

RADIO TEST REPORT

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Report No.: STS2301306W03

Issued for

WHOOP INTERNATIONAL TRADING LIMITED

Flat-B 8/F Chong Gming Building 72 Cheung Sha Wan Road, Kowloon, Hong Kong

Product Name:	10.1 inch Quad Core 4G Tablet PC
Brand:	ROVER
Model Number:	R10
Series Model(s):	N/A
FCC ID:	2AP7LR10
Test Standard:	FCC Part 15.247

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APPROV

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TEST RESULT CERTIFICATION

Applicant's Name	WHOOP INTERNATIONAL TRADING LIMITED
Address	Flat-B 8/F Chong Gming Building 72 Cheung Sha Wan Road, Kowloon, Hong Kong
Manufacturer's Name:	Shenzhen Teleone Technology Co., Ltd
Address	Tower B 5/F, Shanshui Building, Nanshan Yungu Innovation Industry Park, 4093 Liuxian Avenue, Shenzhen, China
Product Description	
Product Name	10.1 inch Quad Core 4G Tablet PC
Brand	ROVER
Model Number	R10
Series Model(s):	N/A
Test Standards	FCC Part15.247
Test Procedure	ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....

Date of receipt of test item: 09 Jan. 2023

Date (s) of performance of tests : 09 Jan. 2023 ~ 09 Feb. 2023

Date of Issue: 09 Feb. 2023

Test Result Pass

Testing Engineer

(Chris Chen)

Technical Manager

(Sean she)

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APPROVAL

Authorized Signatory :

(Bovey Yang)

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7. HOPPING CHANNEL SEPARATION MEASUREMEN

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	09 Feb. 2023	STS2301306W03	ALL	Initial Issue



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: KDB 558074 D01 15.247 Meas Guidance v05r02.

	FCC Part 15.247,Subpart C		
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(a)(1)&(b)(1)	Output Power	PASS	
15.209	Radiated Spurious Emission	PASS	
15.247(d)	Conducted Spurious & Band Edge Emission	PASS	
15.247(a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(1)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.205	Restricted bands of operation	PASS	
Part 15.247(d)/part 15.209(a)	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report.

(2) All tests are according to ANSI C63.10-2013.



1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China FCC test Firm Registration Number: 625569 IC test Firm Registration Number: 12108A A2LA Certificate No.: 4338.01

1.2 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	Uncertainty
1	RF output power, conducted	±1.197dB
2	Unwanted Emissions, conducted	±2.896dB
3	All emissions, radiated 9K-30MHz	±3.84dB
4	All emissions, radiated 30M-1GHz	±3.94dB
5	All emissions, radiated 1G-6GHz	±4.59dB
6	All emissions, radiated>6G	±5.22dB
7	Conducted Emission (9KHz-150KHz)	±2.14dB
8	Conducted Emission (150KHz-30MHz)	±2.54dB



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

10.1 inch Quad Core 4G Tablet PC
ROVER
R10
N/A
N/A
Please refer to the Note 3.
Frequency:2402 – 2480 MHz Modulation: GFSK(1Mbps)
BR
PIFA
1.8dBi
Input: AC 100-240V, 0.3A, 50-60Hz Output: DC 5V, 1500mA
Rated Voltage:3.8V Charge Limit Voltage: 4.35V Capacity: 5100mAH
J865_610&310_D3EF_V1.1
ROVER_R10_12_V01_20221229
Please refer to the Note 1.

Note:

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
- 2. The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.





3.

	Channel List				
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		



2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Worst Mode	Description	Data Rate/Modulation
Mode 1	TX CH00	1Mbps/GFSK
Mode 2	TX CH39	1Mbps/GFSK
Mode 3	TX CH78	1Mbps/GFSK
Mode 4	Hopping	GFSK

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

(2) We tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/ 60Hz is shown in the report.

(3) The battery is fully-charged during the radiated and RF conducted test.

For AC Conducted Emission

	Test Case
AC Conducted Emission	Mode 5 : Keeping BT TX

2.3 FREQUENCY HOPPING SYSTEM REQUIREMENTS

(1)Standard and Limit

According to FCC Part 15.247(a)(1), The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

(2)The Pseudorandom sequence may be generated in a nin-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first one of 9 consecutive ones: i.e. the shift register is initialized with nine ones.

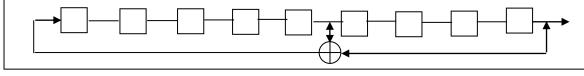
Numver of shift register stages:9

Length of pseudo-random sequence:2⁹-1=511bits Longest sequence of zeros: 8(non-inverted signal)

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Liner Feedback Shift Register for Generator of the PRBS sequence An example of Pseudorandom Frequency Hoppong Sequence as follow:

0 2 4 6	<u>62 64 78 1</u>	<u> </u>

Each frequency used equally on thaverage by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies ini synchronization with the transmitted signals.

(3)Frequency Hopping System

This transmitter device is frequency hopping device, and complies with FCC part 15.247 rule.

This device uses Bluetooth radio which operates in 2400-2483.5 MHz band. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centred from 2402 to 2480 MHz) in the range 2,400-2,483.5MHz. The transmitter switches hop frequencies 1,600 times per second to assure a high degree of data security. All Bluetooth devices participating in a given piconet are synchronized to the frequency-hopping channel for the piconet. The frequency hopping sequence is determined by the master's device address and the phase of the hopping sequence (the frequency to hop at a specific time) is determined by the master's internal clock. Therefore, all slaves in a piconet must know the master's device address and must synchronize their clocks with the master's clock.

Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless devices are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its piconet to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away from the areas of interference, thus having no impact on the bandwidth used.

This device was tested with a bluetooth system receiver to check that the device maintained hopping synchronization, and the device complied with these requirements FCC Part 15.247 rule.



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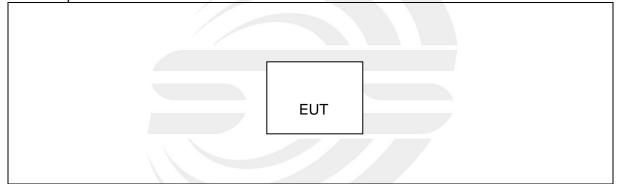
2.4 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS.

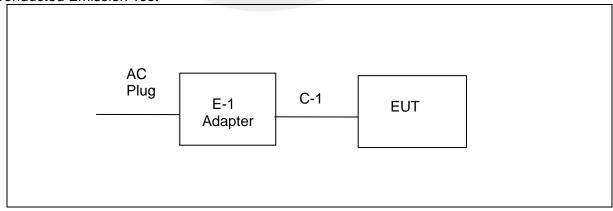
Test software Version	Test program: Bluetooth				
(Power control software)	Power class:	Power class:	Power class:		
Parameters(1Mbps)	DH1 rate:4:27	DH3 rate:11:183	DH5 rate:15:339		

RF Function	Туре	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
BT(Only BR)	BR	GFSK	1.8	8	Engineering mode

2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED Radiated Spurious Emission Test



Conducted Emission Test



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2.6 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-1	Adapter	N/A	YMK-12W050150	N/A	N/A
C-1	Type-C Cable	N/A	N/A	100cm	NO

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in ^CLength₂ column.
- (2) "YES" is means "with core"; "NO" is means "without core".



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2.7 EQUIPMENTS LIST

		RF Radiation Tes	t Equipment		
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2022.03.02	2023.03.01
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2022.07.04	2023.07.03
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2022.09.29	2023.09.28
Pre-mplifier (18G-40G)	SKET	LNPA_1840-50	SK2018101801	2022.07.23	2023.07.22
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2022.09.29	2023.09.28
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Active loop Antenna	ZHINAN	ZN30900C	16035	2022.03.02	2023.03.01
Bilog Antenna	TESEQ	CBL6111D	34678	2022.09.30	2024.09.29
Horn Antenna	SCHWARZBE CK	BBHA 9120D	02014	2021.10.11	2023.10.10
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2021.09.28	2023.09.27
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	SC100_1	60531	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC Power Supply	Zhaoxin	RXN 605D	20R605D11010081	N/A	N/A
Test SW	EZ-EMC		Ver.STSLAB-03A	1 RE	
		Conduction Test	equipment		
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2022.09.29	2023.09.28
LISN	R&S	ENV216	101242	2022.09.28	2023.09.27
LISN	EMCO	3810/2NM	23625	2022.09.28	2023.09.27
Temperature & Humidity	HH660	Mieo	N/A	2022.09.30	2023.09.29
Test SW	EZ-EMC		Ver.STSLAB-03A	1 CE	
RF Connected Test					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Analyzer	Agilent	N9020A	MY51510623	2022.03.01	2023.02.28
Switch control box	MW	MW100-RFCB	N/A	N/A	N/A
Temperature & Humidity	HH660	Mieo	N/A	2022.09.30	2023.09.29
Test SW	MW		MTS 8310_2.0	.0.0	



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

	Conducted Emissionlimit (dBuV)		
FREQUENCY (MHz)	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	
0.50 -5.0	56.00	46.00	
5.0 -30.0	60.00	50.00	

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of "*" marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

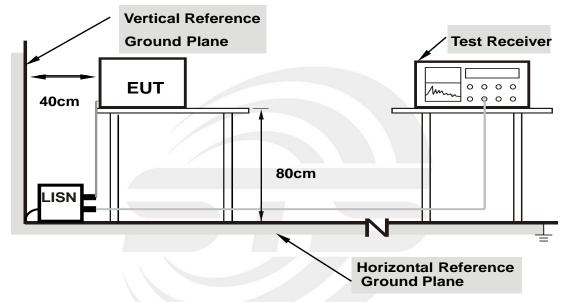
Receiver Parameters	Setting		
Attenuation	10 dB		
Start Frequency	0.15 MHz		
Stop Frequency	30 MHz		
IF Bandwidth	9 kHz		





3.1.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.



3.1.3 TEST SETUP

Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

3.1.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.1.5 TEST RESULT

Temperature:	21.7(C)	Relative Humidity:	42%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 5		

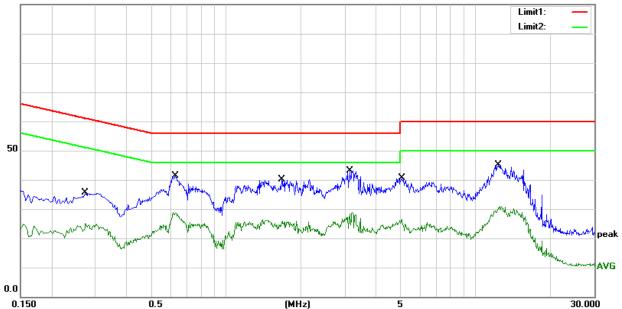
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.2740	24.91	10.63	35.54	61.00	-25.46	QP
2	0.2740	14.42	10.63	25.05	51.00	-25.95	AVG
3	0.6300	31.03	10.42	41.45	56.00	-14.55	QP
4	0.6300	18.48	10.42	28.90	46.00	-17.10	AVG
5	1.6780	29.95	10.30	40.25	56.00	-15.75	QP
6	1.6780	15.86	10.30	26.16	46.00	-19.84	AVG
7	3.1540	32.83	10.35	43.18	56.00	-12.82	QP
8	3.1540	18.42	10.35	28.77	46.00	-17.23	AVG
9	5.0940	30.14	10.46	40.60	60.00	-19.40	QP
10	5.0940	16.24	10.46	26.70	50.00	-23.30	AVG
11	12.4460	33.66	11.46	45.12	60.00	-14.88	QP
12	12.4460	19.49	11.46	30.95	50.00	-19.05	AVG

Remark:

1. All readings are Quasi-Peak and Average values

2. Margin = Result (Result = Reading + Factor)-Limit

3. Factor=LISN factor+Cable loss+Limiter (10dB)



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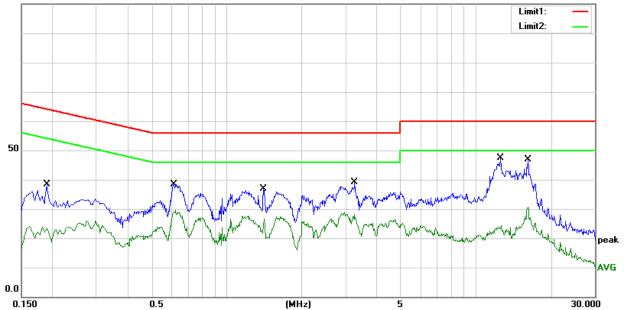
Temperature:	21.7(C)	Relative Humidity:	42%RH
Test Voltage:	AC 120V/60Hz	Phase:	Ν
Test Mode:	Mode 5		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1900	27.87	10.38	38.25	64.04	-25.79	QP
2	0.1900	13.57	10.38	23.95	54.04	-30.09	AVG
3	0.6140	27.99	10.42	38.41	56.00	-17.59	QP
4	0.6140	19.21	10.42	29.63	46.00	-16.37	AVG
5	1.4100	26.42	10.34	36.76	56.00	-19.24	QP
6	1.4100	17.05	10.34	27.39	46.00	-18.61	AVG
7	3.2700	28.69	10.47	39.16	56.00	-16.84	QP
8	3.2700	18.38	10.47	28.85	46.00	-17.15	AVG
9	12.5580	36.05	11.26	47.31	60.00	-12.69	QP
10	12.5580	13.05	11.26	24.31	50.00	-25.69	AVG
11	16.1620	34.88	11.88	46.76	60.00	-13.24	QP
12	16.1620	18.65	11.88	30.53	50.00	-19.47	AVG

Remark:

1. All readings are Quasi-Peak and Average values

- 2. Margin = Result (Result = Reading + Factor)-Limit
- 3. Factor=LISN factor+Cable loss+Limiter (10dB)



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3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205 (a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

	1	1
Frequencies	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (1GHz-25 GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)		
	PEAK	AVERAGE	
Above 1000	74	54	

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RESTRICTED FREQUENCY BANDS

		-	
FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Shenzhen STS Test Services Co., Ltd.

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For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP/AV
Start Frequency	9 KHz/150KHz(Peak/QP/AV)
Stop Frequency	150KHz/30MHz(Peak/QP/AV)
	200Hz (From 9kHz to 0.15MHz)/
RB / VB (emission in restricted	9KHz (From 0.15MHz to 30MHz);
band)	200Hz (From 9kHz to 0.15MHz)/
	9KHz (From 0.15MHz to 30MHz)

Spectrum Parameter	Setting	
Attenuation	Auto	
Detector	Peak/QP	
Start Frequency	30 MHz(Peak/QP)	
Stop Frequency	1000 MHz (Peak/QP)	
RB / VB (emission in restricted	120 KHz / 300 KHz	
band)		

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted	1 MHz / 3 MHz(Peak)
band)	1 MHz/1/T MHz(AVG)

For Restricted band

Spectrum Parameter	Setting	
Detector	Peak/AV	
Start/Stop Frequency	Lower Band Edge: 2310 to 2410 MHz	
	Upper Band Edge: 2476 to 2500 MHz	
	1 MHz / 3 MHz(Peak)	
RB / VB	1 MHz/1/T MHz(AVG)	

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Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and QuasiPeak detector mode will be re-measured.
- e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

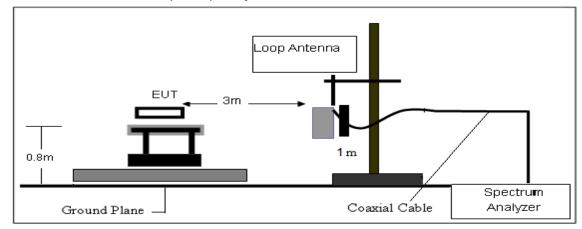
3.2.3 DEVIATION FROM TEST STANDARD

No deviation.

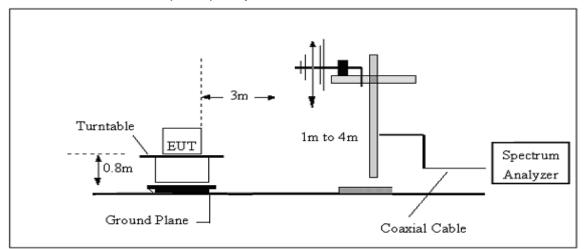


3.2.4 TESTSETUP

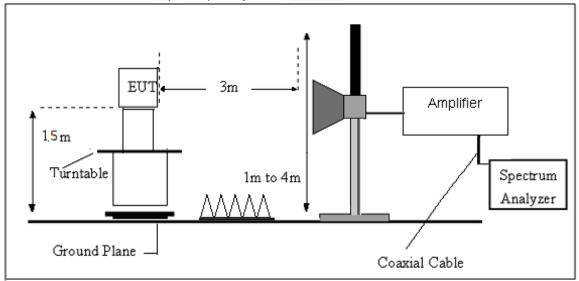
(A) Radiated Emission Test-Up Frequency Below 30MHz

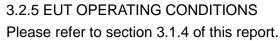


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz







3.2.6 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AGWhere FS = Field Strength CL = Cable Attenuation Factor (Cable Loss) RA = Reading Amplitude AG = Amplifier Gain AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG



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3.2.7 TEST RESULTS

(9KHz-30MHz)

Temperature:	23.1(C)	Relative Humidity:	60%RH
Test Voltage:	DC 3.8V	Test Mode:	TX Mode

Freq.	Reading	Limit	Margin	State	Test Result
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	iesi kesuli
					PASS
					PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits (dBuv) + distance extrapolation factor.





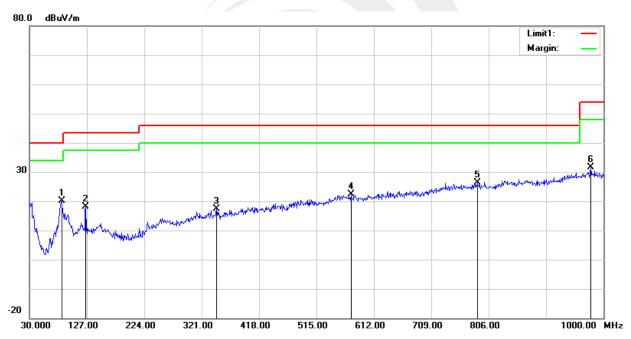
(30MHz-1000MHz)

Temperature:	23.1(C)	Relative Humidity:	60%RH	
Test Voltage:	DC 3.8V	Phase:	Horizontal	
Test Mode:	Mode 1/2/3 (Mode 2 worst mode)			

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	84.3200	42.44	-22.35	20.09	40.00	-19.91	peak
2	125.0600	36.39	-18.22	18.17	43.50	-25.33	peak
3	346.2200	30.63	-13.19	17.44	46.00	-28.56	peak
4	573.2000	28.05	-5.65	22.40	46.00	-23.60	peak
5	786.6000	28.44	-2.05	26.39	46.00	-19.61	peak
6	978.6600	28.99	2.58	31.57	54.00	-22.43	peak

Remark:

- 1. Margin = Result (Result = Reading + Factor)-Limit
- 2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain





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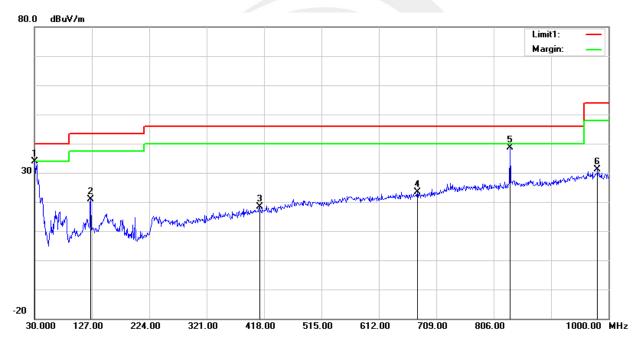
Temperature:	23.1(C)	Relative Humidity:	60%RH
Test Voltage:	DC 3.8V	Phase:	Vertical
Test Mode:	Mode 1/2/3 (Mode 2 worst mo	ode)	

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	30.9700	47.19	-13.35	33.84	40.00	-6.16	peak
2	125.0600	39.11	-18.22	20.89	43.50	-22.61	peak
3	410.2400	28.94	-10.55	18.39	46.00	-27.61	peak
4	676.9900	27.80	-4.37	23.43	46.00	-22.57	peak
5	834.1300	39.16	-0.59	38.57	46.00	-7.43	peak
6	981.5700	28.50	2.57	31.07	54.00	-22.93	peak

Remark:

1. Margin = Result (Result = Reading + Factor)–Limit

2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



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(1GHz~25GHz) Spurious emission Requirements

Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	
				Low Ch	nannel (GFSK/2	2402 MHz)				
3264.73	62.06	44.70	6.70	28.20	-9.80	52.26	74.00	-21.74	PK	Vertical
3264.73	51.77	44.70	6.70	28.20	-9.80	41.97	54.00	-12.03	AV	Vertical
3264.70	61.98	44.70	6.70	28.20	-9.80	52.18	74.00	-21.82	PK	Horizontal
3264.70	50.50	44.70	6.70	28.20	-9.80	40.70	54.00	-13.30	AV	Horizontal
4804.48	58.37	44.20	9.04	31.60	-3.56	54.81	74.00	-19.19	PK	Vertical
4804.48	49.62	44.20	9.04	31.60	-3.56	46.06	54.00	-7.94	AV	Vertical
4804.57	59.05	44.20	9.04	31.60	-3.56	55.49	74.00	-18.51	PK	Horizontal
4804.57	49.58	44.20	9.04	31.60	-3.56	46.02	54.00	-7.98	AV	Horizontal
5359.71	49.30	44.20	9.86	32.00	-2.34	46.95	74.00	-27.05	PK	Vertical
5359.71	38.97	44.20	9.86	32.00	-2.34	36.62	54.00	-17.38	AV	Vertical
5359.58	47.50	44.20	9.86	32.00	-2.34	45.16	74.00	-28.84	PK	Horizontal
5359.58	38.25	44.20	9.86	32.00	-2.34	35.90	54.00	-18.10	AV	Horizontal
7205.94	54.31	43.50	11.40	35.50	3.40	57.71	74.00	-16.29	PK	Vertical
7205.94	44.46	43.50	11.40	35.50	3.40	47.86	54.00	-6.14	AV	Vertical
7205.82	54.08	43.50	11.40	35.50	3.40	57.48	74.00	-16.52	PK	Horizontal
7205.82	44.76	43.50	11.40	35.50	3.40	48.16	54.00	-5.84	AV	Horizontal
				Middle 0	Channel (GFSK	(/2441 MHz)				
3264.73	61.17	44.70	6.70	28.20	-9.80	51.37	74.00	-22.63	PK	Vertical
3264.73	50.24	44.70	6.70	28.20	-9.80	40.44	54.00	-13.56	AV	Vertical
3264.69	61.63	44.70	6.70	28.20	-9.80	51.83	74.00	-22.17	PK	Horizontal
3264.69	51.05	44.70	6.70	28.20	-9.80	41.25	54.00	-12.75	AV	Horizontal
4882.45	58.70	44.20	9.04	31.60	-3.56	55.14	74.00	-18.86	PK	Vertical
4882.45	50.34	44.20	9.04	31.60	-3.56	46.78	54.00	-7.22	AV	Vertical
4882.33	58.17	44.20	9.04	31.60	-3.56	54.61	74.00	-19.39	PK	Horizontal
4882.33	49.18	44.20	9.04	31.60	-3.56	45.62	54.00	-8.38	AV	Horizontal
5359.70	49.37	44.20	9.86	32.00	-2.34	47.03	74.00	-26.97	PK	Vertical
5359.70	39.20	44.20	9.86	32.00	-2.34	36.86	54.00	-17.14	AV	Vertical
5359.69	48.09	44.20	9.86	32.00	-2.34	45.75	74.00	-28.25	PK	Horizontal
5359.69	39.43	44.20	9.86	32.00	-2.34	37.09	54.00	-16.91	AV	Horizontal
7323.77	54.39	43.50	11.40	35.50	3.40	57.79	74.00	-16.21	PK	Vertical
7323.77	44.27	43.50	11.40	35.50	3.40	47.67	54.00	-6.33	AV	Vertical
7323.92	54.12	43.50	11.40	35.50	3.40	57.52	74.00	-16.48	PK	Horizontal
7323.92	44.09	43.50	11.40	35.50	3.40	47.49	54.00	-6.51	AV	Horizontal



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				High Char	nnel (GFSK/	2480 MHz)				
3264.78	61.38	44.70	6.70	28.20	-9.80	51.58	74.00	-22.42	PK	Vertical
3264.78	51.47	44.70	6.70	28.20	-9.80	41.67	54.00	-12.33	AV	Vertical
3264.70	62.03	44.70	6.70	28.20	-9.80	52.23	74.00	-21.77	PK	Horizontal
3264.70	49.94	44.70	6.70	28.20	-9.80	40.14	54.00	-13.86	AV	Horizontal
4960.56	59.17	44.20	9.04	31.60	-3.56	55.61	74.00	-18.39	PK	Vertical
4960.56	49.31	44.20	9.04	31.60	-3.56	45.75	54.00	-8.25	AV	Vertical
4960.39	59.05	44.20	9.04	31.60	-3.56	55.49	74.00	-18.51	PK	Horizontal
4960.39	50.51	44.20	9.04	31.60	-3.56	46.95	54.00	-7.05	AV	Horizontal
5359.67	48.52	44.20	9.86	32.00	-2.34	46.17	74.00	-27.83	PK	Vertical
5359.67	38.95	44.20	9.86	32.00	-2.34	36.60	54.00	-17.40	AV	Vertical
5359.77	47.19	44.20	9.86	32.00	-2.34	44.85	74.00	-29.15	PK	Horizontal
5359.77	38.43	44.20	9.86	32.00	-2.34	36.09	54.00	-17.91	AV	Horizontal
7439.77	54.36	43.50	11.40	35.50	3.40	57.76	74.00	-16.24	PK	Vertical
7439.77	44.97	43.50	11.40	35.50	3.40	48.37	54.00	-5.63	AV	Vertical
7439.87	54.44	43.50	11.40	35.50	3.40	57.84	74.00	-16.16	PK	Horizontal
7439.87	44.70	43.50	11.40	35.50	3.40	48.10	54.00	-5.90	AV	Horizontal

Note:

1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Reading + Factor

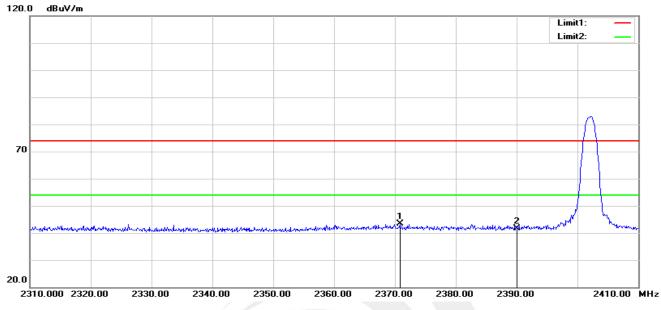
2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



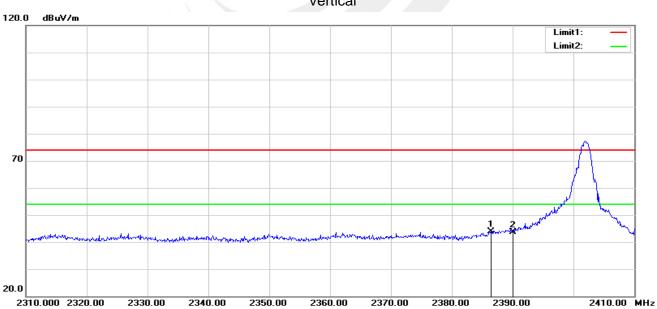


Restricted band Requirements

GFSK-Low Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2370.800	39.32	4.05	43.37	74.00	-30.63	peak
2	2390.000	37.29	4.34	41.63	74.00	-32.37	peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2386.500	39.67	4.28	43.95	74.00	-30.05	peak
2	2390.000	39.36	4.34	43.70	74.00	-30.30	peak

Vertical

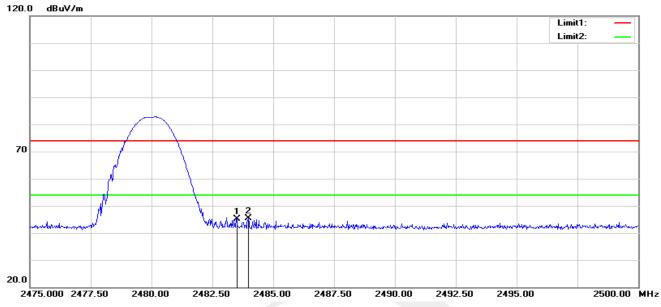
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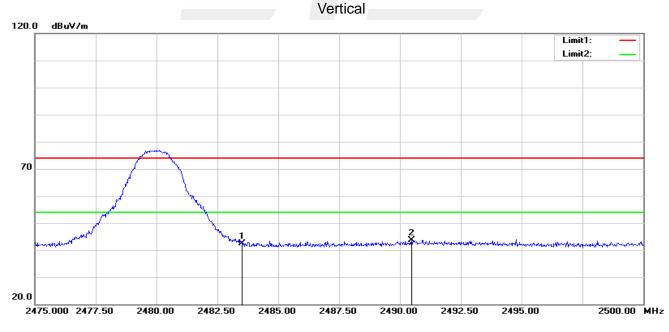
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GFSK-High Horizontal



No.	Frequency	Reading	Correct	Result Limit		Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	40.65	4.60	45.25	74.00	-28.75	peak
2	2483.975	40.79	4.61	45.40	74.00	-28.60	peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	37.90	4.60	42.50	74.00	-31.50	peak
2	2490.475	39.06	4.63	43.69	74.00	-30.31	peak

Note: GFSK of the nohopping and hopping mode all have been test, the worst case is GFSK of the nohopping mode, this report only show the worst case.

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4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

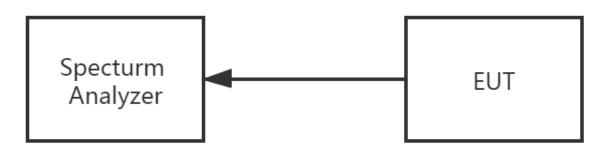
Spectrum Parameter	Setting
Detector	Peak
Stort/Stop Eroguopou	Lower Band Edge: 2300 – 2407 MHz
Start/Stop Frequency	Upper Band Edge: 2475 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Hopping Band edge

Spectrum Parameter	Setting
Detector	Peak
Stort/Stop Eroguopou	Lower Band Edge: 2300– 2403 MHz
Start/Stop Frequency	Upper Band Edge: 2479 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold







The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 500hm; the path loss as the factor is calibrated to correct the reading. Tune the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, the span is set to be greater than RBW.

4.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

4.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



5. NUMBER OF HOPPING CHANNEL

5.1 LIMIT

FCC Part 15.247,Subpart C								
Section	Test Item	Limit	FrequencyRange (MHz)	Result				
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS				

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating FrequencyRange
RB	300KHz
VB	300KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 300KHz, VBW=300KHz, Sweep time = Auto.

5.3 TEST SETUP



5.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

5.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



6. AVERAGE TIME OF OCCUPANCY

6.1 LIMIT

FCC Part 15.247,Subpart C					
Section	Test Item	Limit	FrequencyRange (MHz)	Result	
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS	

6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer.
- b. Set RBW =1MHz/VBW =3MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to e. zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is $3.37 \times 31.6 = 106.6$.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is $5.06 \times 31.6 = 160$.
- k. DH1 Packet permit maximum 1600 / 79 / 2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is 10.12 x 31.6 = 320.

6.3 TEST SETUP



6.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

6.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.

Shenzhen STS Test Services Co., Ltd.



7. HOPPING CHANNEL SEPARATION MEASUREMEN

7.1 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.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> 20 dB Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- c. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



8. BANDWIDTH TEST

8.1 LIMIT

FCC Part15 15.247,Subpart C				
Section	Test Item	Limit	FrequencyRange (MHz)	Result
15.247 (a)(1)	Bandwidth	N/A	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

8.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.



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9. OUTPUT POWER TEST

9.1 LIMIT

FCC Part 15.247,Subpart C								
Section	Test Item	Limit	Frequency Range (MHz)	Result				
		1 W or 0.125W						
15.247 (a)(1)&(b)(1)	Output Power	if channel separation > 2/3 bandwidthprovided thesystems operatewith an output power no greater than125 mW(20.97dBm)	2400-2483.5	PASS				

9.2 TEST PROCEDURE

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

- a) Use the following spectrum analyzer settings:
- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 2) RBW > 20 dB bandwidth of the emission being measured.
- 3) VBW \geq RBW.
- 4) Sweep: Auto.
- 5) Detector function: Peak.
- 6) Trace: Max hold.
- b) Allow trace to stabilize.
- c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.

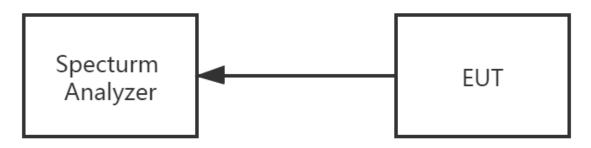
e) A plot of the test results and setup description shall be included in the test report.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DSS bandwidth and shall use a fast-responding diode detector.

9.3 TEST SETUP



9.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

9.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.

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10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

10.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.



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APPENDIX 1-TEST DATA

1. Dwell Time

Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2439.97	0.406	129.514	319	31600	<=400	Pass
NVNT	1-DH3	2441	1.661	249.15	150	31600	<=400	Pass
NVNT	1-DH5	2441	2.91	317.19	109	31600	<=400	Pass



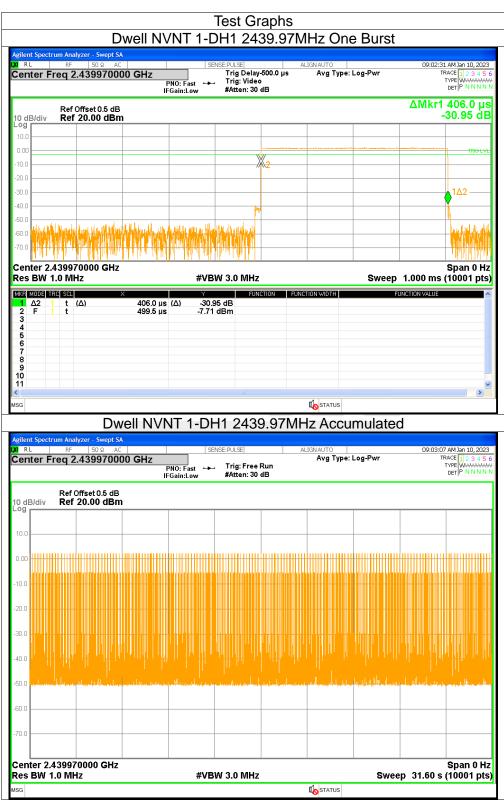
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Dwell NVNT 1-DH3 2441MHz One Burst - Swept SA ilent Spectrum Analyzer 53 AM Jan 10, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P N N N N N RL E:PULSE Trig Delay-500.0 μs Trig: Video #Atten: 30 dB Center Freq 2.441000000 GHz Avg Type: Log-Pwr PNO: Fast IFGain:Low \rightarrow ΔMkr1 1.661 ms 6.08 dB Ref Offset 0.5 dB Ref 20.00 dBm I0 dB/div og 1∆2 n n 30.0 40.0 50.0 i in hear of the second state o -60.0 i Alifi i Di Kiri i Jili i Jili di I Center 2.441000000 GHz Span 0 Hz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 3.000 ms (10001 pts) MKR MODE TRC SCL FUNCTION FUNCTION WIDTH FUNCTION VALUE Т Mile Model 1 Δ2 2 F 3 4 5 6 7 8 9 10 11 4 1.661 ms (∆) 499.2 µs 1 t (Δ) 1 t 6.08 dB -4.42 dBm **I**STATUS -Dwell NVNT 1-DH3 2441MHz Accumulated 28 AM Jan 10, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P N N N N BI Center Freq 2.441000000 GHz Avg Type: Log-Pwr Trig: Free Run #Atten: 30 dB PNO: Fast ↔ Ref Offset 0.5 dB Ref 20.00 dBm 10 dB/div n nr 10.0 RO I 40.0 50. Span 0 Hz Sweep 31.60 s (10001 pts) Center 2.441000000 GHz Res BW 1.0 MHz #VBW 3.0 MHz **I**STATUS SG

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Dwell NVNT 1-DH5 2441MHz One Burst - Swept SA ilent Spectrum Analyze 3:57:11 AM Jan 10, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P N N N N R L Trig Delay-500.0 μs Trig: Video Atten: 30 dB Center Freq 2.441000000 GHz Avg Type: Log-Pwr PNO: Fast IFGain:Low \rightarrow ΔMkr1 2.910 ms -15.19 dB Ref Offset 0.5 dB Ref 20.00 dBm I0 dB/div og n n <mark>∦</mark>2 1<mark>Δ</mark>2 30.0 40.0 50.0 and all the Linear All the of 60.0 Lind and Di di di di di Center 2.441000000 GHz Span 0 Hz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 4.000 ms (10001 pts) MKR MODE TRC SCL FUNCTION FUNCTION WIDTH FUNCTION VALUE Т Milling 1 Δ2 2 F 3 4 5 6 7 8 9 10 11 Δ2 t (∆) t 2.910 ms (∆) 499.2 µs -15.19 dB -6.81 dBm **I**STATUS sG Dwell NVNT 1-DH5 2441MHz Accumulated 46 AM Jan 10, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P N N N N BI Center Freq 2.441000000 GHz Avg Type: Log-Pwr Trig: Free Run Atten: 30 dB PNO: Fast ↔↔ IFGain:Low Ref Offset 0.5 dB Ref 20.00 dBm 10 dB/div 0.00 RD. 40.0 50. Span 0 Hz Sweep 31.60 s (10001 pts) Center 2.441000000 GHz Res BW 1.0 MHz #VBW 3.0 MHz **I**STATUS SG

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2. Maximum Average Conducted Output Power

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	-0.1	0	-0.1	<=20.97	Pass
NVNT	1-DH5	2441	0.92	0	0.92	<=20.97	Pass
NVNT	1-DH5	2480	-1.9	0	-1.9	<=20.97	Pass



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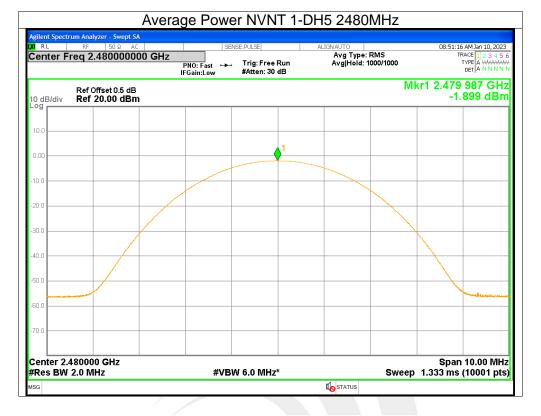
				Test Graphs		
			ge Pow	er NVNT 1-D	0H5 2402MHz	
gilent Spect	r <mark>um Analyzer - Swept S</mark> RF 50 Ω A		SE	NSE:PULSE	ALIGNAUTO	08:47:20 AM Jan 10, 2023
	req 2.4020000		PNO: Fast ++	. Trig: Free Run #Atten: 30 dB	Avg Type: RMS Avg Hold: 1000/1000	TRACE 1 2 3 4 5
0 dB/div	Ref Offset 0.5 dB Ref 20.00 dBn					Mkr1 2.401 997 GH -0.095 dBn
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0.00				↓ ¹		
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enter 2	102000 011-					
						Snan 10 00 MH
	402000 GHz 2.0 MHz		#VB	W 6.0 MHz*	Sw	Span 10.00 MH eep 1.333 ms (10001 pts
					STATUS	eep 1.333 ms (10001 pts
Res BW	2.0 MHz					eep 1.333 ms (10001 pts
Res BW sg gilent Spectr	2.0 MHz 	5 A C	ge Pow		DH5 2441MHz	eep 1.333 ms (10001 pts
Res BW sg gilent Spectr	2.0 MHz	5 A C		er NVNT 1-E	DH5 2441MHz	eep 1.333 ms (10001 pts 08:49:30 AM Jan 10,2023 TRACE 12 3 4 5
Res BW sg gilent Spectr	2.0 MHz	6A ⊂ 100 GHz	ge Powe	er NVNT 1-D	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
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Res BW	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
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Res BW glient Spectr RL RL O dB/div O O dB/div O O O O O O O O O O O O O O O O O O O	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW glient Spectr RL RL O dB/div O O dB/div O O O O O O O O O O O O O O O O O O O	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW sg gilent Spectr	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW 3G gilent Spectr RL Renter F 0 dB/div 9 10.0 9 0.00 90 0.00 90	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW gilent Spect RL center F 0 dB/div 0 0	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW gilent Spect RL center F 0 dB/div 0 0	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW gilent Spectr R RL Image: Constraint of the second s	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW gilent Spectr RL gilent Spectr Riter F center F Riter F code/div C code/div	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW gilent Spectr RL Rt CodB/div Og 10.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz		er NVNT 1-E	DH5 2441MHz	08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA
Res BW isi RL enter F 0 dB/dlv 0 0	2.0 MHz "um Analyzer - Swept S RF 50 Q Av req 2.4410000 Ref Offset 0.5 dB	64 C 100 GHz	ge Powe	er NVNT 1-E		08:49:30 AM Jan 10, 2023 08:49:30 AM Jan 10, 2023 TRACE [] = 3 4 5 TYPACE [] = 3 5 TYPA

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3. Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	1.33	<=20.97	Pass
NVNT	1-DH5	2441	2.48	<=20.97	Pass
NVNT	1-DH5	2480	-0.28	<=20.97	Pass

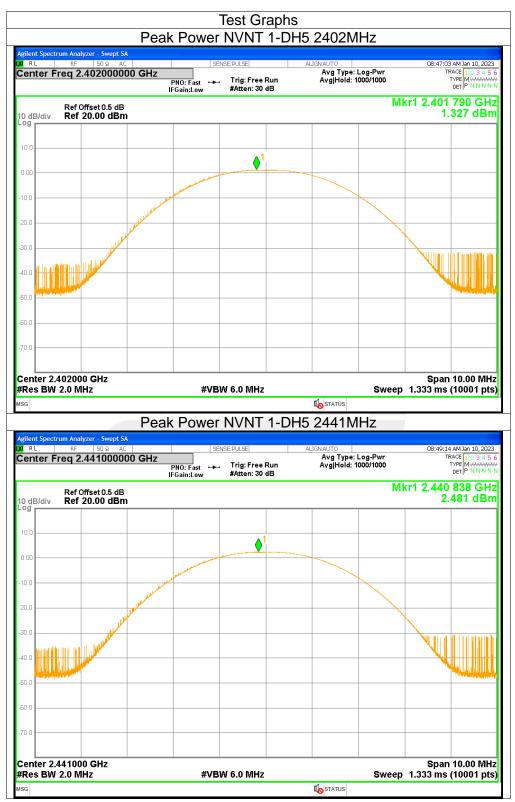


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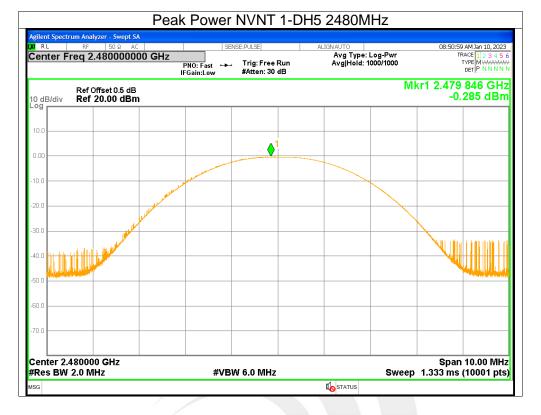
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4. -20dB Bandwidth

Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	0.9673	Pass
NVNT	1-DH5	2441	0.9621	Pass
NVNT	1-DH5	2480	1.0201	Pass



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RL RF 50 Ω AC Center Freq 2.480000000 Center Freq 2.480000000 Center Freq 2.480000000 Center Freq 2.4800000000	GHz	Center Freq: 2.4800000 Trig: Free Run	ALIGNAUTO 000 GHz Avg Hold: 100/100	08:51:24 AM Jan 10, 202 Radio Std: None
Ref Offset 0.5 dB 0 dB/div Ref 20.50 dBm	#IFGain:Low	#Atten: 30 dB	N	Radio Device: BTS /kr3 2.4805122 GH -25.684 dBr
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500				
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19.5			- mand	»
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59.5				V V
69.5				
Center 2.48 GHz Res BW 30 kHz		#VBW 100 ki	Hz	Span 2 MH Sweep 2.667 m
Occupied Bandwidth	 ו	Total Power	5.91 dBm	
•	69.86 kHz			
Transmit Freq Error	2.209 kHz	OBW Power	99.00 %	
x dB Bandwidth	1.020 MHz	x dB	-20.00 dB	
SG				



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5. Carrier Frequencies Separation

Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	2402.018	2402.832	0.814	>=0.645	Pass
NVNT	1-DH5	2440.06	2441.016	0.956	>=0.641	Pass
NVNT	1-DH5	2479.066	2479.974	0.908	>=0.68	Pass



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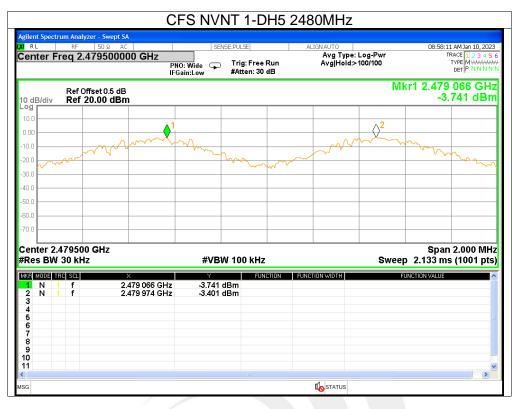
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Avg Type: Log-Pur Avg Type: Log-Pur Avg Type: Log-Pur AvgHield:>100/100 Mkr1 2.402 018 GH -1.697 GB 0 dBrdiv Ref 20.00 dBm -1.697 dBi 0 dBrdiv Ref 2.402 018 Hz -1.697 dBi 0 dBrdiv Ref 2.402 018 Hz -1.697 dBi 1 N f 2.402 018 Hz 2 N f 2.402 018 Hz <t< th=""><th>gilent Spectrum Analyze</th><th>r - Swept SA</th><th>FS NVNT 1-E</th><th></th><th>z</th><th></th></t<>	gilent Spectrum Analyze	r - Swept SA	FS NVNT 1-E		z	
-1.697 dBi Ref 20.00 dBm -1.697 dBi -1.697 dBi -1.		02500000 GHz		eRun Avg Ho	ype: Log-Pwr old>100/100	08:53:53 AM Jan 10, 202 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N
Bit Span 2.000 MIz Span 2.000 MIz Span 2.000 MIz Sweep 2.133 ms (1001 pt					Mkr	1 2.402 018 GH -1.697 dBi
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Control Control <t< td=""><td></td><td>m</td><td>man</td><td></td><td>hum</td><td>har and the second seco</td></t<>		m	man		hum	har and the second seco
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enter 2.402500 GHz Res BW 30 KHz						
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G G G G G G G G G G G G G G	3	2.702 002 0112	e.ee ubm			
1 Image: Status Image: Status CFS NVNT 1-DH5 2441MHz RL RF 50 2 AC enter Freq 2.440500000 GHz Trig: Free Run IFGain:Low ALIGNAUTO 08:57:02 AMian 10, 20 PN0: Wide IFGain:Low Trig: Free Run IFGain:Low Augusto 00:57:02 AMian 10, 20 Augusto Ref Offset 0.5 dB Ref 20.00 dBm Mkr1 2.440 060 GHz 000 Image: Augusto Image: Augusto 00:00 GHz 000 Image: Augusto Image: Augusto Image: Augusto 000 Image: Augusto Image: Augusto Image: Augusto Image: Augusto 000 Image: Augusto	6 7					
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CFS NVNT 1-DH5 2441MHz	9 0					
Ident Spectrum Analyzer - Swept SA RL RF SD R AC SENSERULE ALIGNAUTO D0:57:02 AM Jan 10, 20 enter Freq 2.440500000 GHz PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgIHoid>100/100 TriACE [12:3:4: TriACE [12:3:4: AvgIHoid>100/100 TriACE [12:3:4: TriACE [12:3:4: AvgIHoid>100/100 TriACE [12:3:4: TriACE [12:3:4: AvgIHoid>100/100 TriACE [12:3:4: TriACE [12:3:4: AvgIHoid>100/100 TriACE [12:3:4: TriACE [12:3:4: TriACE [12:3:4: TriACE [12:3:4: TriACE [12:3:4: TriACE [12:3:4: AvgIHoid>100/100 Mikr1 2.440 060 GHz -0.735 dB 00 0.0	1					<u>></u>
enter Freq 2.440500000 GHz PNO: Wide PNO: Wide Pro: Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg Hold>100/100 Trig: Free Run #Atten: 30 dB Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB O dB/div Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB O dB/div Ref Offset 0.5 dB Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB Mkr1 2.440 060 GH O dB/div Ref Offset 0.5 dB Mkr1 2.440 060 GH O data O data O data O data <tr< th=""><th></th><th></th><th></th><th>_</th><th></th><th></th></tr<>				_		
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0 dB/div Ref 20.00 dBm -0.735 dBl 0 dB/div Ref 20.00 dBm -0.735 dBl 0 dB/div Ref 20.00 dBm -0.735 dBl 0 dB/div Ref 20.00 dBm -0.735 dBm -0.7	G ilent Spectrum Analyze RL RF	r - Swept SA 50 Ω AC 40500000 GHz	SENSE:PULSE	DH5 2441MH ALIGNAUTO Avg T)	Z ype: Log-Pwr	08:57:02 AM Jan 10, 20 TRACE 2, 3, 4 TYPE M MAARAM
000 000 <td>1 Ilent Spectrum Analyze RL RF enter Freq 2.44</td> <td>r - Swept SA 50 Ω AC 10500000 GHz PN(IFG</td> <td>SENSE:PULSE</td> <td>DH5 2441MH</td> <td>Z ype: Log-Pwr Id>100/100</td> <td>08:57:02 AM Jan 10, 200 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N</td>	1 Ilent Spectrum Analyze RL RF enter Freq 2.44	r - Swept SA 50 Ω AC 10500000 GHz PN(IFG	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM Jan 10, 200 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N
000 000 <td>1 g g g g g g g g g g g g g</td> <td>r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB</td> <td>SENSE:PULSE</td> <td>DH5 2441MH</td> <td>Z ype: Log-Pwr Id>100/100</td> <td>08:57:02 AM Jan 10, 200 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N</td>	1 g g g g g g g g g g g g g	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM Jan 10, 200 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N
000 000 <td>I Sector Analyze RL RF enter Freq 2.44 Ref Offs O dB/div Ref 20 00 00 00</td> <td>r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB</td> <td>SENSE:PULSE</td> <td>DH5 2441MH</td> <td>Z ype: Log-Pwr Id>100/100</td> <td>08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH</td>	I Sector Analyze RL RF enter Freq 2.44 Ref Offs O dB/div Ref 20 00 00 00	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH
Structure Structure <t< td=""><td>1 ilent Spectrum Analyze RL RF enter Freq 2.44 0 dB/div Ref Offs 0 dD/div Ref 20 0 0 0 0 0 0 0 0</td><td>r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB</td><td>SENSE:PULSE</td><td>DH5 2441MH</td><td>Z ype: Log-Pwr Id>100/100</td><td>08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH</td></t<>	1 ilent Spectrum Analyze RL RF enter Freq 2.44 0 dB/div Ref Offs 0 dD/div Ref 20 0 0 0 0 0 0 0 0	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH
Out Out <td>1 ilent Spectrum Analyze RL RF enter Freq 2.44 0 dB/div Ref Offs 0 dB/div Ref 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB</td> <td>SENSE:PULSE</td> <td>DH5 2441MH</td> <td>Z ype: Log-Pwr Id>100/100</td> <td>08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH</td>	1 ilent Spectrum Analyze RL RF enter Freq 2.44 0 dB/div Ref Offs 0 dB/div Ref 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH
Enter 2.440500 GHz Span 2.000 Mł Res BW 30 kHz #VBW 100 kHz Sweep 2.133 ms (1001 pt KR MODE TRE SCL X Y FUNCTION WIDTH FUNCTION VALUE 1 N 1 f 2.440 060 GHz -0.735 dBm	1	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH
Res BW 30 kHz #VBW 100 kHz Sweep 2.133 ms (1001 pt Image: Section Secting Secting Secting Secting Section Secting Secting Secting Secting	1	r - Swept SA 50 Ω AC 40500000 GHz PN IFG set 0.5 dB	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM 3an 10, 200 TRACE 1 2 3 4 3 TYPE M WWWW DET P N N N 1 2.440 060 GH
1 N 1 f 2.440 060 GHz -0.735 dBm	1 iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	r - Swept SA S0 Ω AC PN IFG Set 0.5 dB .00 dBm	SENSE:PULSE	DH5 2441MH	Z ype: Log-Pwr Id>100/100	08:57:02 AM Jan 10, 200 TRACE 12 3 4 TYPE DET P N N N 1 2.440 060 GH -0.735 dBI
1 2.4410100112 3.022 4011 4 4 4 5 6 7 4 8 4	1 Image: Sectrum Analyze RL RF enter Freq 2.44 0 dB/div Ref 20	r - Swept SA 50 Ω AC PN PN IFG Set 0.5 dB .00 dBm	SENSE:PULSE O: Wide Trig: Free ain:Low #Atten: 30	ALIGNAUTO AUGNAUTO Avg Ty all AvgIHo AvgIHo	ype: Log-Pwr Id:>100/100 Mkr	08:57:02 AM Jan 10, 200 TRACE 12 3 4 1 TYPE MWWW 1 2.440 060 GH -0.735 dB1
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 Image: Spectrum Analyze RL RF enter Freq 2.44 0 Image: Spectrum Analyze 0 <	r - Swept SA S0 & AC 10500000 GHz PN IFG Set 0.5 dB .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm	SENSE-PULSE O: Wide Trig: Free ain:Low #Atten: 30 #VBW 100 kH: 0.735 dBm	ALIGNAUTO AUGNAUTO Avg Ty all AvgIHo AvgIHo	ype: Log-Pwr Id:>100/100 Mkr	08:57:02 AM Jan 10, 200 TRACE 12 3 4 1 TYPE MWWW 1 2.440 060 GH -0.735 dB1
8	1	r - Swept SA S0 & AC 10500000 GHz PN IFG Set 0.5 dB .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm	SENSE-PULSE O: Wide Trig: Free ain:Low #Atten: 30 #VBW 100 kH: 0.735 dBm	ALIGNAUTO AUGNAUTO Avg Ty all AvgIHo AvgIHo	ype: Log-Pwr Id:>100/100 Mkr	08:57:02 AM Jan 10, 200 TRACE 12 3 4 1 TYPE MWWW 1 2.440 060 GH -0.735 dB1
	Ref Ref Ref Offse 0 dB/div Ref 0 0 dB/div dB/div 0 0 dB/div dB/div 0 0 dB/div dB/div dB/div 0 dB/div	r - Swept SA S0 & AC 10500000 GHz PN IFG Set 0.5 dB .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm .00 dBm	SENSE-PULSE O: Wide Trig: Free ain:Low #Atten: 30 #VBW 100 kH: 0.735 dBm	ALIGNAUTO AUGNAUTO Avg Ty all AvgIHo AvgIHo	ype: Log-Pwr Id:>100/100 Mkr	08:57:02 AM Jan 10, 200 TRACE 12 3 4 1 TYPE MWWW 1 2.440 060 GH -0.735 dB1



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6. Number of Hopping Channel

Condition	Mode	Hopping Number	Limit	Verdict
NVNT	1-DH5	79	>=15	Pass



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		Hopp	٦ .ing No	Test Gr		Honni	na		
gilent Spectru	um Analyzer - Swept SA		ning No.		T-DHC	поррі	ng		
enter Fr	RF 50 Ω AC req 2.44175000	0 GHz	SEN NO: Fast 🌩 Gain:Low	SE:PULSE Trig: Free I #Atten: 30	Run	IGN AUTO Avg Type: Avg Hold:>*			8 AM Jan 10, 202 RACE 1 2 3 4 5 TYPE M M N N N DET P N N N N
0 dB/div	Ref Offset 0.5 dB Ref 20.00 dBm	1					Mkr	1 2.401 8 0	137 0 GH .609 dBr
° 9 10.0 1 - 0.00 1 -					MMMM		ANDAAA	AAAAAAAA	
20.0	***			, , , , , , , , , , , , , , , , , , ,				1 8 1 8 1 8 1 8 1 8 1 8	
'0.0	000 GHz							Stop 2	.48350 GH
Res BW			#VBV	V 300 kHz			Swee	p 8.000 m	
KR MODE TR 1 N 1 2 N 1 3 4	f 2.40	x 11 837 0 GHz 80 160 0 GHz	0.609 c -1.199 c	1Bm	CTION FUNCT	ION WIDTH	F	UNCTION VALUE	
5 6 7 8 9									
0									
G						STATUS			



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7. Band Edge

Condition	Mode	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	No-Hopping	-58.2	<=-20	Pass
NVNT	1-DH5	2480	No-Hopping	-55.47	<=-20	Pass



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gilent Spectrum Analyzer	- Swept SA			1Hz No-Hoppii	
RL RF enter Freq 2.40	F	SENSE PNO: Wide +++ FGain:Low	:PULSE Trig: Free Run #Atten: 30 dB	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100	08:47:45 AM Jan 10, 20 TRACE 1 2 3 4 5 TYPE MWWW DET P N N N
Ref Offse dB/div Ref 20.0	et 0.5 dB				Mkr1 2.402 168 GH 0.972 dB
og					
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0.00					
0.0			\nearrow		
0.0			/		
0.0					
0.0				<u> </u>	
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50.0 With the marked of the state	WARY WIN WAR WAR I MAN	NTW I		Unine how the	Manunan and Manual And M
0.0					
0.0					
enter 2.402000 G Res BW 100 kHz	iHz	20 (B) (A)			Span 8.000 MH
		#VBM	300 kHz	#S1	ween 100 Å ms (1001 nf
ŝG		#vBW	300 kHz	#SN	weep 100.0 ms (1001 pt
Ban					
Ban gilent Spectrum Analyzer RL RF	- Swept SA 50 Ω AC	NT 1-DH		NO-HOPPING	Emission 08:47:58 AM Jan 10, 202
Ban gilent Spectrum Analyzer RL RF	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	No-Hopping	Emission
Ban glent Spectrum Analyzer RL RF center Freq 2.35 Ref Offse	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM In 10, 20 TRACE 2 3 4 TYPE MUMUM DET P N N N Mkr1 2.402 2 GH
Ban glent Spectrum Analyzer RL RF enter Freq 2.35 Ref Offse 0 dB/div Ref 20.	- Swept SA 50 Ω AC 60000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM Jan 10,200 TRACE 12 2 3 4 TYPE MWWW DET P N N N
Ban glient Spectrum Analyzer RL RF center Freq 2.35 0 dB/div Ref 20. 0 00	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM In 10, 20 TRACE 2 3 4 TYPE MUMUM DET P N N N Mkr1 2.402 2 GH
Ban glent Spectrum Analyzer RL RF center Freq 2.35 Ref Offse	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM In 10, 20 TRACE 2 3 4 TYPE MUMUM DET P N N N Mkr1 2.402 2 GH
Ban glient Spectrum Analyzer RL RF center Freq 2.35 0 dB/div Ref 20. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM Jan 10, 202 TRACE 12 3 4 TYPE MWWWW DET P NN NT Mkr1 2.402 2 GH 0.967 dBt
Ban glient Spectrum Analyzer RL RF center Freq 2.35 0 dB/div Ref 20. 0 0 0 00 0 00 0 00 0 00	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM Jan 10, 202 TRACE 1 2 3 4 TYPE MWWW DET P NN NT Mkr1 2.402 2 GH 0.967 dBt
Ban glient Spectrum Analyzer RL RF center Freq 2.35 Ref Offs: 0 dB/div Ref 20. 0 dB/div Ref 20.	- Swept SA 50 Ω AC 6000000 GHz		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM Jan 10, 202 TRACE 12 3 4 TYPE MWWWW DET P NN NT Mkr1 2.402 2 GH 0.967 dBt
Ban glient Spectrum Analyzer RL RF center Freq 2.35 Ref Offse 0 dB/div Ref 20. 0 dB/div Ref 20.	- Swept SA 50 Ω AC 6000000 GHz 1 et 0.5 dB 00 dBm		5 2402MHz	NO-HOPPING	Emission 08:47:58 AM Jan 10, 202 TRACE 1 2 3 4 TYPE MWWW DET P NN NT Mkr1 2.402 2 GH 0.967 dBt
Ban Silent Spectrum Analyzer RL RF enter Freq 2.35 Ref Offse 0 dB/div Ref 20. 8 0 dB/div Ref 20. 8 10 dB/div Ref 20. 8 10 dB/div Ref 20. 10 dB/div Ref 20.	- Swept SA 50 Ω AC 6000000 GHz 1 et 0.5 dB 00 dBm	NT 1-DH	5 2402MHz	LIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100	Emission 08:47:58 AM Jan 10, 20 TRACE 2 3 4 TYPE MWWWW Mkr1 2:402 2 GH 0.967 dBr 1.150 d 5top 2:40600 GH veep 100.0 ms (1001 pt
Ban Sitent Spectrum Analyzer RL RF enter Freq 2.35 Ref Offso 0 dB/div Ref 20. 9 10.0 10.	- Swept SA 50 Q AC 6000000 GHz II et 0.5 dB 00 dBm 	NT 1-DHS SENSE PNO: Fast → FGain:Low #VBW	5 2402MHz PULSE Trig: Free Run #Atten: 30 dB 300 kHz	ALIGNAUTO AVG Type: Log-Pwr Avg Hold: 100/100	Emission 08:47:58 AM Jan 10, 20 TRACE 23:45 TYPE MWWW Mkr1 2.402 2 GH 0.967 dBi 1.14 dat 1.14 dat 5top 2.40600 GH
Ban Sitent Spectrum Analyzer RL RF enter Freq 2.35 Ref Offse 0 dB/div Ref 20. 9 10.0 10.	- Swept SA 50 Q AC 6000000 GHz 1 1 1 1 1 1 1 1 1 1 1 1 1	NT 1-DHS SENSE PNO: Fast →→ FGain:Low #VBW 4 0.967 dE -57.238 dE -57.238 dE	5 2402MHz PUSE Trig: Free Run #Atten: 30 dB 300 kHz FUNCTION F Sm	LIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100	Emission 08:47:58 AM Jan 10, 20 TRACE 2 3 4 TYPE MWWWW Mkr1 2:402 2 GH 0.967 dBr 1.150 d 5top 2:40600 GH veep 100.0 ms (1001 pt
Ban Sitent Spectrum Analyzer RL RF enter Freq 2.35 Ref Offse 0 dB/div Ref 20. 9 10.0 10.	- Swept SA 50 Q AC 6000000 GHz u et 0.5 dB 00 dBm 2.402 2 GHz 2.400 2 GHz 2.400 0 GHz	NT 1-DHS SENSE PNO: Fast → FGain:Low #VBW 0.967 dE -57.238 dE -57.238 dE	5 2402MHz PUSE Trig: Free Run #Atten: 30 dB 300 kHz FUNCTION F Sm	LIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100	Emission 08:47:58 AM Jan 10, 20 TRACE 2 3 4 TYPE MWWWW Mkr1 2:402 2 GH 0.967 dBr 1.150 d 5top 2:40600 GH veep 100.0 ms (1001 pt
Ban start 2.30600 GHz Res BW 100 KHz Res BW 100 KHz Res BC Ref Offs: Ref Offs: Re	- Swept SA 50 Q AC 6000000 GHz u et 0.5 dB 00 dBm 2.402 2 GHz 2.400 2 GHz 2.400 0 GHz	NT 1-DHS SENSE PNO: Fast → FGain:Low #VBW 0.967 dE -57.238 dE -57.238 dE	5 2402MHz PUSE Trig: Free Run #Atten: 30 dB 300 kHz FUNCTION F Sm	LIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100	Emission 08:47:58 AM Jan 10, 20 TRACE 2 3 4 TYPE MWWWW Mkr1 2:402 2 GH 0.967 dBr 1.150 d 5top 2:40600 GH veep 100.0 ms (1001 pt

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Da gilent Spectrum Analyzer - Sv			10 2400	MHz No-Ho		
RL RF 50	Ω AC	SENSE:	PULSE	ALIGNAUTO	08:51:41 AM Jan	
enter Freq 2.4800	PNO		Trig: Free Run #Atten: 30 dB	Avg Type: Log Avg Hold: 100/	100 TYPE M	2345 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Ref Offset 0 dB/div Ref 20.00					Mkr1 2.479 840 -0.668	
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0.0						
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0.0 Contraction of the second se	ANVIANA ANALY IN A REAL AND IN A REAL AND A R					-rikanika
0.0						
enter 2.480000 GHz	Z I	I			Span 8.00	0 MH
Res BW 100 kHz		#VBW 3	300 kHz		#Sweep 100.0 ms (10)	01 pts
ilent Spectrum Analyzer - S		T 1-DH5		lz No-Hoppi	ng Emission	
				ALIGNALITO	00:51:52 AM log	10, 2022
	000000 GHz	0: Fast ↔	Trig: Free Run	ALIGNAUTO Avg Type: Log Avg Hold: 100/	100 TYPE M	2 3 4 5 (1)
enter Freq 2.5260 Ref Offset 0	000000 GHz PN IFG 0.5 dB	l0:East ↔		Avg Type: Log	J-Pwr TRACE 1 100 TYPE M Det P Mkr1 2.480 2	2345 NNNN GH:
Ref Offset 0 0 dB/div Ref 20.00	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	J-Pwr TRACE 1 100 TYPE M DET P	2345 NNNN GH:
Ref Offset C 0 dB/div Ref 20.00	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	J-Pwr TRACE 1 100 TYPE M Det P Mkr1 2.480 2	2345 NNNN GH:
Ref Offset C dB/div Ref 20.00	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	J-Pwr TRACE 1 100 TYPE M DET P Mkr1 2.480 2	2345 NNNN GH:
Ref Offset C 0 dB/div Ref 20.00 99 0.0 0.0 0.0	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	GH:
Ref Offset 0 9 dB/div Ref 20.00 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	GH:
Ref Offset C 0 dB/div Ref 20.00 99 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	GH:
Ref Offset 0 0 dB/div Ref 20.00 0 d1 1 0 d2 0 d2 0 d2 0 d2 0 d2 0 d2 0 d2 0 d2	000000 GHz PN IFG 0.5 dB	0: Fast ↔	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	GH:
Ref Offset C 0 dB/div Ref 20.00 9 9 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	000000 GHz PN IFG 0.5 dB dBm	0: Fast ↔	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	GH:
Ref Offset 0 0 dB/div Ref 2.5260	000000 GHz PN IFG 0.5 dB dBm	0: Fast ↔	Trig: Free Run	Avg Type: Log	Per TRACE 11 100 TYPE M DET P Mkr1 2.480 2 -0.607	2345 MNNN GH: dBn -20.67 dBr
Ref Offset 0 0 dB/div Ref 20.00 9 9 100 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	000000 GHz PN IFG 0.5 dB dBm	0: Fast → a ain:Low	Trig: Free Run	Avg Type: Log	ITRACE 11 100 TYPE M Mkr1 2.480 2 -0.607	2 3 4 5 NNNN CGH: dBm -20.67 dBr
Ref Offset C 0 dB/div Ref 20.00 9 9 100 11 100 100 11 100 100 100 100	200000 GHz PN IFG 0.5 dB 0 dBm	0: Fast → i ain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log	Per TRACE Tryre 100 Tryre Det P Mkr1 2.480 2 -0.607 -0.607 -0.607	2 3 4 5 NNNN CGH: dBm -20.67 dBr
Ref Offset 0 0 dB/div Ref 20.00 0 dB/div Ref 20.00 0 d 1 1 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d	2.480 2 GHz 2.483 5 GHz	0: Fast → 3 ain:Low 4 #VBW 3 -0.607 dB -58.728 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2 3 4 5 NNNN CGH: dBn
enter Freq 2.5260	2.480 2 GHz	00: Fast ain:Low #VBW : -0.607 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2 3 4 5 NNNN CGH: dBn
And Provide and Pro	2.480 2 GHz 2.480 2 GHz 2.480 2 GHz 2.480 3 GHz 2.480 0 GHz	0: Fast → a ain:Low 4 #VBW : -0.607 dB -60.081 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2345 NNNN GH: 20.67 dB
Ref Offset C 0 dB/div 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d	2.480 2 GHz 2.480 2 GHz 2.480 2 GHz 2.480 3 GHz 2.480 0 GHz	0: Fast → a ain:Low 4 #VBW : -0.607 dB -60.081 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2345 NNNN GH: 20.67 dB
Ref Offset C 0 dB/div Ref 20.00 0 dB/div Ref 20.00 0 d 1 0 d	2.480 2 GHz 2.480 2 GHz 2.480 2 GHz 2.480 3 GHz 2.480 0 GHz	0: Fast → a ain:Low 4 #VBW : -0.607 dB -60.081 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2345 NNNN GH: 20.67 dB
Ref Offset C 0 dB/div Ref 20.00 0 dB/div Ref 20.00 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0	2.480 2 GHz 2.480 2 GHz 2.480 2 GHz 2.480 3 GHz 2.480 0 GHz	0: Fast → a ain:Low 4 #VBW : -0.607 dB -60.081 dB	Trig: Free Run #Atten: 30 dB	Avg Type: Lo Avg Hold: 100/	Per TRACE 11 100 Tryce M Mkr1 2.480 2 -0.607	2 3 4 5 NNNN CGH: dBm -20.67 dBr

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8. Band Edge(Hopping)

Condition	Mode	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Hopping	-65.21	<=-20	Pass
NVNT	1-DH5	2480	Hopping	-56.88	<=-20	Pass



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AvgiHold 2000/2000 Children Trig: Free Run #Kten: 30 dB AvgiHold 2000/2000 10 dB/div Ref Offset0.5 dB Mkr1 2.479 064 CI -1.189 dB 100 -1.189 dB -1.189 dB -1.199 dB 100 -1.199 dB -1.199 dB -1.199 dB			oping) N	VNT 1-DH	5 2480MHz Ho	pping Ref	
Mkr1 2.479 064 Cl 10 dB/dv Ref 20.00 dBm 10 dB/dv 10	KIRL RF	50 Ω AC 0000000 GHz	PNO: Wide 🔸	Trig: Free Run	Avg Type: Log-Pw	r TF	AM Jan 10, 2023 ACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N
-99 -99 -90 -90 000 -90 -9		t 0.5 dB					
Can be for the formation of the formatio							
100 0	10.0		<u> </u>				
200 400 400 400 400 400 400 400	0.00	1 m	M	m			
300 1	10.0		h d		<u> </u>		
400 500 8	-20.0		- V	¥	h l		
600 6	30.0						
60 0 Conter 2.480000 GHz Span 8.000 M Center 2.480000 GHz #VBW 300 kHz Sweep 1.000 ms (1001 p So State State Band Edge(Hopping) NVNT 1-DH5 2480MHz Hopping Emission State Ref Offset 0.5 dB Augitioid 20002000 PHO: Fast Trig: Free Run Brance 10.00 dBm Augitioid 20002000 Ref Offset 0.5 dB Mkr1 2.476 9 GF 0.00 dB/div Ref 20.00 dBm -0.813 dBm 10 dB/div Ref 20.00 dBm -0.813 dBm 10 dB/div Ref 2.476 0 GHz Stop 2.57600 GHz 20 dA Stop 2.57600 GHz Stop 2.57600 GHz 21 dA 30 dA Stop 2.57600 GHz 21 dA 313 dBm Stop 2.57600 GHz 21 N 1 2478 S GHz	40.0						
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Ref Offset 0.5 dB Ref 20.00 dBm Mkr1 2.476 9 GF -0.813 dB 100 Attien: 30 dB 0.813 dB					STATUS		
Ref 20.00 dBm -0.813 dB ref 20.00 dBm -0.813 dBm ref 20.00 dBm -0.813 dBm ref 20.00 dBm -0.813 dBm ref 2476 9 GHz -0.813 dBm ref 2485 6 GHz -0.813 dBm ref 2485 6 GHz -0.813 dBm ref 2491 8 GHz -58.055 dBm <thr>10</thr>	Agilent Spectrum Analyzer X/ R L RF	- Swept SA 50 Ω AC		NSE:PULSE	Alignauto Avg Type: Log-Pw	08:59:02 r TF	AM Jan 10, 2023
100 1	Agilent Spectrum Analyzer X/ R L RF	- Swept SA 50 Ω AC 6000000 GHz	PNO: Fast ↔	VSE:PULSE	Alignauto Avg Type: Log-Pw	08:59:02 r TF 0 ·	AM Jan 10, 2023 ACE 1 2 3 4 5 TYPE MWWWW DET P N N N N
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Agilent Spectrum Analyzer	- Swept SA 50 Ω AC 6000000 GHz et 0.5 dB	PNO: Fast ↔	VSE:PULSE	Alignauto Avg Type: Log-Pw	08:59:02 r TF 0 Mkr1 2.4	AMJan 10, 2023 ACE 1 2 3 4 5 TYPE MWWWW DET P NNNN 76 9 GHz
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Start 2.47600 GHz Stop 2.57600 G #Res BW 100 kHz Stop 2.57600 G WBW 300 kHz Stop 2.57600 G Mode Infe Sci Stop 2.57600 G MIRE MODE INFO Science Stop 2.57600 G M 1 FUNCTION WIDTH FUNCTION VALUE 1 PUNCTION WIDTH FUNCTION VALUE A 1 F 2.476 9 GHz -0.813 dBm PUNCTION VALUE A 1 FUNCTION VALUE A 1 F 2.476 9 GHz -0.813 dBm A 1 F 2.493 5 GHz -59.042 dBm S	Ref Offse 10.00 1	- Swept SA 50 Ω AC 6000000 GHz et 0.5 dB	PNO: Fast ↔	VSE:PULSE	Alignauto Avg Type: Log-Pw	08:59:02 r TF 0 Mkr1 2.4	AMJan 10, 2023 AACE 12 3 4 5 6 TYPE MWNNN OETP NNNN 76 9 GHz 813 dBm
1 N 1 f 2.476 9 GHz 0.813 dBm 2 N 1 f 2.483 5 GHz 5.9042 dBm 3 N 1 f 2.400 0 GHz 58.854 dBm 4 N 1 f 2.491 8 GHz 58.055 dBm 5 - - - - 6 - - - - 7 - - - - 8 - - - - 9 - - - - 10 - - - -	Ref Offse 10.0 1 <	- Swept SA 50 Ω AC 6000000 GHz et 0.5 dB	PNO: Fast ↔	VSE:PULSE	Alignauto Avg Type: Log-Pw	08:59:02 r TF 0 Mkr1 2.4	AMJan 10, 2023 AACE 12 3 4 5 6 TYPE MWNNN OETP NNNN 76 9 GHz 813 dBm
8 9 10 11	Ref Ref Offse 10 B B B 10.0 1 B B 20.0 1 B B 30.0 2 B B 40.0 2 C C 50.0 2 C C 70.0 2 C C 50.0 2 C C	- Swept SA 50 Ω AC 6000000 GHz et 0.5 dB 00 dBm	PNO: Fast	NSE-PULSE	ALIGNAUTO AUGNAUTO Avg Type: Log-Pw Avg Hold: 2000/200	08:59:02 Mkr1 2.4 -0.1	AMJan 10, 2023 Arce 11 2 3 4 5 of trype[MWWWWW per/P NNNN1 76 9 GHz 813 dBm -21.17 dBm
	Ref Offse Ref Offse Center Freq 2.52 Ref Offse Center Freq 2.52 Ref Offse	- Swept SA 50 Q AC 6000000 GHz et 0.5 dB 00 dBm 4 2.476 9 GH 2.483 6 GH 2.483 6 GH	PNO: Fast IFGain:Low #VB #VB z -0.813 z -59.042 z -58.854	VSE-PULSE Trig: Free Run #Atten: 30 dB	ALIGNAUTO	08:59:02 Mkr1 2.4 -0.1	AMJan 10, 2023 AMJan 10, 2034 5 TYPE MINIMUM PET P NNNN 76 9 GHz 813 dBm -21.17 dBm -21.17 dBm 577600 GHz

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9. Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	-47.16	<=-20	Pass
NVNT	1-DH5	2441	-48.06	<=-20	Pass
NVNT	1-DH5	2480	-44.95	<=-20	Pass



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gilent Spectrum Analy R L RF	<mark>/zer - Swept SA</mark> 50 Ω AC	SE	ENSE:PULSE	ALIGNAUTO	08:48:14 AM Jan 10, 202
	402000000 GH		Tain France Dam	Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 TYPE MWWWW DET P N N N N
	ffset 0.5 dB 20.00 dBm			Mkr1	l 2.402 166 5 GH 0.984 dBr
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0.00					
10.0					
20.0	and the second s				mon
30.0					
10.0					
50.0					
60.0					
70.0					
enter 2.40200					Span 1.500 MH
Res BW 100 KI	Hz	#VB	W 300 kHz	#Sweer	100.0 ms (1001 pt)
Res BW 100 kl	Hz	#VB	SW 300 kHz	#Sweep	o 100.0 ms (1001 pts
				•	
	Tx. Spu	irious NVI		STATUS	08:48:25 AM Jan 10, 202
gilent Spectrum Analy RL RF	Tx. Spu /zer - Swept SA	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	402MHz Emissior	08:48:25 AM Jan 10, 202 TRACE 11 2 3 4 5 TYPE Mwww
sg gilent Spectrum Analy RL RF Senter Freq 13	Tx. Spt γ/2er - Swept SA 50 Ω AC 3,2650000000 GH	urious NVI	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN VKr1 2.402 6 GH
gilent Spectrum Analy RL RF Renter Freq 13 Ref 0	Τχ. Spu / zer - Swept SA 50 Ω AC	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:49:25 AM Jan 10, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN Wkr1 2.402 6 GH
gilent Spectrum Analy RL RF center Freq 13 0 dB/div Ref 0	Tx. Spu 50 Ω AC 3.265000000 GH	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:49:25 AM Jan 10, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN Wkr1 2.402 6 GH
sc RL RF center Freq 12 0 dB/div Ref 2 0 0.00 0.00	Tx. Spu 50 Ω AC 3.265000000 GH	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 12:3 4 5 TYPE MWWWW DET P NNNN Wkr1 2.402 6 GH: -5.916 dBn
sc RL RF center Freq 13 0 dB/div Ref 3 0 0 0.00	Tx. Spu 50 Ω AC 3.265000000 GH	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	0 100.0 ms (1001 pts 08:49:25 AM Jan 10, 202: TRACE 12 3 45 TYPE MWANN DET P NNNN Mkr1 2.402 6 GH: -5.916 dBn
sc RL RF center Freq 13 0 dB/div Ref 2 0 dB/div Ref 2 0 dB/div Ref 3 0 d0	Tx. Spu 50 Ω AC 3.265000000 GH	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2 3 4 5 TYPE MWWWW DET P N N N Wkr1 2.402 6 GH: -5.916 dBn
SG RL RF RL RF RF center Freq 13 Ref 0 0 0 0B/div Ref 1 0 0.00 0 0 0.00 0 0 0 0.00 0 0 0 0.00 0 0 0 0.00 0 0 0	Tx. Spu	Irious NVI Hz PNO: Fast IFGain:Low ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	NT 1-DH5 24	ALIGNAUTO Avg Type: Log-Pwr Avg]Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2 3 4 5 TYPE MWWWW DET P N N N Wkr1 2.402 6 GH: -5.916 dBn
SG RL RF RL RF Ref 0 OddB/div Ref 1 Ref 0 0.0 <td>Tx. Spu</td> <td>urious NVN se Hz PN0: Fast ↔</td> <td>NT 1-DH5 24</td> <td>ALIGNAUTO AVG Type: Log-Pwr Avg Hold: 10/10</td> <td>08:48:25 AM Jan 10, 202 TRACE 12:3 4 5 TYPE MWWWW DET P NNNN Wkr1 2.402 6 GH: -5.916 dBn</td>	Tx. Spu	urious NVN se Hz PN0: Fast ↔	NT 1-DH5 24	ALIGNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 12:3 4 5 TYPE MWWWW DET P NNNN Wkr1 2.402 6 GH: -5.916 dBn
S6 Ref 0 RL Ref 11 Conterner Freq 11 Ref 0 O dB/div Ref 1 O data Ref 1 Ref 1 Ref 1 Ref 1 Ref 1 Ref 1 Ref 1 Ref 1<	Tx. Spu 30 2 AC 30 2 AC 3.265000000 GH 5.5 dB 20.00 dBm	PNO: Fast IFGain:Low 4 4 5 4 5 1 1 1 1 1 1 1 1 1	NT 1-DH5 24	ALIGNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2 3 4 5 TYPE MWWWW Mkr1 2.402 6 GH; -5.916 dBn -19.02 dB -19.02 dB -19
ss RL RF center Freq 13 Ref 0 0 dB/div Ref 1 0 dB/div Ref	Tx. Spu	JITIOUS NVN	NT 1-DH5 24	ALISNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2:34 5 TYPE MWWWW DET P NN NN Mkr1 2:402 6 GH -5.916 dBn -19:02 dB -19:02
SG Ref 0 RL RF center Freq 13 0 dB/div Ref 0 0 dB/div Ref 13 0 dB/div Ref 14	Tx. Spu S0 & AC 3.265000000 GH 3.265000000 GH Mfset 0.5 dB 20.00 dBm	ITIOUS NVN	NT 1-DH5 24	ALISNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2 3 4 5 TYPE MWWWW Mkr1 2.402 6 GH; -5.916 dBn -19.02 dB -19.02 dB -19
SG Ref 0 0 dB/div Ref 0 1 dV 1 f 1 dV 1 f	Tx. Spu 50 2 AC 3.265000000 GH 150 2 AC 150	ITIOUS NVN	NT 1-DH5 24	ALISNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2:34 5 TYPE MWWWW DET P NN NN Mkr1 2:402 6 GH -5.916 dBn -19:02 dB -19:02
SG RL RF RL RF center Freq 13 O OB/O 0.00 O 0.00 <tr tr=""></tr>	Tx. Spu [50 g AC] 3.265000000 GH 50 g AC] 3.265000000 GH 50 g AC] 50 g	ITIOUS NVN	NT 1-DH5 24	ALISNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2:34 5 TYPE MWWWW DET P NN NN Mkr1 2:402 6 GH -5.916 dBn -19:02 dB -19:02
SG RL RF RL RF Ref 01 Content Freq 13 Ref 01 Ref 01 O dB/div Ref 13 Ref 13 O dB/div Ref 14 Ref 14 O d0	Tx. Spu 72er - Swept SA 50 Q AC 50 Q 50 Q 5	ITIOUS NVN	NT 1-DH5 24	ALISNAUTO AVG Type: Log-Pwr Avg Hold: 10/10	08:48:25 AM Jan 10, 202 TRACE 11 2:34 5 TYPE MWWWW DET P NN NN Mkr1 2:402 6 GH -5.916 dBn -19:02 dB -19:02



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gilent Spectrum Analyzer -	Swept SA			5 2441MHz	Rei	
RL RF 50 enter Freq 2.441	000000 GHz		PULSE Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log Avg Hold: 100/		08:49:54 AM Jan 10, 202 TRACE 1 2 3 4 5 TYPE MWWW DET P N N N N
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enter 2.4410000 G	Hz					Span 1.500 MH
Res BW 100 kHz		#VBW :	300 kHz	4	#Sweep 10	0.0 ms (1001 pt
				STATUS		
Slant Cooptrum Analyzor		ous NVNT	1-DH5 24	t41MHz En	nission	
RL RF 5	Swept SA Ο Ω AC	DUS NVNT		141MHz En		08:50:03 AMJan 10, 202 TRACE 1 2 3 4 5
RL RF 5	Swept SA 0 Ω AC 5000000 GHz	SENSE:		141MHz En	g-Pwr 0	TRACE 1 2 3 4 5 TYPE MWWW DET P N N N N
RL RF SI enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	TRACE 12345 TYPE MWWW DET P N N N 1 2.441 4 GH
RL RF S enter Freq 13.26 D dB/div Ref Offset 0 dB/div Ref 20.0 9 1	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	TRACE 12345 TYPE MWWW DET P N N N 1 2.441 4 GH
RL RF St enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0 9 1 0.00 1	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	1 2.441 4 GH -3.532 dBr
RL RF SI enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0 9 1 0.00 1 0.00 1	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	1 2.441 4 GH -3.532 dBr
RL RF SI enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0 0 dB/div	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	1 2.441 4 GH -3.532 dBr
RL RF Si enter Freq 13.26 Ref Offset 0 dB/div Ref Offset 0 dB/div Ref 20.0 0 dB/div	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO Avg Type: Log	g-Pwr 0	1 2.441 4 GH -3.532 dBr
RL RF Si enter Freq 13.26 Ref Offset Ref Offset 0.0 0.0 1 0.0 1 1	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE:	PULSE	ALIGNAUTO AVg Type: Lo Avg Hold: 20/2	g-Pwr 0	12.441 4 GH -3.532 dBr -1789 dE
enter Freq 13.26	Swept SA 0 Ω AC 5000000 GHz 10.5 dB	SENSE: PNO: Fast →→ FGain:Low	PULSE	ALIGNAUTO AUGNAUTO AvgjHold: 20/2	g-Pwr 0 Mkr	TRACE 2 3.4 5 TYPE 3.4 5 TY
RL RF SI enter Freq 13.26 Ref Offset Ref Offset 0 dB/div Ref 20.0 1 0.0 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1 0.00 1 1	Swept SA 0 2 AC 5000000 GHz 10.5 dB 0 dBm 4 4 4 2.441 4 GHz	SENSE: PNO: Fast FGain:Low 5 5 #VBW : 3,532 dB	PULSE	ALIGNAUTO Avg Hold: 20/2	g-Pwr 0 Mkr	08:50:03 AM Jan 10, 202 TRACE [1 2 3 4 5 TYPE I 2 3 4 5 TYP
RL RF SI enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0 1 dB/div Ref 20.0 1 dB/div Ref 20.0 1 dB/div Ref 20.0 2 N	Swept SA 0 2 AC 55000000 GHz 10.5 dB 0 dBm 4 4 4 4 4 5 6 6 6 6 6 7 141 4 GHz 25.668 3 GHz 5.067 2 GHz 7.147 8 GHz	SENSE: PN0: Fast FGain:Low FGain:Low #VBW: 3.532 dB -45.949 dB -57.224 dB -57.229 dB	PULSE	ALIGNAUTO AUGNAUTO AvgjHold: 20/2	g-Pwr 0 Mkr	TRACE 2 3.4 5 TYPE 3.4 5 TY
RL RF SI enter Freq 13.26 Ref Offset dB/div Ref 20.0 og 1	Swept SA 0 2 AC 55000000 GHz 10.5 dB 10 dBm 4 2.441 4 GHz 25.568 3 GHz 5.067 2 GHz 5.067 2 GHz	SENSE: PN0: Fast FGain:Low FGain:Low #VBW: 3.532 dB -45.949 dB -57.224 dB -57.229 dB	PULSE	ALIGNAUTO AUGNAUTO AvgjHold: 20/2	g-Pwr 0 Mkr	TRACE 2 3.4 5 TYPE 3.4 5 TY
RL RF Si enter Freq 13.26 Ref Offset 0 dB/div Ref 20.0 0.0 1 1 1 1 1 1 1 2 1 3 1 4 1 5 1	Swept SA 0 2 AC 55000000 GHz 10.5 dB 0 dBm 4 4 4 4 4 5 6 6 6 6 6 7 141 4 GHz 25.668 3 GHz 5.067 2 GHz 7.147 8 GHz	SENSE: PN0: Fast FGain:Low FGain:Low #VBW: 3.532 dB -45.949 dB -57.224 dB -57.229 dB	PULSE	ALIGNAUTO AUGNAUTO AvgjHold: 20/2	g-Pwr 0 Mkr	TRACE 2 3.4 5 TYPE 3.4 5 TY



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			urious N	VNT 1-DH	15 2480MH	z Ref		
LXI RL	ctrum Analyzer - Swe RF 50 ହ Freq 2.48000	AC 00000 GHz P	SEN NO: Wide ↔ Gain:Low	SE:PULSE Trig: Free Run Atten: 30 dB	ALIGNAUTO Avg Type: Avg Hold: 3	Log-Pwr 300/300	08:52:31 AMJ TRACE TYPE I DET	n 10, 2023 2 3 4 5 6 4 W W N N N ? N N N N N
10 dB/div	Ref Offset 0.5 Ref 20.00 c					Mkr1	2.480 166 -0.587	5 GHz ′ dBm
10.0					1			
0.00								
-10.0								
-20.0							- Au	
-30.0								A A A
-40.0								
-50.0								
-60.0								
-70.0								
Center 2	2.4800000 GHz	,					Span 1.5	00 MH;
#Res BV	V 100 kHz	-	#VBV	V 300 kHz	r1	#Sweep	100.0 ms (10	
MSG			US NV/N	T 1-DH5	2480MHz E	mission		
	ctrum Analyzer - Swe	ept SA						
Center	RF 50 Ω Freq 13.2650	00000 GHz	PNO: Fast ↔→	SE:PULSE Trig: Free Run Atten: 30 dB	ALIGNAUTO Avg Type: Avg Hold: 2		TYPE	n 10, 2023 L 2 3 4 5 6 M M N N N N P N N N N N
10 dB/div	Ref Offset 0.5 Ref 20.00 (N	1kr1 2.481 -6.745	
10.0								
-10.00	∮ 1							
-20.0								-20.59 dBm
-40.0		2 - 4						<mark>2</mark>
-50.0		-2	5	and the second second	and the second			
-70.0								
Start 30 #Res BV	MHz V 100 kHz		#VBV	V 300 kHz		#Sweep	Stop 26. 100.0 ms (100	
MKR MODE	1 f	× 2.481 1 GHz	-6.745 (FUNCTION	FUNCTION WIDTH	FUN	ICTION VALUE	^
2 N 3 N 4 N	1 f 1 f 1 f	25.600 0 GHz 5.043 4 GHz 7.531 6 GHz	-45.547 c -56.313 c -55.013 c	dBm dBm				
5 N 6 7	1 f	9.723 3 GHz	-58.318 (dBm				
8 9 10								
11 <								>
MSG					🚺 STATUS 🦺	Meas Uncal		

Tx. Spurious NVNT 1-DH5 2480MHz Ref



APPENDIX 2-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

* * * * * END OF THE REPORT * * * * *



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