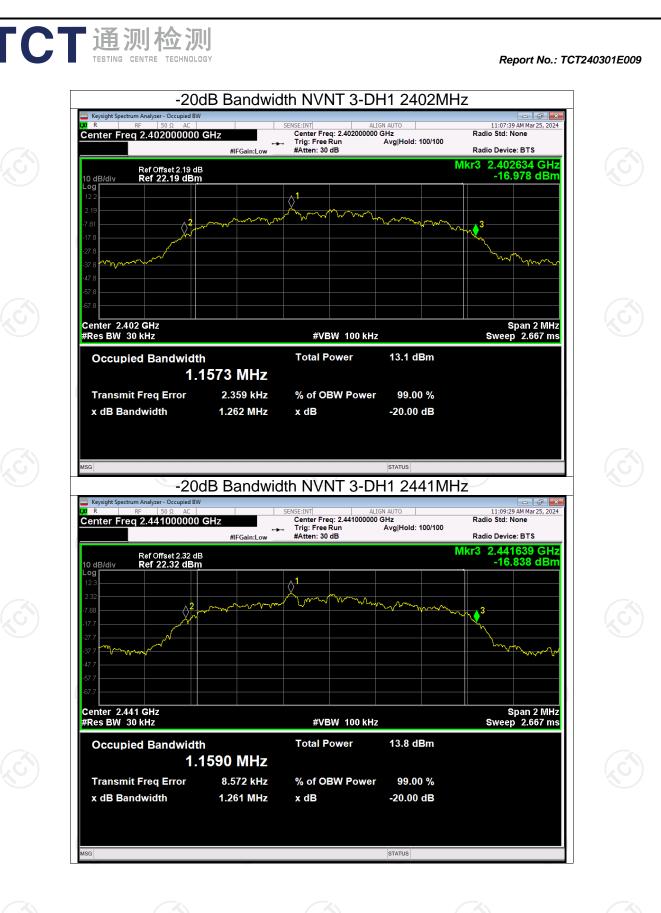
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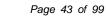




Report No.: TCT	240301E009
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			rquonoioo oopuluu			
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	2401.994	2403.005	1.011	0.945	Pass
NVNT	1-DH1	2441.014	2442.002	0.988	0.945	Pass
NVNT	1-DH1	2478.989	2479.987	0.998	0.945	Pass
NVNT	2-DH1	2401.985	2402.982	0.997	0.843	Pass
NVNT	2-DH1	2440.989	2441.986	0.997	0.843	Pass
NVNT	2-DH1	2478.999	2479.963	0.964	0.843	Pass
NVNT	3-DH1	2401.896	2402.893	0.997	0.841	Pass
NVNT	3-DH1	2440.894	2441.894	1	0.841	Pass
NVNT	3-DH1	2478.894	2479.907	1.013	0.841	Pass
KO)				KO)	•	

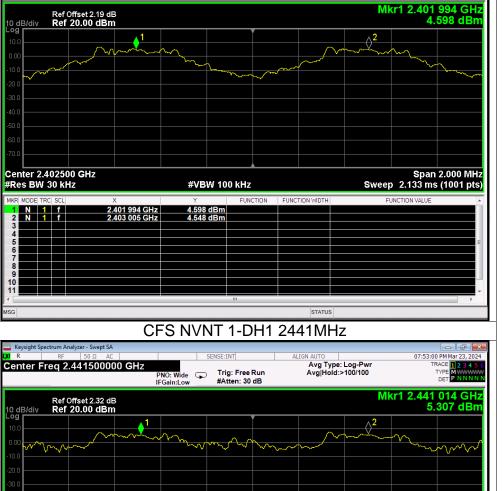
Carrier Frequencies Separation



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Avg Type: Log-Pwr Avg|Hold:>100/100 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNN Mkr1 2.401 994 GHz 4.598 dBm

07:49:11 PM Mar 23, 2024



Test Graphs CFS NVNT 1-DH1 2402MHz

PNO: Wide Trig: Free Run IFGain:Low #Atten: 30 dB

10 dBi Log **F** Center 2.441500 GHz #Res BW 30 kHz Span 2.000 MHz Sweep 2.133 ms (1001 pts) #VBW 100 kHz FUNCTION WIDTH 2.441 014 GHz 2.442 002 GHz 5.307 dBm 5.425 dBm 1 f 1 f Ň STATUS

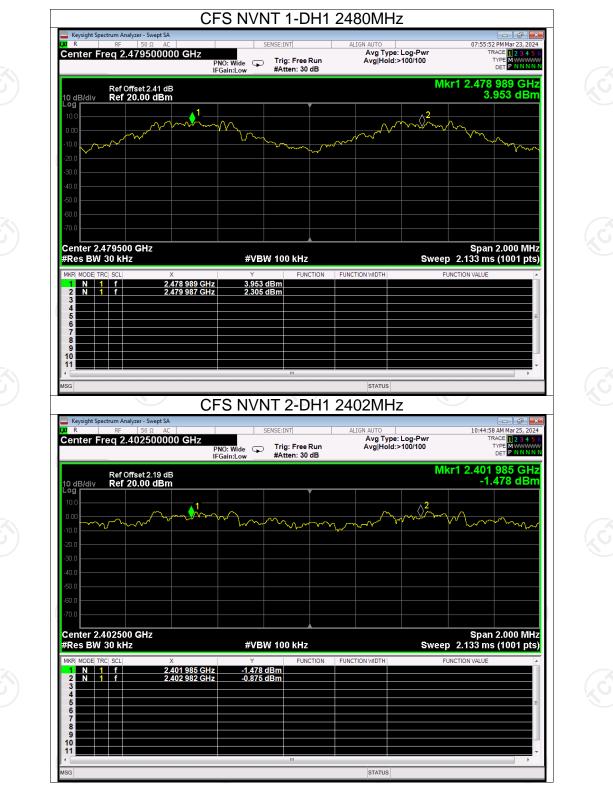
Report No.: TCT240301E009

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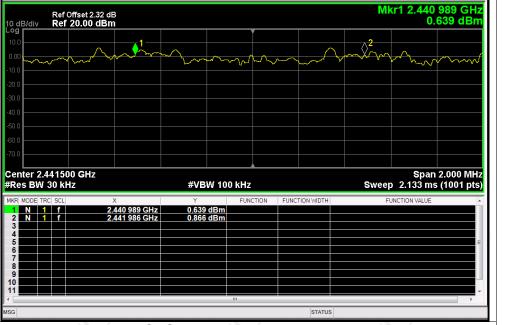


Keysight Spectrum Analyzer - Swept SA

Center Freq 2.402500000 GHz







CFS NVNT 2-DH1 2441MHz

Trig: Free Run #Atten: 30 dB

PNO: Wide IFGain:Low

 \mathbf{P}

ALTGN AL

Avg Type: Log-Pwr Avg|Hold:>100/100

Avg Type: Log-Pw Avg|Hold:>100/100

Ø²

FCT通测检测 TESTING CENTRE TECHNOLOGY

🔤 Keysight Spe

Center Freg 2.441500000 GHz

Keysight Spectrum Analyzer - Swept SA

Center Freg 2.479500000 GHz

Ref Offset 2.41 dB Ref 20.00 dBm

0 R

10 dB/div Log **r**

0 R

CFS NVNT 2-DH1 2480MHz

Trig: Free Run #Atten: 30 dB

PNO: Wide IFGain:Low

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Report No.: TCT240301E009

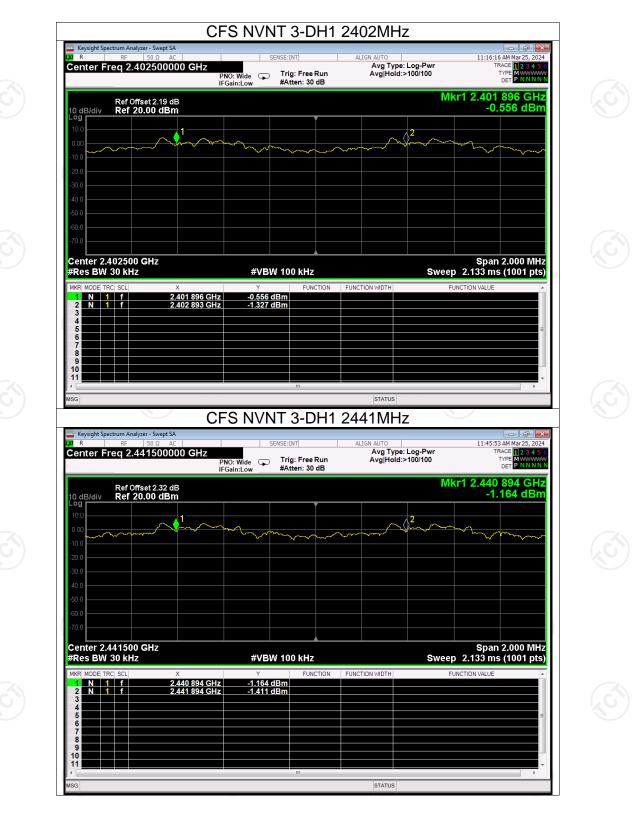
10:51:39 AM Mar 25, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N

0:42:12 AM Mar

TYP

Mkr1 2.478 999 GHz 3.439 dBm

12345 MWWWW PNNNN



FCT通测检测 TESTING CENTRE TECHNOLOGY

TC		り检测	1			Re	eport No.: TCT2	40301E009
			CFS NVN	NT 3-DH1 2	2480MHz			
	Keysight Spectrum A Center Freq 2			SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log- Avg Hold:>100/	11:33: Pwr 100	26 AM Mar 25, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N	
	10 dB/div Ref 10 g 10.0 -10.0 -20.0 -30.0 -40.0	Offset 2.41 dB 7 20.00 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mkr1 2.478		
	-50 0 -50 0 -70 0 Center 2.4795 #Res BW 30 k MKR MODE TRC SCL 1 N 1 f 3 A 5 6	Hz	94 GHz 0.088	dBm		Spar Sweep 2.133 m FUNCTION VALUE		
	7 8 9 10 11 4 MSG			m	STATUS		· ·	
							Page	48 of 99

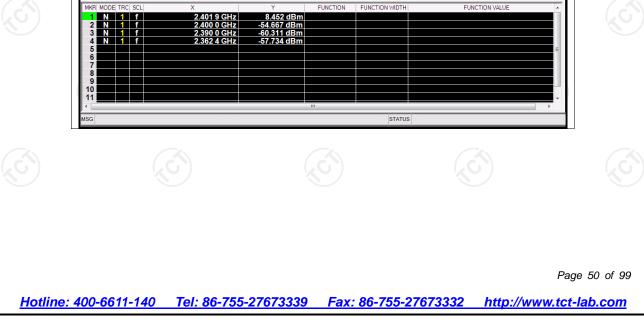
Hotline: 400-6611-140	Tel: 86-755-27673339	Fax: 86-755-27673332	http://www.tct-lab.com

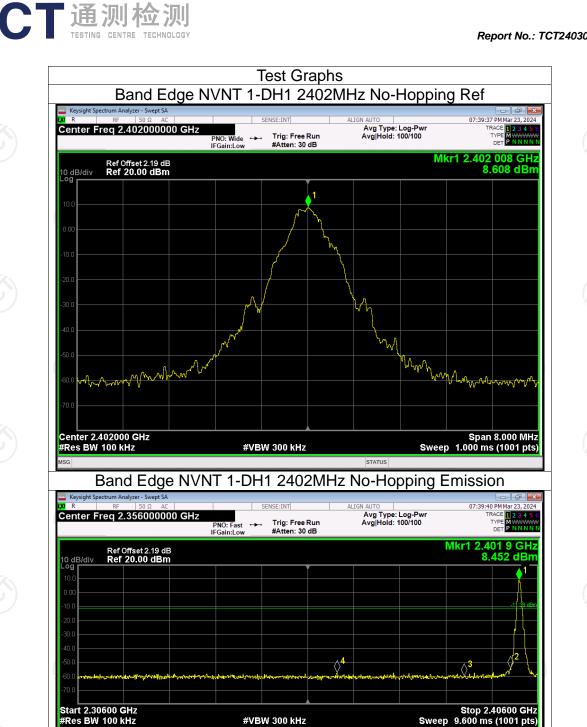
			Band Edge				
Condition	Condition Mode Frequer (MHz)		Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict	
NVNT	1-DH1	2402	No-Hopping	-66.34	-20	Pass	
NVNT	1-DH1	2480	No-Hopping	-52.56	-20	Pass	
NVNT	2-DH1	2402	No-Hopping	-66.09	-20	Pass	
NVNT	2-DH1	2480	No-Hopping	-50.71	-20	Pass	
NVNT	3-DH1	2402	No-Hopping	-55.53	-20	Pass	
NVNT	3-DH1	2480	No-Hopping	-65.30	-20	Pass	

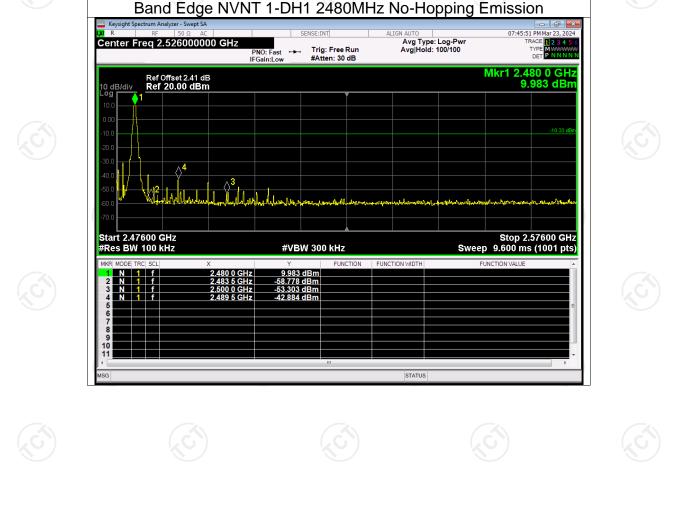
Report No.: TCT240301E009

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Band Edge NVNT 1-DH1 2480MHz No-Hopping Ref

Trig: Free Run #Atten: 30 dB

▲1

PNO: Wide IFGain:Low

 $\sim \sim \sim$

#VBW 300 kHz

нн

AUTO Avg Type: Log-Pwr Avg|Hold: 100/100

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STATUS

mmmmm

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Center Freq 2.480000000 GHz

Ref Offset 2.41 dB Ref 20.00 dBm

mannon

Keysight:

10 dB/div Loa

Mr. mr.

Center 2.480000 GHz #Res BW 100 kHz

K/R

Report No.: TCT240301E009

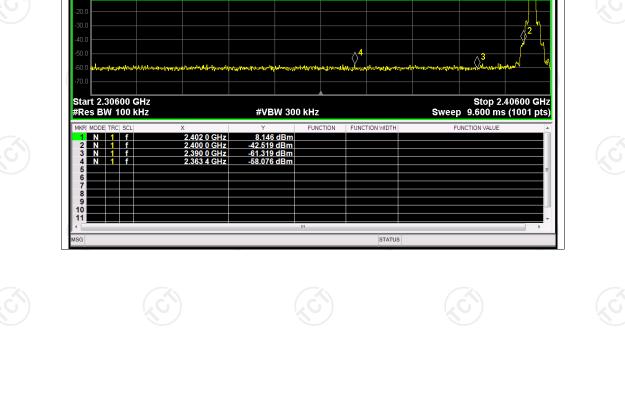
07:45:48 PM Mar 23, 20 TRACE 1 2 3 4 TYPE M WWW DET P N N N

LAN.A

Span 8.000 MHz Sweep 1.000 ms (1001 pts)

TYPE DET

Mkr1 2.480 160 GHz 9.675 dBm



- Keysight 08:01:41 PM Mar 23, 20 TRACE 1 2 3 4 TYPE MWWW DET P N N N K/R Avg Type: Log-Pwr Avg|Hold: 100/100 Center Freg 2.402000000 GHz Trig: Free Run #Atten: 30 dB PNO: Wide IFGain:Low **н**н Mkr1 2.402 008 GHz 8.015 dBm Ref Offset 2.19 dB Ref 20.00 dBm 10 dB/div Loa m Warnahu Mann W.M.M.M. Man mam Center 2.402000 GHz #Res BW 100 kHz Span 8.000 MHz Sweep 1.000 ms (1001 pts) #VBW 300 kHz STATUS

Band Edge NVNT 2-DH1 2402MHz No-Hopping Ref

Center Freg 2.356000000 GHz

10 dB/div Log **r**

Ref Offset 2.19 dB Ref 20.00 dBm

Band Edge NVNT 2-DH1 2402MHz No-Hopping Emission Keysight Spectrum Analyzer - Swept SA

Trig: Free Run #Atten: 30 dB

PNO: Fast ↔→→ IFGain:Low

Avg Type: Log-Pw Avg|Hold: 100/100

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Report No.: TCT240301E009

44 PM Mar 23

TYP

Mkr1 2.402 0 GHz 8.146 dBm



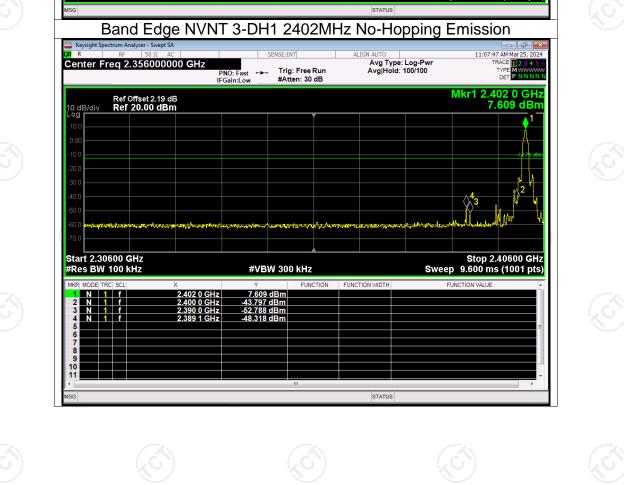
Band Edge NVNT 2-DH1 2480MHz No-Hopping Ref

Keysight

K/R

Report No.: TCT240301E009

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11:07:44 AM Mar 25, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N Avg Type: Log-Pwr Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB TYPE DET PNO: Wide IFGain:Low **н**н Mkr1 2.401 840 GHz 7.219 dBm Ref Offset 2.19 dB Ref 20.00 dBm 10 dB/div Loa m mar 1 M Maria mahn M mm N MAN Center 2.402000 GHz #Res BW 100 kHz Span 8.000 MHz Sweep 1.000 ms (1001 pts) #VBW 300 kHz

Band Edge NVNT 3-DH1 2402MHz No-Hopping Ref

Keysight:

Center Freg 2.402000000 GHz

K/R

Report No.: TCT240301E009

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Band Edge NVNT 3-DH1 2480MHz No-Hopping Ref

Trig: Free Run #Atten: 30 dB

PNO: Wide IFGain:Low

нн

Avg Type: Log-Pwr Avg|Hold: 100/100

Keysight

10 dB/div Loa

Center Freg 2.480000000 GHz

Ref Offset 2.41 dB Ref 20.00 dBm

K/R

Report No.: TCT240301E009

11:47:53 AM Mar 25, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N

TYPE DET

Mkr1 2.479 848 GHz 8.545 dBm

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Report No.: TCT240301E009	Report	t No.:	TCT240	301E009
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Band Edge(Hopping)										
Condition	Mode	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict				
NVNT	1-DH1	2402	Hopping	-59.76	-20	Pass				
NVNT	1-DH1	2480	Hopping	-48.34	-20	Pass				
NVNT	2-DH1	2402	Hopping	-54.99	-20	Pass				
NVNT	2-DH1	2480	Hopping	-45.90	-20	Pass				
NVNT	3-DH1	2402	Hopping	-59.01	-20	Pass				
NVNT 🐇	3-DH1	2480	Hopping	-46.44	-20	Pass				

Band Edge(Hopping)



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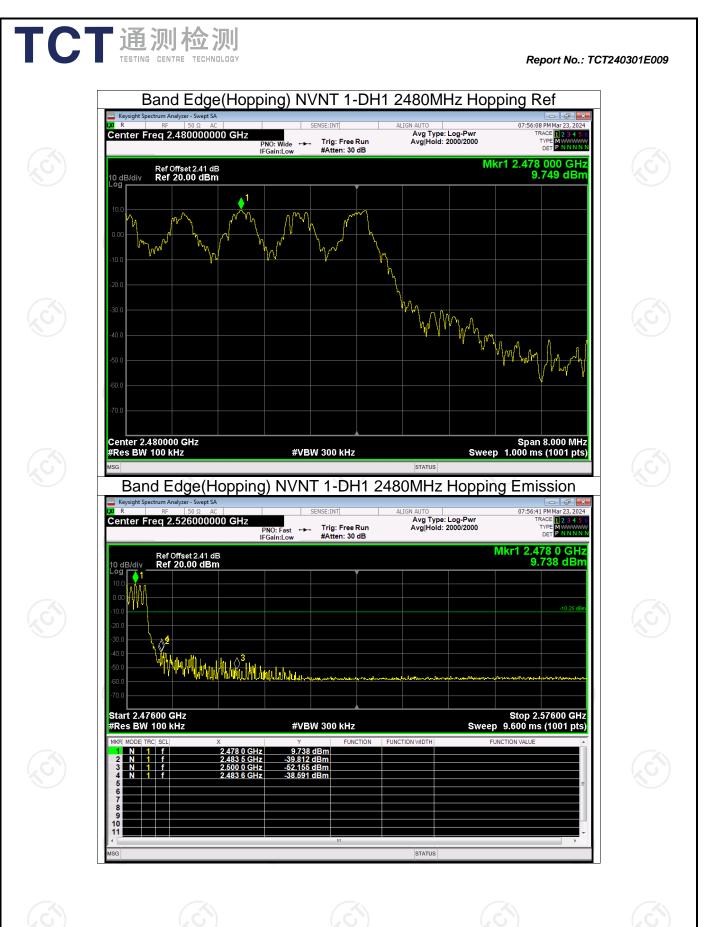


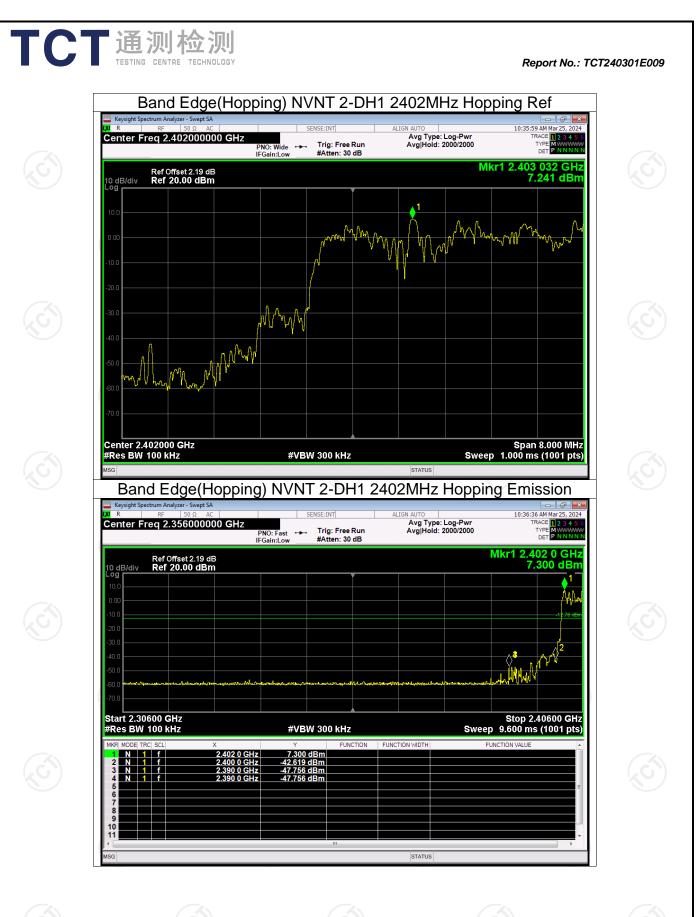
Test Graphs Band Edge(Hopping) NVNT 1-DH1 2402MHz Hopping Ref Keysight Spect 07:49:26 PM Mar 23, 2024 Center Freq 2.402000000 GHz Avg Type: Log-Pwr Avg|Hold: 2000/2000 TRACE 1 2 3 4 5 TYPE MWWWW DET PNNNN PNO: Wide +++ Trig: Free Run IFGain:Low #Atten: 30 dB Mkr1 2.405 032 GHz 7.736 dBm Ref Offset 2.19 dB Ref 20.00 dBm 10 dB/div Log NW NM Mm MM Center 2.402000 GHz #Res BW 100 kHz Span 8.000 MHz Sweep 1.000 ms (1001 pts) #VBW 300 kHz STATUS

Band Edge(Hopping) NVNT 1-DH1 2402MHz Hopping Emission Keysight Spectru (I R Center Freq 2.356000000 GHz Avg Type: Log-Pwr Avg|Hold: 2000/2000 PNO: Fast ---- Trig: Free Run IFGain:Low #Atten: 30 dB

Report No.: TCT240301E009

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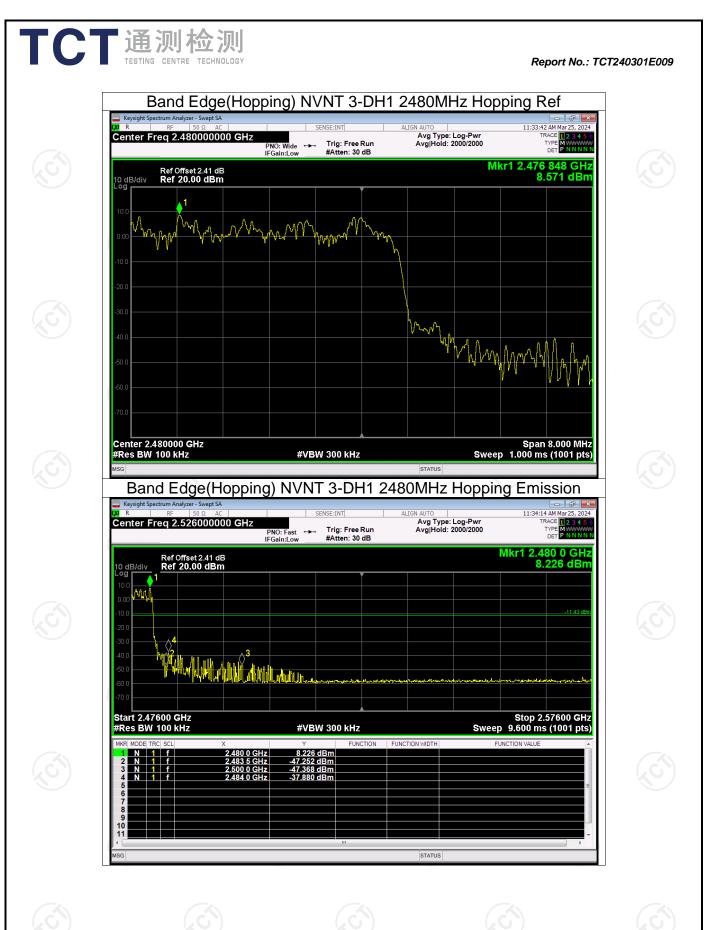


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Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	-46.13	-20	Pass
NVNT	1-DH1	2441	-61.12	-20	Pass
NVNT	1-DH1	2480	-51.91	-20	Pass
NVNT	2-DH1	2402	-57.26	-20	Pass
NVNT	2-DH1	2441	-62.91	-20	Pass
NVNT	2-DH1	2480	-30.42	-20	Pass
NVNT 🚫	3-DH1	2402	-62.50	-20	Pass
NVNT	3-DH1	2441	-63.27	-20	Pass
NVNT	3-DH1	2480	-61.19	-20	Pass

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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Tx. Spurious NVNT 1-DH1 2402MHz Ref Keysight Spectrum Analyzer - Swept SA 07:39:45 PM Mar 23, 2024 R RF 50 Ω AC Center Freq 2.402000000 GHz Avg Type: Log-Pwr Avg|Hold: 100/100 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N N N PNO: Wide ---- Trig: Free Run IFGain:Low #Atten: 20 dB Mkr1 2.401 840 50 GHz 8.529 dBm Ref Offset 2.19 dB Ref 12.19 dBm MAN vyyw~" Mar and Alexand will white the first the second se ANN MAN month ally with the way W WWWWWWW

Center 2.4020000 GHz #Res BW 100 kHz Span 1.500 MHz Sweep 2.000 ms (30001 pts) #VBW 300 kHz STATUS

Test Graphs

Tx. Spurious NVNT 1-DH1 2402MHz Emission

Keysight Spect	trum Analyzer - Swept S	SA								
LXI R	RF 50 Ω 4			SENSE:INT			I AUTO			14 PM Mar 23, 2024
Center Fre	eq 13.265000	F	PNO: Fast ↔ Gain:Low	. Trig: Fi #Atten:			Avg Type: Avg Hold:		1	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N
10 dB/div Log	Ref Offset 2.19 o Ref 12.19 dB									101 7 GHz .243 dBm
2.19	1				_ _					
-7.81										-11.47 dBm
-17.8										
-27.8										
-47.8	¢	3								
-57.8		<u> </u>	5					al Long de Matth		
-67.8	and the first state		the state of the	ut de la c haile						
-77.8										
Start 0.03 #Res BW 1			#VB	W 300 k	Hz			Swee	Stoj 2.530 s	o 26.50 GHz (30001 pts)
MKR MODE TRC	SCL	Х	Y		UNCTION	FUNCTION	N WIDTH	F	UNCTION VALUE	*
1 N 1 2 N 1	f	2.401 7 GHz 5.255 2 GHz								
3 N 1	f	4.804 3 GHz	-51.034	dBm						
4 N 1	f	7.205 1 GHz	-57.940							
5 N 1	1	9.465 7 GHz	-66.062	dBm						=
7										
8										
10										
11										-
MSG							STATUS			

Report No.: TCT240301E009

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10 dB/div Log

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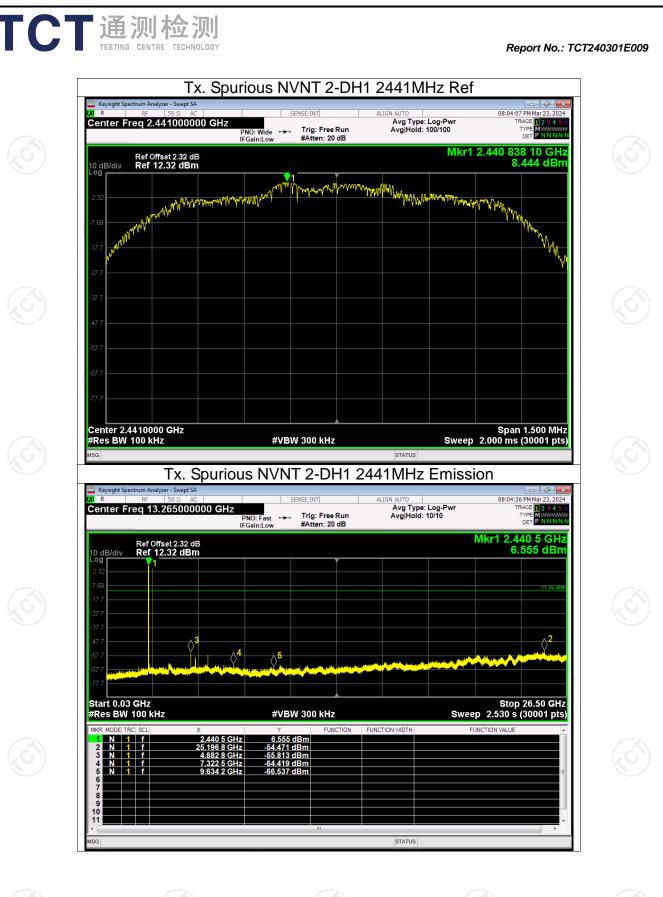
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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

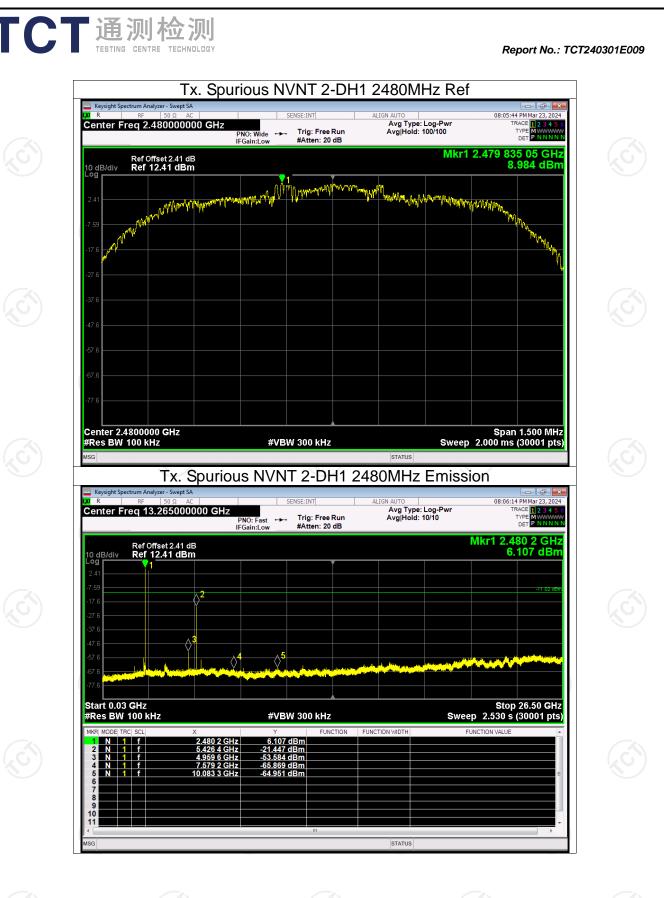




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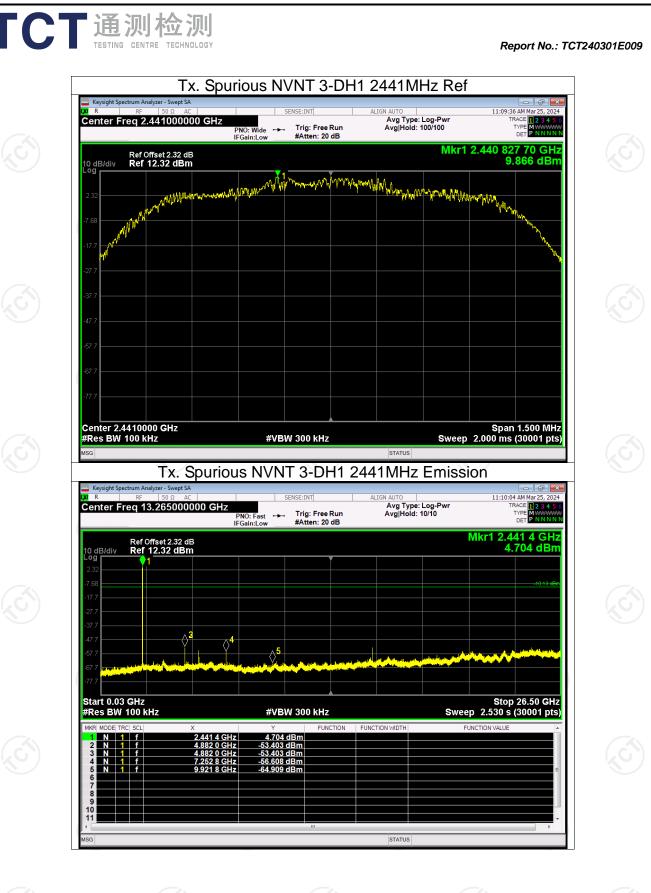


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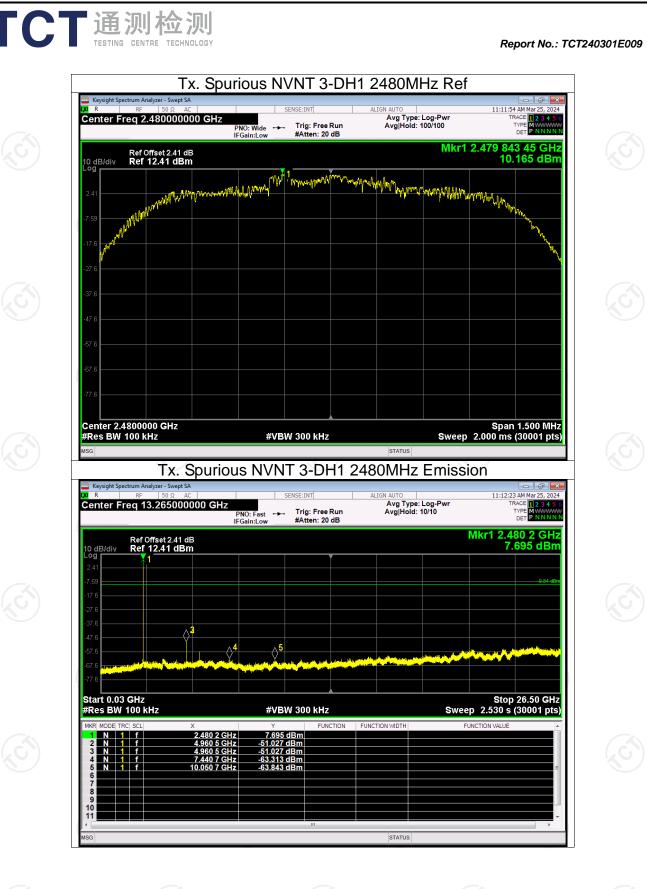






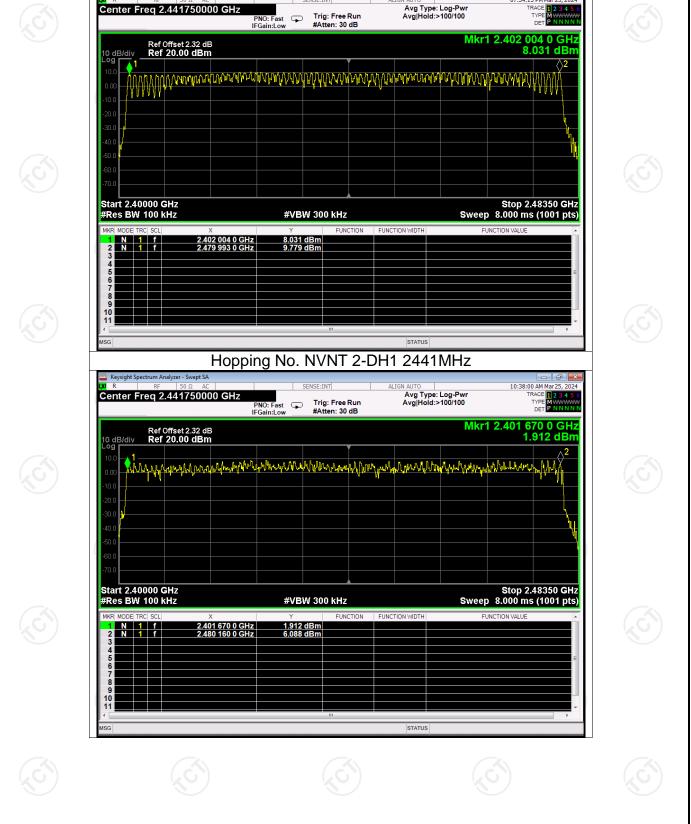






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TC		则检测				Re	port No.: TCT2	240301E009
	Condition NVNT NVNT NVNT	Mode 1-DH1 2-DH1 3-DH1		of Hopping Hopping N 79 79 79 79	g Channel lumber	Limit 15 15 15	Verd Pas Pas Pas	ss s
<u>Hotli</u>	ne: 400-6611	-140 Tel: 86	-755-27673	1339 Fax:	<u>86-755-2767</u>	<u>3332 http:</u>	Page //www.tct-la	73 of 99 1 b.com



Test Graphs Hopping No. NVNT 1-DH1 2441MHz

CT 通测检测 TESTING CENTRE TECHNOLOGY

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441750000 GHz

Report No.: TCT240301E009

07:54:15 PM Mar 23, 2024

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		oning No	NVNT 3-D	H1 2441M		eport No.: TCT2	240301E009
Center Freq 2.4	lyzer - Swept SA 50 Ω AC 441750000 GH ffset 2.32 dB 20.00 dBm	Z PNO: Fast IFGain:Low	ENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log Avg Hold:>100/	11:24: Pwr 100 Mkr1 2.401 {	.370 dBm	
-40.0 -50.0 -50.0 -70.0 Start 2.400000 G #Res BW 100 kH MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 4 5 5 6 6		Y	dBm		Stop 2 Sweep 8.000 m FUNCTION VALUE		
8 9 10 11 • MSG			m.	STATUS		÷	
						Page	75 of 99

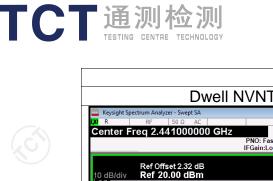
TCT	通测检测
	TESTING CENTRE TECHNOLOGY

Report No.: TCT240301E009

Dwell Time								
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.38	121.60	320	31600	400	Pass
NVNT	1-DH3	2441	1.63	259.17	159	31600	400	Pass
NVNT	1-DH5	2441	2.88	305.28	106	31600	400	Pass
NVNT 🐇	2-DH1	2441	0.38	121.22	319	31600	400	Pass
NVNT	2-DH3	2441	1.64	268.96	164	31600	400	Pass
NVNT	2-DH5	2441	2.89	355.47	123	31600	400	Pass
NVNT	3-DH1	2441	0.39	124.41	319	31600	400	Pass
NVNT	3-DH3	2441	1.64	259.12	158	31600	400	Pass
NVNT	3-DH5	2441	2.89	335.24	116	31600	400	Pass

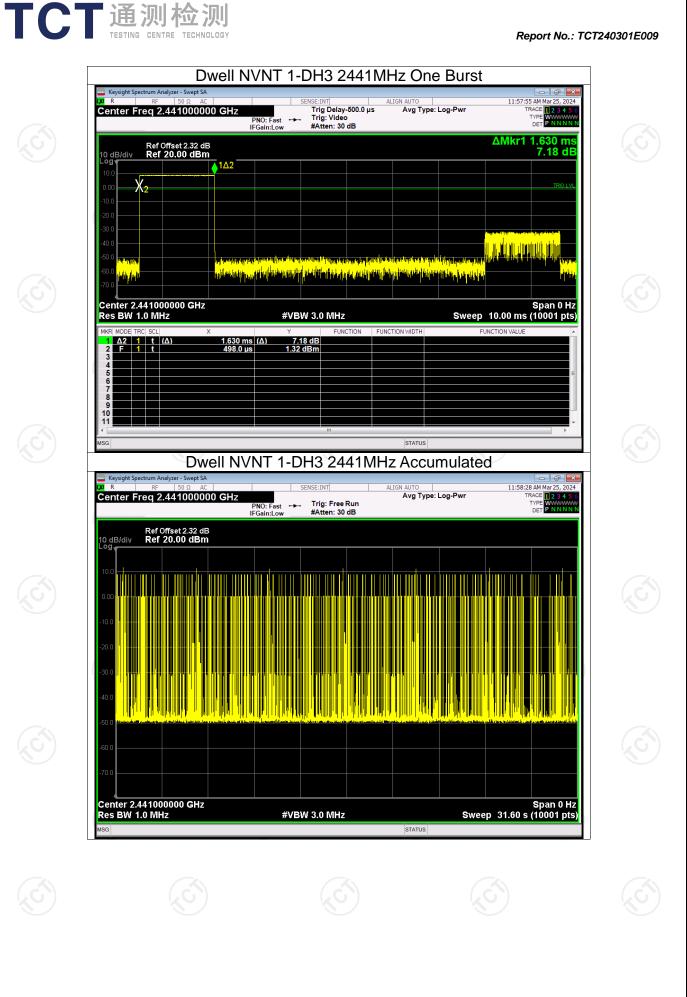
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leysight Spectrum Analyzer - Swept SA R RF 50 Ω AC	SENSE:INT	ALIGN AUTO	07:56:55 PM Mar 23, 2024
nter Freq 2.441000000 GHz	PNO: Fast ↔ Trig Delay-500.0 µ Trig: Video IFGain:Low #Atten: 30 dB	is Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWWW DET PNNNN
Ref Offset 2.32 dB			ΔMkr1 380.0 μs -57.68 dB
IB/div Ref 20.00 dBm			-57.08 UB
X ₂			TRIG LVL
10.2			
	ur an	ni in the former of the second part of the former former of the part of the second second second second second	i terre di Balanian provinsi da provinsi da Balania. E gli informativa da provinsi da provin
nter 2.441000000 GHz BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Span 0 Hz 10.00 ms (10001 pts)
MODE TRC SCL X	Y FUNCTION		UNCTION VALUE
Δ2 1 t (Δ) 380.0 μ F 1 t 497.0 μ			
	III	CTATIO	Þ.
	/NT 1-DH1 2441N		d
eysight Spectrum Analyzer - Swept SA			
RF 50 Ω AC nter Freq 2.441000000 GHz	PNO: Fast Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr	07:57:27 PM Mar 23, 2024 TRACE 1 2 3 4 5 6 TYPE
Ref Offset 2.32 dB	IFGain:Low #Atten: 30 dB		DET P NNNN
B/div Ref 20.00 dBm			
מיינים אין המשירה את את היו הי שלאמר איזיא איזיד המרמייה איזיד איזיד איזיד איזיד איזיד איזיד איזיד איזיי איזיי איזיי איזיי איזיי איזיי איזיי איזיד איזיי איזי			
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	Keysight Spectrum Analyzer - Swept SA R RF 50 Ω AC Center Freq 2.441000000 GHz	VNI 1-DH5 2441MHZ OI sense:INT ALIGN AUTO Trig Delay-500.0 µs Avg Ty PN0: Fast → Trig: Video	11:56:06 AM Mar 25, 2024 pe: Log-Pwr TRACE 2 34 5 0 TYPE VINNING	_
	Ref Offset 2.32 dB 10 dB/div Ref 20.00 dBm	FGain:Low #Atten: 30 dB	ΔMkr1 2.880 ms 1.97 dB	S
	10.0 X2		TROLVL	
	-20.0			
	-50.0 http://www.inter- -60.0 http://www.inter- -70.0	an e mai an general e fan de fan Fan en fan de	t pås trainsenan protes er proti kente ty finder protekansen produktion	(S)
	Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Span 0 Hz Sweep 10.00 ms (10001 pts)	
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	(Δ) 1.97 dB 6.57 dBm	FUNCTION VALUE	
	8 9 10 11 4 MSG	III STATUS		
	Dwell NV	NT 1-DH5 2441MHz Acc	umulated	
	Keysight Spectrum Analyzer - Swept SA R R F 50 Ω AC Center Freq 2.441000000 GHz	SENSE:INT ALIGN AUTO AVG Ty PNO: Fast Gain:Low #Atten: 30 dB	11:56:39 AM Mar25, 2024 pe: Log-Pwr TRACE 12 34 5 0 TYPE V	
	Ref Offset 2.32 dB 10 dB/div Ref 20.00 dBm			
	0.00			
	-40 0 -50 0			
	-60.0			
	Center 2.441000000 GHz		Span 0 Hz	
	Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 31.60 s (10001 pts)	
11-41:	400 6611 140 Tol: 96 75	5 27672220 - Eavy 96 765 1	Pa	age 79 of 99

Dwell NVNT 1-DH5 2441MHz One Burst

Report No.: TCT240301E009

TCT 通测检测 TESTING CENTRE TECHNOLOGY