



RADIO TEST REPORT FCC ID: 2A86J-MSWXB2518

Product: MSWXB2518 Trade Mark: N/A Model No.: MSWXB2518 Family Model: N/A Report No.: S24101705201001 Issue Date: Nov. 30, 2024

Prepared for

Shenzhen MoreSense Technology Co., Ltd. 206, building A1, international Jinbo Plaza, 663 Bulong Road,

Bantian street, Longgang District, Shenzhen

Prepared by

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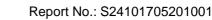


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1 **TEST RESULT CERTIFICATION**

Shenzhen MoreSense Technology Co., Ltd.
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Shenzhen MoreSense Technology Co., Ltd.
206, building A1, international Jinbo Plaza, 663 Bulong Road, Bantian street, Longgang District, Shenzhen
MSWXB2518
N/A
MSWXB2518
N/A
S241017052001
Oct. 17, 2024 ~ Nov. 30, 2024

Certificate #4298.01

Measurement Procedure Used:

APPLICABLE STANDARDS

FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C ANSI C63.10-2013	STANDARD/ TEST PROCEDURE	TEST RESULT
	FCC 47 CFR Part 15, Subpart C	TEST RESULT Complied

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and 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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The test results of this report relate only to the tested sample identified in this report.

Prepared Bv

Kieron Luo

(Project Engineer)

(Supervisor)

Approved . Βv

Alex Li (Manager)

Version.1.3



FCC Part15 (15.247), Subpart C			
Standard Section	Test Item	Verdict	Remark
15.207	Conducted Emission	PASS	
15.209 (a) 15.205 (a)	Radiated Spurious Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(b)(1)	Peak Output Power	PASS	
15.247(a)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.247 (d)	Band Edge Emission	PASS	
15.247 (d)	Spurious RF Conducted Emission	PASS	
15.203	Antenna Requirement	PASS	

Remark:

 "N/A" denotes test is not applicable in this Test Report.
 All test items were verified and recorded according to the standards and without any deviation during the test.





3 FACILITIES AND ACCREDITATIONS

3.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

3.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description	
CNAS-Lab.	: The Certificate Registration Number is L5516.
IC-Registration	The Certificate Registration Number is 9270A.
-	CAB identifier:CN0074
FCC- Accredited	Test Firm Registration Number: 463705.
	Designation Number: CN1184
A2LA-Lab.	The Certificate Registration Number is 4298.01
	This laboratory is accredited in accordance with the recognized
	International Standard ISO/IEC 17025:2005 General requirements for
	the competence of testing and calibration laboratories.
	This accreditation demonstrates technical competence for a defined
	scope and the operation of a laboratory quality management system
	(refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).
Name of Firm	: Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	: No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan
	District, Shenzhen, Guangdong, People's Republic of China.

3.3 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	Uncertainty	
1	Conducted Emission Test	±2.80dB	
2	RF power, conducted, PSD	±0.16dB	
3	Spurious emissions, conducted	±0.21dB	
4	All emissions, radiated(30MHz~1GHz)	±2.64dB	
5	All emissions, radiated(1GHz~6GHz)	±2.40dB	
6	All emissions, radiated(>6GHz)	±2.52dB	
7	Temperature	±0.5°C	
8	Humidity	±2%	
9	All emissions, radiated(9KHz~30MHz)	±6dB	
10	Occupied Channel Bandwidth	±3.7dB	
11	Dwell time	±2.8%	





4 GENERAL DESCRIPTION OF EUT

Product Feature and Specification		
Equipment	MSWXB2518	
Trade Mark	N/A	
FCC ID	2A86J-MSWXB2518	
Model No.	MSWXB2518	
Family Model	N/A	
Model Difference	N/A	
Operating Frequency	2402-2480MHz	
Modulation	GFSK, π/4-DQPSK, 8-DPSK	
Number of Channels	79 Channels	
Antenna Type	ceramic antenna	
Antenna Gain	1.5 dBi	
Adapter	N/A	
Battery	N/A	
Rating(s)	DC 3.3V	
HW Version	N/A	
SW Version	N/A	

Note 1: Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.





Revision History				
Report No.	Version	Description	Issued Date	
S24101705201001	Rev.01	Initial issue of report	Nov. 30, 2024	



5 DESCRIPTION OF TEST MODES

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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.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (1Mbps for GFSK modulation; 2Mbps for π /4-DQPSK modulation; 3Mbps for 8-DPSK modulation) were used for all test.

The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement -X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

Carrier Frequency and Channel list:

Channel	Frequency(MHz)
0	2402
1	2403
39	2441
40	2442
77	2479
78	2480

Note: fc=2402MHz+k×1MHz k=0 to 78

The following summary table is showing all test modes to demonstrate in compliance with the standard.

For AC Conducted Emission				
Final Test Mode	Final Test Mode Description			
Mode 1 normal link mode				

Note: AC power line Conducted Emission was tested under maximum output power.

For Radiated Test Cases		
Final Test Mode	Description	
Mode 1	normal link mode	
Mode 2	CH00(2402MHz)	
Mode 3	CH39(2441MHz)	
Mode 4	CH78(2480MHz)	

Note: For radiated test cases, the worst mode data rate 3Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

For Conducted Test Cases		
Final Test Mode	Description	
Mode 2	CH00(2402MHz)	
Mode 3	CH39(2441MHz)	
Mode 4	CH78(2480MHz)	
Mode 5	Hopping mode	

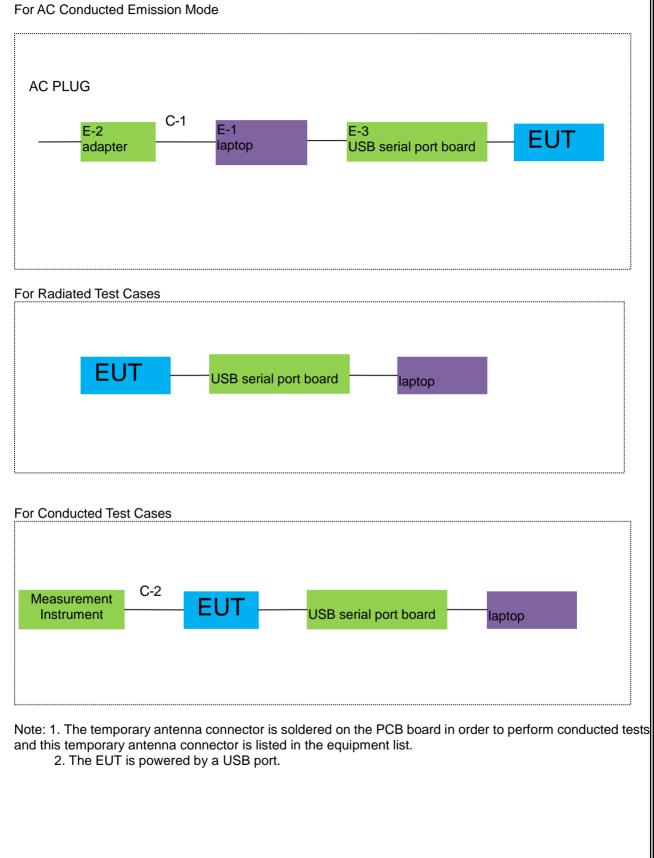
Note: The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.

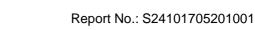




6 SETUP OF EQUIPMENT UNDER TEST

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM





6.2 SUPPORT EQUIPMENT

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.

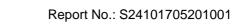
Certificate #4298.01

Item	Equipment	Manufacturer	Model/Type No.	Note
AE-1	laptop	ASUS	S5506M	Peripherals
AE-2	adapter	ASUS	ADP-90RE B	Peripherals
AE-3	USB serial port board	NA	NA	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	Power Cable	NO	NO	1.0m
C-2	RF Cable	YES	NO	0.1m

Notes:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in [Length] column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".



6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

ilac-

ACCREDITED Certificate #4298.01

Radiation& Conducted Test equipment

vaulatio		estequipment					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibrati on period
1	Spectrum Analyzer	Agilent	E4440A	MY41000130	2024.04.26	2025.04.25	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024.04.25	2025.04.24	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2024.04.25	2025.04.24	1 year
4	Test Receiver	R&S	ESPI7	101318	2024.04.26	2025.04.25	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
7	Horn Antenna	EM	EM-AH-1018 0	2011071402	2024.05.12	2027.05.11	3 year
8	Broadband Horn Antenna	SCHWARZBE CK	BBHA 9170	803	2024.05.12	2027.05.11	3 year
9	Amplifier	EMC	EMC051835 SE	980246	2024.04.25	2025.04.24	1 year
10	Active Loop Antenna	SCHWARZBE CK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
11	Power Meter	DARE	RPR3006W	15I00041SN 084	2024.04.25	2025.04.24	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2023.05.06	2026.05.05	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2023.05.06	2026.05.05	3 year
14	High Test Cable(1G-40G Hz)	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
15	Filter	TRILTHIC	2400MHz	29	2024.04.26	2027.04.25	3 year
16	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:

We will use the temporary antenna connector (soldered on the PCB board) When conducted test And this temporary antenna connector is listed within the instrument list





AC Co	AC Conduction Test equipment						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
2	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
3	LISN	SCHWARZBE CK	NNLK 8129	8129245	2024.04.25	2025.04.24	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2024.04.26	2027.04.25	3 year
5	Test Cable (9KHz-30MH z)	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
6	Test Cable (9KHz-30MH z)	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
7	Test Cable (9KHz-30MH z)	N/A	C03	N/A	2023.05.06	2026.05.05	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Aux Equipment & Test Cable which is scheduled for calibration every 2 or 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFtest	MTS 8310 2.4GHz/5GHz	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

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7 TEST REQUIREMENTS

7.1 CONDUCTED EMISSIONS TEST

7.1.1 Applicable Standard

According to FCC Part 15.207(a)

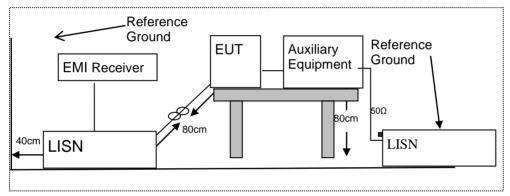
7.1.2 Conformance Limit

	Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average	
0.15-0.5	66-56*	56-46*	
0.5-5.0	56	46	
5.0-30.0	60	50	

Note: 1. *Decreases with the logarithm of the frequency

- 2. The lower limit shall apply at the transition frequencies
 - 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

7.1.3 Test Configuration



7.1.4 Test Procedure

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
- 2. The EUT was placed on a table which is 0.8m above ground plane.
- 3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 4. 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 40cm long.
- 5. 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.
- 6. LISN at least 80 cm from nearest part of EUT chassis.
- 7. The frequency range from 150KHz to 30MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
- 9. For the actual test configuration, please refer to the related Item -EUT Test Photos.

7.1.5 Test Results

Pass





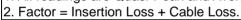
7.1.6 Test Results

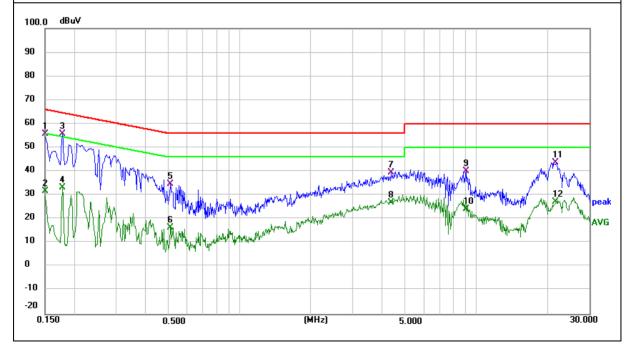
EUT:	MSWXB2518	Model Name :	MSWXB2518
Temperature:	24.9℃	Relative Humidity:	53.2%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 3.3V	Test Mode:	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Damark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1500	45.75	10.00	55.75	66.00	-10.25	QP
0.1500	21.76	10.00	31.76	56.00	-24.24	AVG
0.1776	45.85	10.05	55.90	64.60	-8.70	QP
0.1776	23.29	10.05	33.34	54.60	-21.26	AVG
0.5072	24.00	10.70	34.70	56.00	-21.30	QP
0.5072	5.71	10.70	16.41	46.00	-29.59	AVG
4.3605	29.43	10.03	39.46	56.00	-16.54	QP
4.3605	17.02	10.03	27.05	46.00	-18.95	AVG
9.0113	29.43	10.71	40.14	60.00	-19.86	QP
9.0113	13.61	10.71	24.32	50.00	-25.68	AVG
21.7149	30.78	13.00	43.78	60.00	-16.22	QP
21.7149	14.14	13.00	27.14	50.00	-22.86	AVG

Remark:

1. All readings are Quasi-Peak and Average values.









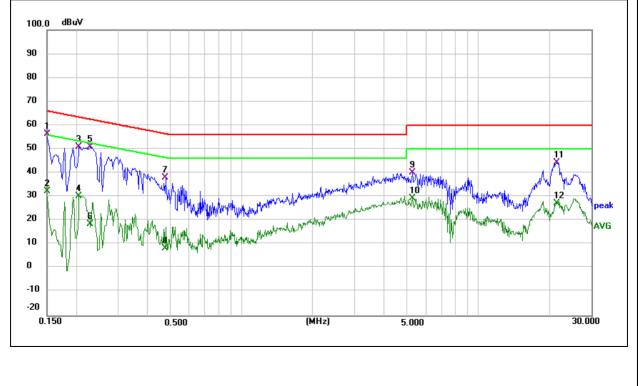
EUT:	MSWXB2518	Model Name :	MSWXB2518
Temperature:	24.9 ℃	Relative Humidity:	53.2%
Pressure:	1010hPa	Phase :	Ν
Test Voltage :	DC 3.3V	Test Mode:	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1500	46.25	10.00	56.25	66.00	-9.75	QP
0.1500	22.26	10.00	32.26	56.00	-23.74	AVG
0.2049	40.77	10.10	50.87	63.41	-12.54	QP
0.2049	20.28	10.10	30.38	53.41	-23.03	AVG
0.2290	40.77	10.16	50.93	62.49	-11.56	QP
0.2290	8.32	10.16	18.48	52.49	-34.01	AVG
0.4736	27.48	10.63	38.11	56.45	-18.34	QP
0.4736	-2.20	10.63	8.43	46.45	-38.02	AVG
5.2489	30.01	10.13	40.14	60.00	-19.86	QP
5.2489	19.10	10.13	29.23	50.00	-20.77	AVG
21.4860	31.34	12.96	44.30	60.00	-15.70	QP
21.4860	14.27	12.96	27.23	50.00	-22.77	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.





7.2 RADIATED SPURIOUS EMISSION

7.2.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and ANSI C63.10-2013

7.2.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). According to FCC Part15.205, Restricted bands

According to 1 00 1 art13.20			
MHz	MHz	MHz	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	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	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Froguopov(MHz)	Class B (dBuV/	/m) (at 3M)
Frequency(MHz)	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

Measurement was performed at an antenna to the closed point of EUT distance of meters.
 For Frequency 9kHz~30MHz:

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

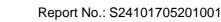
Limit line=Specific limits(dBuV) + distance extrapolation factor.

For Frequency above 30MHz:

Distance extrapolation factor =20log(Specific distance/ test distance)(dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

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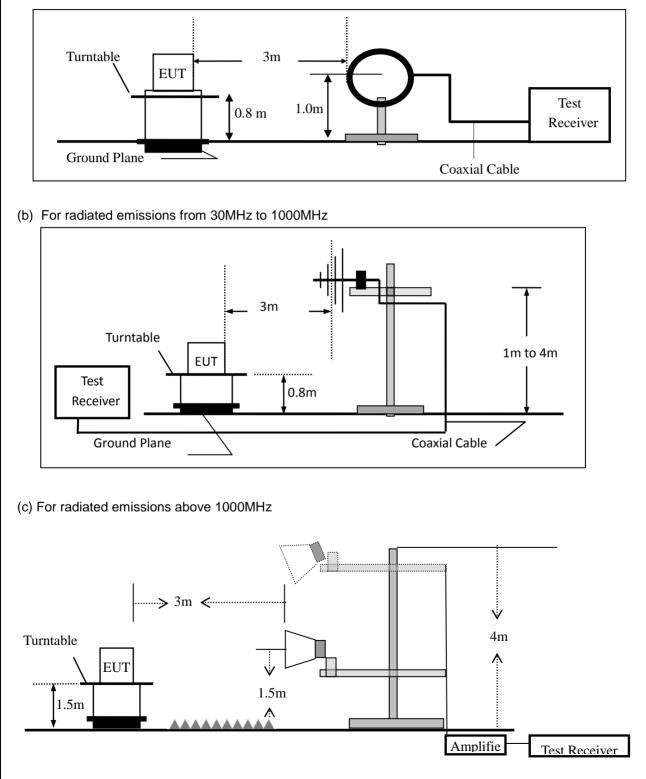
7.2.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

Certificate #4298.01

7.2.4 Test Configuration

(a) For radiated emissions below 30MHz





7.2.5 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Certificate #4298.01

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Spectrum Parameter	Setting				
Attenuation	Auto				
Start Frequency	1000 MHz				
Stop Frequency	10th carrier harmonic				
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1 MHz for Average				

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For the radiated emission test above 1GHz: Place the measurement antenna 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.
- e. 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 then Quasi Peak detector mode re-measured.
- f. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- g. 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





During the radiated emission test, the Spectrum Analyzer was set with the following configurations:										
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth							
30 to 1000	QP	120 kHz	300 kHz							
AL	Peak	1 MHz	1 MHz							
Above 1000	Average	1 MHz	1 MHz							

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz])., the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

7.2.6 Test Results

Spurious Emission below 30MHz (9KHz to 30MHz)

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Kieron Luo

Freq.	Ant.Pol.	Emission L	evel(dBuV/m)	Limit 3	m(dBuV/m)	Over(dB)		
(MHz)	H/V	PK AV		PK AV		PK	AV	

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.



191.7450

586.8436

938.8326



-19.89

-14.03

-9.59

peak

peak

peak

Spurious Emission below 1GHz (30MHz to 1GHz) All the modulation modes have been tested, and the worst result was report as below: EUT: MSWXB2518 Model Name : MSWXB2518 Temperature: **24.3**℃ 53% **Relative Humidity:** 1010hPa Test Mode: Pressure: Mode 4 DC 3.3V Test Voltage : Emission Meter Frequency Factor Limits Margin Polar Reading Level Remark (H/V) (dBuV/m) (MHz) (dBuV) (dB) (dBuV/m) (dB) 43.2016 V 49.06 -24.13 24.93 40.00 -15.07 peak V 18.36 61.7780 6.75 25.11 40.00 -14.89peak V 108.2666 5.82 17.65 23.47 43.50 -20.03 peak V

23.61

31.97

36.41

43.50

46.00

46.00

V **Remark:**

V

Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit

17.22

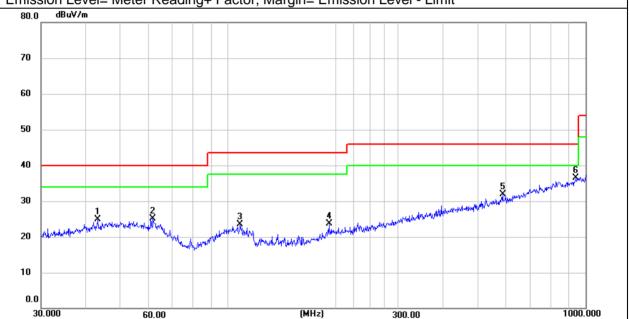
25.50

30.52

6.39

6.47

5.89







Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark	
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Remark	
Н	64.8865	7.69	17.56	25.25	40.00	-14.75	peak	
Н	103.0800	8.74	17.84	26.58	43.50	-16.92	peak	
Н	192.4185	11.28	17.26	28.54	43.50	-14.96	peak	
Н	319.9370	7.53	20.62	28.15	46.00	-17.85	peak	
Н	719.1995	6.01	28.18	34.19	46.00	-11.81	peak	
Н	955.4381	6.69	30.67	37.36	46.00	-8.64	peak	
Remar								
-	on Level= Meter I	Reading+ Fac	tor, Margin	= Emission Le	vel - Limit			
80.0	dBuV/m							
70								
60								
50								
							- _	
40								
40					porte and the second	5	P. Contraction of the second s	
30				3		In the start of the start		
30		1 2		×	under with good the word with	All Contraction of the Contracti		
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10								
0.0								
	000 60).00	()	MHz)	300.00		1000.000	





· · · · · · · · · · · · · · · · · · ·	Spurious Emission Above 1GHz (1GHz to 25GHz)										
EUT:	MS	WXB251	8	Mod	el No.:		MSV	/XB2518			
Temperature:	20	20 °C			Relative Humidity: 48%						
Test Mode:	Мо	de2/Mod	e3/Mode4	Test	By:		Kierc	on Luo			
All the modulation modes have been tested, and the worst result was report as below:											
Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Lim	nits	Margin	Remark	Comment	
(MHz)	(dBµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµ'	V/m)	(dB)			
			Low Char	nel (2402	MHz) (GFSk	()Abo	ve 1G	ì			
4804.214	53.50	5.21	35.59	44.30	50.00	74.	00	-24.00	Pk	Vertical	
4804.214	39.33	5.21	35.59	44.30	35.83	54.	00	-18.17	AV	Vertical	
7206.265	65.75	6.48	36.27	44.60	63.90	74.	00	-10.10	Pk	Vertical	
7206.265	52.72	6.48	36.27	44.60	50.87	54.	00	-3.13	AV	Vertical	
4804.109	53.23	5.21	35.55	44.30	49.69	74.	00	-24.31	Pk	Horizontal	
4804.109	38.97	5.21	35.55	44.30	35.43	54.	00	-18.57	AV	Horizontal	
7206.224	64.72	6.48	36.27	44.52	62.95	74.	00	-11.05	Pk	Horizontal	
7206.224	51.08	6.48	36.27	44.52	49.31	54.	00	-4.69	AV	Horizontal	
			Mid Chan	nel (2441	MHz)(GFSK)Abo	ve 1G				
4882.396	53.30	5.21	35.66	44.20	49.97	74.	00	-24.03	Pk	Vertical	
4882.396	39.76	5.21	35.66	44.20	36.43	54.	00	-17.57	AV	Vertical	
7323.241	63.97	7.10	36.50	44.43	63.14	74.	00	-10.86	Pk	Vertical	
7323.241	50.94	7.10	36.50	44.43	50.11	54.	00	-3.89	AV	Vertical	
4882.108	54.43	5.21	35.66	44.20	51.10	74.	00	-22.90	Pk	Horizontal	
4882.108	40.64	5.21	35.66	44.20	37.31	54.	00	-16.69	AV	Horizontal	
7323.132	63.59	7.10	36.50	44.43	62.76	74.	00	-11.24	Pk	Horizontal	
7323.132	49.01	7.10	36.50	44.43	48.18	54.	00	-5.82	AV	Horizontal	
		T	High Char	nel (2480	MHz)(GFSK	() Abo	ove 10	3			
4960.397	57.45	5.21	35.52	44.21	53.97	74.	00	-20.03	Pk	Vertical	
4960.397	40.62	5.21	35.52	44.21	37.14	54.	00	-16.86	AV	Vertical	
7440.201	64.59	7.10	36.53	44.60	63.62	74.	00	-10.38	Pk	Vertical	
7440.201	51.85	7.10	36.53	44.60	50.88	54.	00	-3.12	AV	Vertical	
4960.225	55.11	5.21	35.52	44.21	51.63	74.	00	-22.37	Pk	Horizontal	
4960.225	42.03	5.21	35.52	44.21	38.55	54.	00	-15.45	AV	Horizontal	
7440.298	62.49	7.10	36.53	44.60	61.52	74.	00	-12.48	Pk	Horizontal	
7440.298	49.77	7.10	36.53	44.60	48.80	54.	00	-5.20	AV	Horizontal	

Note:

(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor (2) All other emissions more than 20dB below the limit.





UT:	MSWXB2				2390MHz and odel No.:			/XB2518	;	
emperature:	. 20 ℃	Relative Humidity: 48%								
est Mode:	Mode2/ N				est By:	!	Kierc	on Luo		
Il the modu	lation mod	es have	been test		d the worst res	sult was	s <u>rep</u>	or <u>t as be</u>	low:	
Frequency	Meter Reading	Cable Loss	Antenna Factor	Pream Facto		Limit	its	Margin	Detector	Comment
(MHz)	(dBµV)	(dB)	dB/m	(dB)) (dBµV/m)	(dBµV	//m)	(dB)	Туре	
			1	Mbps(C	GFSK)-Non-hop	ping				
2310.00	56.30	2.97	27.80	43.80	0 43.27	74	+	-30.73	Pk	Horizontal
2310.00	43.94	2.97	27.80	43.80	0 30.91	54	+	-23.09	AV	Horizontal
2310.00	55.93	2.97	27.80	43.80	0 42.90	74	+	-31.10	Pk	Vertical
2310.00	41.54	2.97	27.80	43.80	0 28.51	54	+	-25.49	AV	Vertical
2390.00	58.68	3.14	27.21	43.80	0 45.23	74	+	-28.77	Pk	Vertical
2390.00	45.59	3.14	27.21	43.80	0 32.14	54	+	-21.86	AV	Vertical
2390.00	57.44	3.14	27.21	43.80	0 43.99	74	+	-30.01	Pk	Horizontal
2390.00	44.97	3.14	27.21	43.80	0 31.52	54	+	-22.48	AV	Horizontal
2483.50	55.14	3.58	27.70	44.00	0 42.42	74	+	-31.58	Pk	Vertical
2483.50	43.63	3.58	27.70	44.00	0 30.91	54	+	-23.09	AV	Vertical
2483.50	55.54	3.58	27.70	44.00	0 42.82	74	+	-31.18	Pk	Horizontal
2483.50	44.52	3.58	27.70	44.00	0 31.80	54	F	-22.20	AV	Horizontal
2500.00	53.48	5.9	27.70	45.10	0 41.98	74	F	-32.02	Pk	Vertical
2500.00	42.16	5.9	27.70	45.10	0 30.66	54	F	-23.34	AV	Vertical
2500.00	52.78	5.9	27.70	45.10		74		-32.72	Pk	Horizontal
2500.00	41.85	5.9	27.70	45.10	0 30.35	54	F	-23.65	AV	Horizontal
				1Mbp:	s(GFSK)-hoppin	ng				
2310.00	52.99	2.97	27.80	43.80		74.0)0	-34.04	Pk	Vertical
2310.00	42.15	2.97	27.80	43.80	0 29.12	54.0	00	-24.88	AV	Vertical
2310.00	54.66	2.97	27.80	43.80	0 41.63	74.0)0	-32.37	Pk	Horizontal
2310.00	41.58	2.97	27.80	43.80	0 28.55	54.0	00	-25.45	AV	Horizontal
2390.00	51.01	3.14	27.21	43.80	0 37.56	74.0	00	-36.44	Pk	Vertical
2390.00	40.81	3.14	27.21	43.80	0 27.36	54.0)0	-26.64	AV	Vertical
2390.00	52.71	3.14	27.21	43.80	0 39.26	74.0	00	-34.74	Pk	Horizontal
2390.00	43.28	3.14	27.21	43.80	0 29.83	54.0)0	-24.17	AV	Horizontal
2483.50	55.81	3.58	27.70	44.00	0 43.09	74.0)0	-30.91	Pk	Vertical
2483.50	44.09	3.58	27.70	44.00	0 31.37	54.0)0	-22.63	AV	Vertical
2483.50	54.73	3.58	27.70	44.00	0 42.01	74.0)0	-31.99	Pk	Horizonta
2483.50	43.59	3.58	27.70	44.00	0 30.87	54.0)0	-23.13	AV	Horizonta
2500.00	52.57	5.9	27.70	45.10	0 41.07	74.0	00	-32.93	Pk	Vertical
2500.00	41.83	5.9	27.70	45.10	0 30.33	54.0	00	-23.67	AV	Vertical
2500.00	51.22	5.9	27.70	45.10	0 39.72	74.0	00	-34.28	Pk	Horizonta
2500.00	40.67	5.9	27.70	45.10	0 29.17	54.0	00	-24.83	AV	Horizonta

Note: (1) All other emissions more than 20dB below the limit.

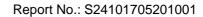




	Spurious Emission in Restricted Band 3260MHz-18000MHz											
ΕL	JT:	MSWXB2518					Model No.: MS			MSWXB2518		
Те	mperature:	20 ℃				Relat	ive Humidit	y:	48%			
Те	st Mode:	Mode	e2/ Mode	э4		Test I	By:		Kiero	n Luo		
A	II the modula	ation mode	es have	been teste	ed, a	and the	e worst res	ult wa	is repo	ort as be	ow:	
	Frequency	Reading Level	Cable Loss	Antenna Factor		eamp actor	Emission Level	Lin	nits	Margin	Detector	Comment
	(MHz)	(dBµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµ	ıV/m)	(dB)	Туре	
	3260	54.16	4.04	29.57	44	4.70	43.07	7	'4	-30.93	Pk	Vertical
	3260	40.77	4.04	29.57	44	4.70	29.68	5	64	-24.32	AV	Vertical
	3260	54.14	4.04	29.57	44	4.70	43.05	7	'4	-30.95	Pk	Horizontal
	3260	41.37	4.04	29.57	4	4.70	30.28	5	64	-23.72	AV	Horizontal
	3332	52.91	4.26	29.87	4	4.40	42.64	7	'4	-31.36	Pk	Vertical
	3332	41.34	4.26	29.87	4	4.40	31.07	5	64	-22.93	AV	Vertical
	3332	53.50	4.26	29.87	4	4.40	43.23	7	'4	-30.77	Pk	Horizontal
	3332	43.80	4.26	29.87	4	4.40	33.53	5	64	-20.47	AV	Horizontal
	17797	42.12	10.99	43.95	43	3.50	53.56	7	'4	-20.44	Pk	Vertical
	17797	33.55	10.99	43.95	4:	3.50	44.99	5	64	-9.01	AV	Vertical
	17788	42.49	11.81	43.69	4	4.60	53.39	7	'4	-20.61	Pk	Horizontal
	17788	34.00	11.81	43.69	4	4.60	44.90	5	54	-9.10	AV	Horizontal

Note: (1) All other emissions more than 20dB below the limit.





7.3 NUMBER OF HOPPING CHANNEL

7.3.1 Applicable Standard

According to FCC Part 15.247(a)(1) (iii)and ANSI C63.10-2013

7.3.2 Conformance Limit

Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

Certificate #4298.01

7.3.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.3.4 Test Setup

Please refer to Section 6.1 of this test report.

7.3.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.3

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.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW : To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

 $VBW \ge RBW$

Sweep = auto

Detector function = peak Trace = max hold

7.3.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode 5(1Mbps)	Test By:	MSWXB2518 48% Kieron Luo



7.4 HOPPING CHANNEL SEPARATION MEASUREMENT

7.4.1 Applicable Standard

According to FCC Part 15.247(a)(1) and ANSI C63.10-2013

7.4.2 Conformance 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 2400-2483.5MHz band shall have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

7.4.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.4.4 Test Setup

Please refer to Section 6.1 of this test report.

7.4.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.2

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.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Measurement Bandwidth or Channel Separation

RBW: Start with the RBW 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

7.4.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 ℃	Relative Humidity:	MSWXB2518 48% Kieron Luo
Test Mode:	Mode2/Mode3/Mode4	Test By:	Kieron Luo



7.5 AVERAGE TIME OF OCCUPANCY (DWELL TIME)

7.5.1 Applicable Standard

According to FCC Part 15.247(a)(1)(iii) and ANSI C63.10-2013

7.5.2 Conformance Limit

The average time of occupancy on any channel shall not be greater than 0.4s within a period of 0.4s multiplied by the number of hopping channels employed.

Certificate #4298.01

7.5.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.5.4 Test Setup

Please refer to Section 6.1 of this test report.

7.5.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.4 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. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel RBW \geq 1MHz VBW \geq RBW Sweep = as necessary to capture the entire dwell time per hopping channel Detector function = peak Trace = max hold Measure the maximum time duration of one single pulse. Set the EUT for DH5, DH3 and DH1 packet transmitting. Measure the maximum time duration of one single pulse.





7.5.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Kieron Luo

ACCREDITED Certificate #4298.01

Test data reference attachment.

Note:

Period Time = (channel number)*0.4

DH1 Dwell time: Pulse time* Burst Count (Number of hops in the period specified in the requirements) DH3 Dwell time: Pulse time* Burst Count (Number of hops in the period specified in the requirements) DH5 Dwell time: Pulse time* Burst Count (Number of hops in the period specified in the requirements)



7.6 20DB BANDWIDTH TEST

7.6.1 Applicable Standard

According to FCC Part 15.247(a)(1) and ANSI C63.10-2013

7.6.2 Conformance Limit

No limit requirement.

7.6.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.6.4 Test Setup

Please refer to Section 6.1 of this test report.

7.6.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 6.9.2 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. The EUT was operating in controlled its channel. Use the following spectrum analyzer settings: Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel RBW \geq 1% of the 20 dB bandwidth VBW \geq RBW Sweep = auto Detector function = peak Trace = max hold

Certificate #4298.01

7.6.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Kieron Luo





7.7 **PEAK OUTPUT POWER**

7.7.1 Applicable Standard

According to FCC Part 15.247(b)(1) and ANSI C63.10-2013

7.7.2 Conformance Limit

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.

7.7.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.7.4 Test Setup

Please refer to Section 6.1 of this test report.

7.7.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.5.

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.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

 $RBW \ge the 20 dB$ bandwidth of the emission being measured

 $VBW \ge RBW$

Sweep = auto

Detector function = peak Trace = max hold

7.7.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518	
Temperature:	20 ℃	Relative Humidity:	48%	
Test Mode:	Mode2/Mode3/Mode4	Test By:	Kieron Luo	





7.8 CONDUCTED BAND EDGE MEASUREMENT

7.8.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013

7.8.2 Conformance Limit

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.205(c)).

7.8.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.8.4 Test Setup

Please refer to Section 6.1 of this test report.

7.8.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.6.

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.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW = 100KHz

VBW = 300KHz

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.

Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

Repeat above procedures until all measured frequencies were complete.

7.8.6 Test Results

EUT:	MSWXB2518	Model No.:	MSWXB2518
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode2 /Mode4/ Mode 5	Test By:	Kieron Luo





7.9 SPURIOUS RF CONDUCTED EMISSION

7.9.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013.

7.9.2 Conformance Limit

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.9.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.9.4 Test Setup

Please refer to Section 6.1 of this test report.

7.9.5 Test Procedure

Establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

- b) Set the RBW = 100 kHz.
- c) Set the VBW \geq [3 × RBW].
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level.

Then the limit shall be attenuated by at least 20 dB relative to the maximum amplitude level in 100 kHz.

7.9.6 Test Results

Remark: The measurement frequency range is from 30MHzHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.





7.10 ANTENNA APPLICATION

7.10.1 Antenna 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.

7.10.2 Result

The EUT antenna is Permanently attached ceramic antenna (Gain: 1.5 dBi). It comply with the standard requirement.



7.11 FREQUENCY HOPPING SYSTEM (FHSS) EQUIPMENT REQUIREMENTS 7.11.1 Standard Applicable

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. (g) 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 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. (h) 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 hopsets 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.

7.11.2 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 2,400-2,483.5 MHz. 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 an bluetooth system receiver to check that the device maintained hopping synchronization, and the device complied with these requirements for FCC Part 15.247 rule.

7.11.3 EUT Pseudorandom Frequency Hopping Sequence

Pseudorandom Frequency Hopping Sequence Table as below: Channel: 08, 24, 40, 56, 40, 56, 72, 09, 01, 09, 33, 41, 33, 41, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 42, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 55, 71, 08, 24, 08, 24, 40, 56, 40, 48, 72, 01, 72, 01, 25, 33, 12, 28, 44, 60, 42, 58, 74, 11, 05, 13, 37, 45 etc.

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





8 TEST RESULTS

8.1 DWELL TIME

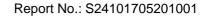
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.369	85.977	233	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.625	214.5	132	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.872	292.944	102	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.378	81.27	215	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.63	202.12	124	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.88	276.48	96	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.378	80.136	212	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.63	215.16	132	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.88	285.12	99	31600	400	Pass

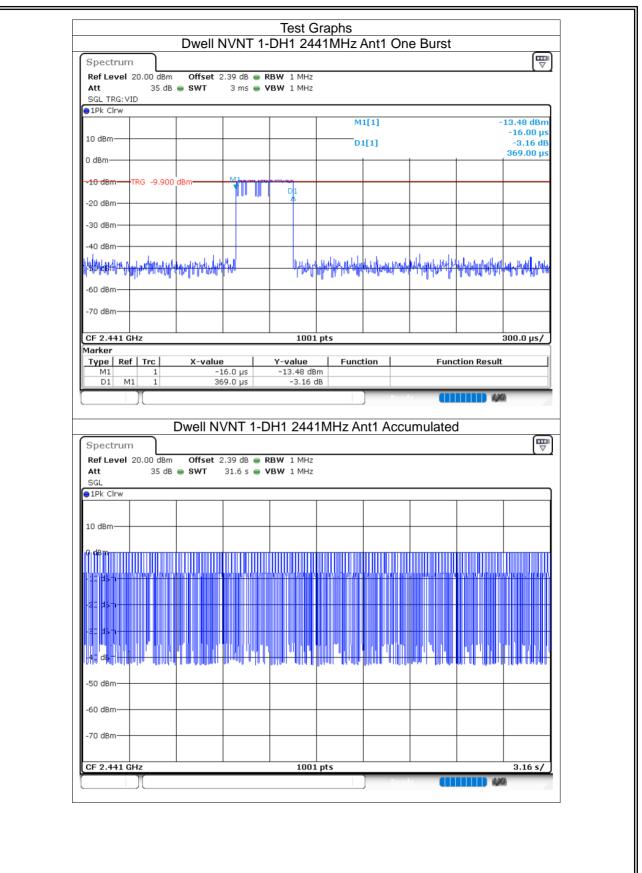


ilac-MR

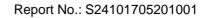
ACCREDITED

Certificate #4298.01



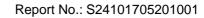






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-70 dBm								
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					Read	y di		
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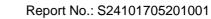
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Ref Level 2 Att SGL 1Pk Clrw	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz		nt1 Accu			
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Ref Level 2 Att SGL ● 1Pk Clrw 10 dBm - 10 dBm	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz					
Ref Level 2 Att SGL IPk Clrw 10 dBm 0 dBm	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz					
Ref Level 2 Att SGL ● 1Pk Clrw 10 dBm 	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz					
Ref Level 2 Att SGL ● 1Pk Clrw 10 dBm − 10 dBm − 10 dBm − 20 cBr − −	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz					
Ref Level 2 Att SGL ● 1Pk Clrw 10 dBm 0 dBm -10 dBm -20 cBr -20 cBr -20 cBr -20 cBr	20.00 dBm	Offset 2	2.39 dB 👄 R	BW 1 MHz					
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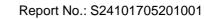
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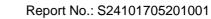
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	or de								
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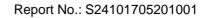
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Ref Level 20.00 C Att 35 SGL 10 ID dBm 0 0 dBm 0 -10 dEm 0 -20 dEm 0 -30 dEm 0 -30 dBm 0	IBm Offset 2 dB • SWT	2.39 dB • F 31.6 s • V	RBW 1 MHz /BW 1 MHz					
Ref Level 20.00 C Att 35 SGL 10 ID dBm 0 0 dBm 0 -10 dBm 0 -20 dBm 0 -31 dBm 0 -32 dBm 0 -34 dBm 0	IBm Offset 2 dB • SWT	2.39 dB • F 31.6 s • V	RBW 1 MHz /BW 1 MHz					
Ref Level 20.00 C Att 35 SGL 10 ID dBm 0 0 dBm 0 -10 dEm 0 -20 dEm 0 -30 dEm 0 -30 dBm 0	IBm Offset 2 dB • SWT	2.39 dB • F 31.6 s • V	RBW 1 MHz /BW 1 MHz					
Ref Level 20.00 C Att 35 SGL 10 ID dBm 0 0 dBm 0 -20 dBm 0 -30 dBm 0 -50 dBm 0	IBm Offset 2 dB • SWT	2.39 dB • F 31.6 s • V	RBW 1 MHz /BW 1 MHz					





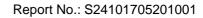
				M	1[1]			11.92 dBm
10 dBm				Di	L[1]			-133.00 μs -2.27 dB
0 dBm								378.00 µs
-10 dBm-TR	G -11.100 dB	m M1 And	Mulu 31					
-20 dBm		m <u> </u>	^					
-30 dBm								
-40 dBm								
And sub-	Wether Hard And And And And And And And And And An	haddler		honoppinity stilling	Milphylynyny	MH-HARA	Million all all a	Why water and
-60 dBm						1		
-70 dBm								
CF 2.441 GHz			1001	pts				300.0 µs/
Marker Type Ref		X-value	Y-value	·	tion	Func	tion Result	
M1 D1 M1	1	-133.0 µs 378.0 µs	-11.92 dP	im			cion no sun	
) Read	y M		1
	Dw	ell NVNT 3		1MH7 Δι	nt1 Acci	mulater		
Spectrum						innulated	•	
Ref Level 20		Offset 2.39 dB						(``)
Att SGL 1Pk Clrw	35 dB 😑 S	SWI 31.0 S I	● VBW 1 MHz					
UPK CIrw								
10 dBm								
0 dBm								
ממומרונים ערוארים	מנייומאי אאו בערמער	A PERCENTION AND A PARTY OF MANY AND A PARTY OF MAN	הייתו הרוא בורה היו איז הייתה או	ANTINOTION	IN PININ INDUN	THA MARMAN ANY IN	THE REPORT OF THE PARTY OF THE P	2799) (A HAR AND
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-22 :8 -23 :8, -43 :8(-,							A MANAMAN I JANA	
-20 c8 -23 c8 -45 ¢8 -50 dBm	1000 () (0.00)(0.00)						U MÜHMÜNN I TI'U I	
							A MANANA I JI O	
-60 dBm							nnninn i Lind	
							U DUULUUU A A A A A A A A A A A A A A A A A	
-60 dBm				pts			n n n n n n n n n n n n n n n n n n n	3.16 s/
-60 dBm				pts	Read	Y (





10 dBm M1[1] 0 dBm M1 0 dBm M1 -10 dBm TRG -10.700 dBm -20 dBm -10.700 dBm -30 dBm -10.700 dBm -40 dBm -10.700 dBm	-3.33 dBm 0.00000000 s 0.24 dB 1.63000 ms
0 dBm	
-10 dBm TRG -10.700 dBm	
-20 dBm	
-30 dBm	
-40 dBm	
	ultra trace to the la
-60 dBm	ana and the stand of the standard of the stand
-70 dBm	
CF 2.441 GHz 1001 pts	500.0 μs/
Marker _Type Ref Trc X-value Y-value Function Function	tesult
M1 1 0.0 s -3.33 dBm D1 M1 1 1.63 ms 0.24 dB	
Ready	1 4341
Dwell NVNT 3-DH3 2441MHz Ant1 Accumulated	
Spectrum	
Ref Level 20.00 dBm Offset 2.39 dB ● RBW 1 MHz ● Att 30 dB ● SWT 31.6 s ● VBW 3 MHz	
SGL	
1Pk Clrw	
10 dBm	
o dam	
O dBm	
o dBm	
O dBm	
0 dBm	
HC 68 m	
10 d8 m 10 d8 m -20 d8 m	
440 bb h	
Hdd blam Hdd b	3.16 s/





					M	1[1]			13.58 dBm
10 dBm						1[1]			-136.00 μs 3.13 dB
0 dBm								:	2.88000 ms
		at the supplicitude	hord and produced of	hadden and the 1					
-20 dBm	KG -10.900								
-30 dBm									
-40 dBm									
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					1000 1			<u> </u>	
-60 dBm									
-70 dBm									
CF 2.441 G	Hz			1001	l pts				800.0 µs/
Marker Type Ref		X-value		Y-value	Fund	tion	Fund	tion Result	:
M1 D1 M1	1 1 1		86.0 µs .88 ms	-13.58 dE 3.13					
)[]] Read	ly (II		
	Г) Well N	/NT 3-D	H5 244	1MHz Ai	nt1 Acci	umulated	1	
Spectrum								-	
									Ē
Ref Level	20.00 dBm		2.39 dB 👄 R						
	20.00 dBm	Offset 2 SWT	2.39 dB 👄 R 31.6 s 👄 V						
Ref Level 3 Att SGL	20.00 dBm								
Ref Level 2 Att SGL 1Pk Clrw	20.00 dBm								
Ref Level 2 Att SGL 1Pk Clrw	20.00 dBm								
Ref Level 2 Att SGL 1Pk Clrw	20.00 dBm								
Ref Level : Att SGL 1Pk Clrw 10 dBm	20.00 dBm								
Ref Level : Att SGL 1Pk Clrw 10 dBm	20.00 dBm								
Ref Level : Att SGL 1Pk Clrw 10 dBm	20.00 dBm								
Ref Level : Att SGL 1Pk Clrw 10 dBm	20.00 dBm								
Ref Level : Att SGL IPk Clrw 10 dBm 10 dBm -10 c 5 m -20 c 5 m	20.00 dBm 35 dB	• SWT		'BW 1 MHz					
Ref Level : Att SGL IPk Clrw 10 dBm 0.dBm -20.cSr -35.cSr	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					
Ref Level : Att SGL 1Pk Clrw 10 dBm 10 dBm -20 c3r -20 c3r -30 c3r -50 dBm	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					
Ref Level : Att SGL 1Pk Clrw 10 dBm 10 dBm 4.0 dBm 4.0 dBm 4.0 dBm 4.0 dBm 4.0 dBm 5.0 dBm -50 dBm	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					
Ref Level : Att SGL IPR CIrw 10 dBm 10 dBm -20 dBm -20 dBm -30 dBm -50 dBm	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					
Ref Level 3 Att SGL 1Pk Clrw 10 dBm 10 dBm 4.0 dBm 4.0 dBm 4.0 dBm 4.0 dBm 4.0 dBm 5.0 dBm -50 dBm	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					3.16 s/
Ref Level : Att SGL IPR Clrw 10 dBm dBm -20 dBm -20 dBm -50 dBm -60 dBm -70 dBm	20.00 dBm 35 dB	• SWT	31.6 5 • V	'BW 1 MHz					3.16 s/



8.2 MAXIMUM CONDUCTED OUTPUT POWER

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.05	21	Pass
NVNT	1-DH5	2441	Ant1	0.35	21	Pass
NVNT	1-DH5	2480	Ant1	0.11	21	Pass
NVNT	2-DH5	2402	Ant1	-0.6	21	Pass
NVNT	2-DH5	2441	Ant1	-0.29	21	Pass
NVNT	2-DH5	2480	Ant1	-0.59	21	Pass
NVNT	3-DH5	2402	Ant1	-0.23	21	Pass
NVNT	3-DH5	2441	Ant1	0.06	21	Pass
NVNT	3-DH5	2480	Ant1	-0.19	21	Pass

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Certificate #4298.01

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Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100			Mode Auto Sweep			
●1Pk Max			M1[1]			0.05 dBm
10 dBm				+ +	2.401	96500 GHz
		мі				
0 dBm		<u> </u>				
-10 dBm					/	
-20 dBm						/
-30 dBm						
-40 dBm						
-50 dBm						
co dou						
-60 dBm						
-70 dBm						
					0	n 5.0 MHz
CE 2.402 GHz						
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW	set 2.39 dB 👄 RB	BW 2 MHz	H5 2441MHz An Mode Auto Sweep	dy (111) ht1		
Spectrum Ref Level 20.00 dBm Off	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz	H5 2441MHz Al	tr ti		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 P1Pk Max	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz	H5 2441MHz A	nt1		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	H5 2441MHz Al	• • • • • • • • • • • • • • • • • • •		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 P1Pk Max	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	ht1		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 P1Pk Max 10 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	•• •••••••••••••••••••••••••••••••••••		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 • IPk Max 10 dBm -10 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	htt		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL SGL SW SGL Count 100/100 ID	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	htt		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 ● 1Pk Max 10 dBm 0 dBm -10 dBm -10 dBm -10 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	htt		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 ● 1Pk Max 10 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	** •••••••••••••••••••••••••••••••••••		
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 9 1Pk Max 10 dBm 0 0 -10 dBm - - -30 dBm -30 dBm -	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	•• •••••••••••••••••••••••••••••••••••		
Spectrum Ref Level 20.00 dBm Off Att 35 dB Sw SGL Count 100/100 91Pk Max 91Pk Max 10 dBm 0 0 -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm -50 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	** •••••••••••••••••••••••••••••••••••		
Spectrum Ref Level 20.00 dBm Off Att 35 dB Sw SGL Count 100/100 9 1Pk Max 10 dBm 0 0 -10 dBm -20 dBm -30 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	** •••••••••••••••••••••••••••••••••••		
Spectrum Ref Level 20.00 dBm Off Att 35 dB Sw SGL Count 100/100 91Pk Max 10 dBm 10 dBm 0 dBm -0 dBm -0 dBm -0 dBm -0 dBm -20 dBm -30 dBm -30 dBm -30 dBm -10 dBm -10 dBm	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	ht1		
Spectrum Ref Level 20.00 dBm Off Att 35 dB Sw SGL Count 100/100 91Pk Max 91Pk Max 10 dBm 0 0 -10 dBm - - -20 dBm - - -30 dBm - - -50 dBm - -	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	H5 2441MHz Ai Mode Auto Sweep	** •••••••••••••••••••••••••••••••••••	2.441	
Spectrum Ref Level 20.00 dBm Off Att 35 dB SW SGL Count 100/100 1Pk Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -60 dB	set 2.39 dB 👄 RB	/NT 1-DF BW 2 MHz BW 2 MHz	Mode Auto Sweep	** •••••••••••••••••••••••••••••••••••		

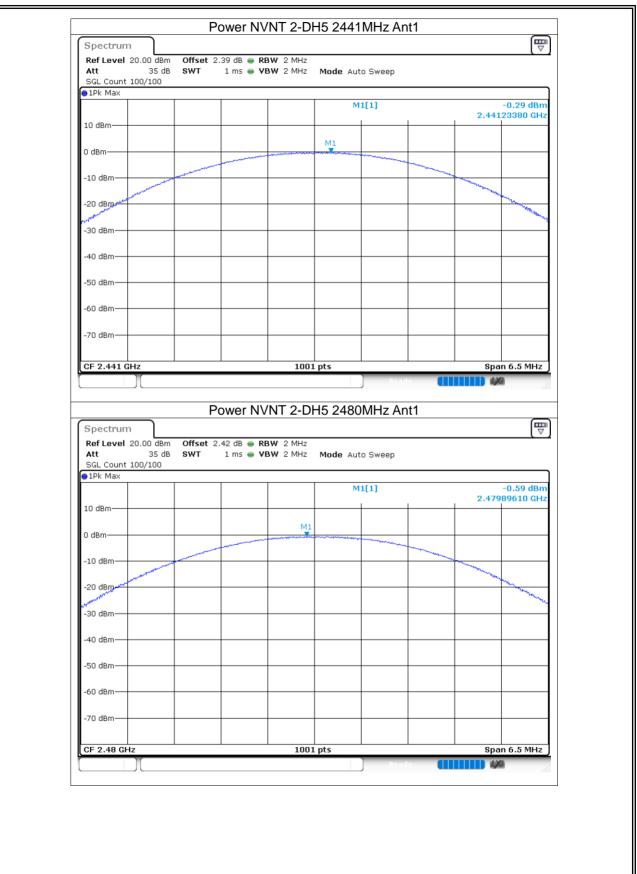




Att 35 dE SGL Count 100/100 9 1Pk Max	SWT	i ms 🖶 VE	BW 2 MHz	Mode Aut	to Sweep			
				м	1[1]		0.472	0.11 dBm
10 dBm						+	2.479	96000 GHz
0 dBm			MI					
-10 dBm								
-20 dBm								
-30 dBm								
-40 dBm								
-50 dBm								
-60 dBm								
-70 dBm								
CF 2.48 GHz			1001	pts			Spa	n 5.0 MHz
Ref Level 20.00 dBm Att 35 dE	Offset 2.3	38 dB 👄 RE	/NT 2-DF BW 2 MHz BW 2 MHz			nt1		 ₹
Ref Level 20.00 dBm Att 35 dB SGL Count 100/100	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1		
Att 35 dE SGL Count 100/100 1Pk Max	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut		nt1	2.402	-0.60 dBm 211690 GHz
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 1Pk Max 10 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	<u>ht1</u>	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE 35 dE SGL Count 100/100 1Pk Max 35 dE	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 1Pk Max 10 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep		2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm 0 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep		2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm 10 dBm -0 dBm -0 dBm -20 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 0 dBm -0 0 -10 dBm -0 -0 -20 dBm -0 -0 -30 dBm -40 dBm -0	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm 10 dBm -0 dBm -0 dBm -10 dBm -0 dBm -0 dBm -30 dBm -30 dBm -0 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 0 dBm -0 0 -10 dBm -0 -0 -20 dBm -0 -0 -30 dBm -40 dBm -0	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1	2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm 0 -10 dBm -0 -20 dBm -0 -30 dBm -0 -50 dBm -50 dBm	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep		2.402	-0.60 dBm
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 dBm - -10 dBm - -20 dBm - -30 dBm - -40 dBm - -50 dBm - -70 dBm -	Offset 2.3	38 dB 👄 RE	BW 2 MHz BW 2 MHz	Mode Aut	to Sweep	nt1		-0.60 dBm 11690 GHz
Ref Level 20.00 dBm Att 35 dE SGL Count 100/100 IPk Max 10 dBm 0 0 dBm -0 0 dBm -10 dBm -0 -0 -20 dBm -0 -0 -30 dBm -0 -0 -60 dBm -60 dBm -0	Offset 2.3	38 dB 👄 RE	BW 2 MHz	Mode Aut	to Sweep	nt1		-0.60 dBm 11690 GHz

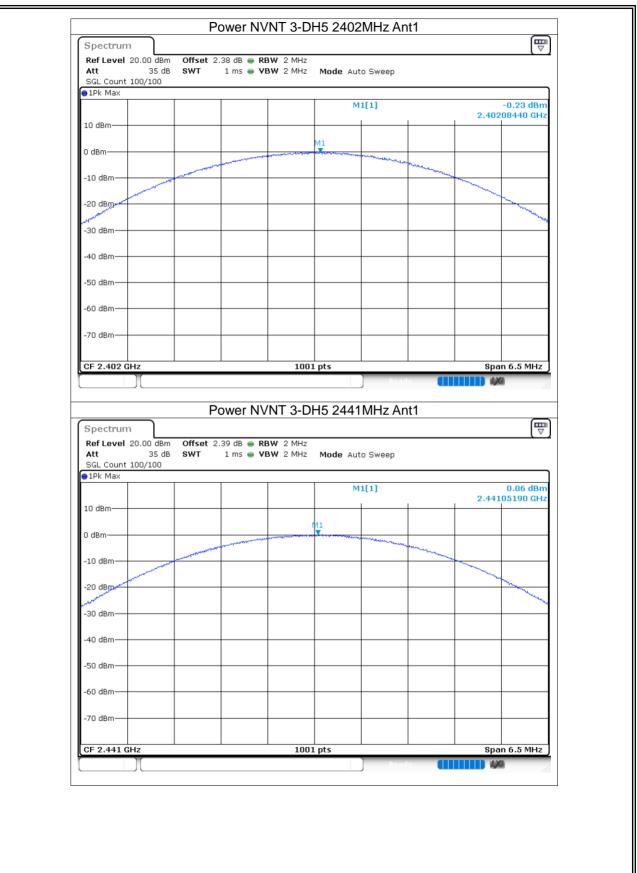
















-0.19 dBm
000650 GHz
and and a



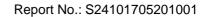


8.3 -20DB BANDWIDTH

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.942	Pass
NVNT	1-DH5	2441	Ant1	0.936	Pass
NVNT	1-DH5	2480	Ant1	0.93	Pass
NVNT	2-DH5	2402	Ant1	1.33	Pass
NVNT	2-DH5	2441	Ant1	1.34	Pass
NVNT	2-DH5	2480	Ant1	1.336	Pass
NVNT	3-DH5	2402	Ant1	1.306	Pass
NVNT	3-DH5	2441	Ant1	1.308	Pass
NVNT	3-DH5	2480	Ant1	1.299	Pass



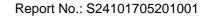
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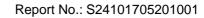
Spectrum	011 1 5				
	Offset 2.39 dB ● SWT 63.3 µs ●		Mode Auto FFT		
SGL Count 100/100					
●1Pk Max	<u> </u>		M1[1]		-8.32 dBm
10 dBm			milil	2	.44120180 GHz
			M2[1]	2	-28.32 dBm 44036600 GHz
0 dBm			M1		
-10 dBm		track	\sim		
-20 dBm					
-30 dBm					
-40 dBm					
-50.dBm					- A
-60 dBm					
-70 dBm					
CF 2.441 GHz		1001 pt	ts		Span 2.0 MHz
Marker Type Ref Trc	X-value	Y-value	Function	Function Re	sult
M1 1 M2 1	2.4412018 GHz 2.440366 GHz	-8.32 dBm -28.32 dBm			
1712 1		20.52 0011			
M3 1	2.441706 GHz	-27.99 dBm]
M3 1	2.441706 GHz	-27.99 dBm		eady (111111)	4,40
M3 1	· · · · · · · · · · · · · · · · · · ·		R	eady (111111)	14,451
M3 1	2.441706 GHz		2-DH5 2480	MHz Ant1	
Spectrum	-20dB Bandwi	idth NVNT 2	2-DH5 2480	MHz Ant1	
Spectrum Ref Level 20.00 dBm	-20dB Bandwi	idth NVNT 2 RBW 30 kHz		MHz Ant1	
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100	-20dB Bandwi	idth NVNT 2 RBW 30 kHz		MHz Ant1	
Spectrum Ref Level 20.00 dBm Att 35 dB	-20dB Bandwi	idth NVNT 2 RBW 30 kHz	Mode Auto FFT	MHz Ant1	
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100	-20dB Bandwi	idth NVNT 2 RBW 30 kHz	Mode Auto FFT		-8.61 dBm 48002000 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 P1Pk Max 10 dBm	-20dB Bandwi	idth NVNT 2 RBW 30 kHz	Mode Auto FFT	2	-8.61 dBm
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 Ith Max 10 dBm 0 dBm	-20dB Bandwi	idth NVNT 2 RBW 30 kHz	Mode Auto FFT M1[1] M2[1]	2	-8.61 dBm .48002000 GHz -28.21 dBm
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 P1Pk Max 10 dBm	-20dB Bandwi	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2	-8.61 dBm .48002000 GHz -28.21 dBm
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 1Pk Max 10 dBm -10 dBm -20 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 PIPk Max 10 dBm -10 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 PIPk Max 10 dBm -10 dBm -20 dBm -30 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 INF Max 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 PIPk Max 10 dBm -10 dBm -20 dBm -30 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 INF Max 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 ● 1Pk Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -59-dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 INF Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -60 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1] M2[1]	2 2 2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 IPk Max 10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -60 dBm -70 dBm -70 dBm -70 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz	Mode Auto FFT M1[1]M2[1]	2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 IN Max 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm -60 dBm -70 dBm	-20dB Bandwi offset 2.42 dB ● swT 63.3 µs ●	idth NVNT 2 RBW 30 kHz VBW 100 kHz M1	Mode Auto FFT M1[1]M2[1]	2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 IPk Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm -70 dBm CF 2.48 GHz Marker Type Ref M1 1	-20dB Bandwi Offset 2.42 dB • SWT 63.3 µs •	idth NVNT 2 RBW 30 kHz VBW 100 kHz 100 kHz 100 kHz 100 kHz 100 kHz 100 kHz 100 kHz 100 kHz 100 kHz	Mode Auto FFT M1[1] M2[1] M2[1] ts	2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz
Spectrum Ref Level 20.00 dBm Att 35 dB SGL Count 100/100 INK Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm	-20dB Bandwi Offset 2.42 dB • SWT 63.3 µs •	idth NVNT 2 RBW 30 kHz VBW 100 kHz ////////////////////////////////////	Mode Auto FFT M1[1] M2[1] M2[1] ts	2	-8.61 dBm 48002000 GHz -28.21 dBm 47936800 GHz





Spectrum							
Ref Level 20.00 Att 3	dBm Offset 2.3 5 dB SWT 63		30 kHz	Mode Auto CC	т		
SGL Count 100/10). 5 µS 👅 ¥E	3W 100 KH2	MOUE AUTO FF	1		
●1Pk Max							
				M1[1]			-6.34 dBm 19780 GHz
10 dBm				M2[1]		-2	26.22 dBm
0 dBm				M1		2.4013	38600 GHz
-10 dBm				<u>~~</u>			
-20 dBm		$\sim\sim$		\vee $ $ \sim	$\sim 1 \sim$	h.	
-20 0811	M2~~/					M3	
-30 dBm							
-40 dBm	/						
-50-dBm	/					L	$\sim \sim$
~~~							$\sim$
-60 dBm							
-70 dBm							
CF 2.402 GHz			1001 m				2.0 MHz
GF 2.402 GH2 Marker			1001 p			span	1 2.0 MHZ
Type   Ref   Trc			Y-value	Function	Fund	ction Result	
M1 1 M2 1			-6.34 dBm -26.22 dBm				
M3 1	. 2.40269	92 GHz	-26.06 dBm				
Spectrum				3-DH5 244	Poety 111		
Ref Level 20.00	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	<b>3W</b> 30 kHz				
Ref Level 20.00 Att 3	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	<b>3W</b> 30 kHz	Mode Auto FF			
Ref Level 20.00 Att 3 SGL Count 100/10 PIPK Max	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	<b>3W</b> 30 kHz				€6.46 dBm 14400 GHz
Ref Level         20.00           Att         3           SGL Count         100/10	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	<b>3W</b> 30 kHz	Mode Auto FF		2.4410 -2	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level 20.00 Att 3 SGL Count 100/10 1Pk Max	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2	-6.46 dBm 04400 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           IPk Max         10           IO dBm         10	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL         Count         100/10           ● 1Pk Max         10         dBm           10 dBm         -10 dBm         -10	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL Count         100/10           1Pk Max         10           10 dBm         0           -10 dBm	dBm Offset 2.3 5 dB SWT 63	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL         Count         100/10           1Pk Max         10         dBm           0         dBm         -10	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL         Count         100/10           1Pk Max         10           10 dBm         0           -10 dBm         -0           -20 dBm         -20	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL Count         100/10           1Pk Max         10           10 dBm	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm )4400 GHz 26.17 dBm
Ref Level         20.00           Att         3           SGL Count         100/10           ● 1Pk Max         10           10 dBm         0           0 dBm         -10           -10 dBm         -20           -20 dBm         -30 dBm           -40 dBm         -40 dBm	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           • 1Pk Max         10           0 dBm         -           -10 dBm         -           -20 dBm         -           -30 dBm         -           -40 dBm         -           -60 dBm         -	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL         20.01           ● 1Pk Max         10           ● 1Pk Max         10           0 dBm         -0           -10 dBm         -0           -20 dBm	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           • 1Pk Max         10           10 dBm         0           -10 dBm         -0           -20 dBm         -0           -30 dBm         -0           -40 dBm         -0           -50/dBm         -0           -70 dBm         -0	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	BW 30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           IPk Max         10           0 dBm         0           -10 dBm         -           -20 dBm         -           -30 dBm         -           -40 dBm         -           -50 dBm         -           -60 dBm         -           -70 dBm         -           CF 2.441 GHz         Marker	dBm Offset 2.3 5 dB SWT 63 00	39 dB 👄 RE	30 kHz BW 100 kHz	Mode Auto FF		2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           ● 1Pk Max         10           10 dBm         0           0 dBm         -           -10 dBm         -           -20 dBm         -           -30 dBm         -           -40 dBm         -           -50 dBm         -           -70 dBm         -           CF 2.441 GHz         Marker           Type         Ref         Trc	dBm Offset 2.3 5 dB SWT 63 00	39 dB • Re 3.3 µs • Ve	30 kHz BW 100 kHz M M M M M M M M M M M M M M M M M M M	Mode Auto FF	T	2.4410 -2 2.4403	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           ● 1Pk Max         100           10 dBm         0           0 dBm         -00           -10 dBm         -00           -20 dBm         -00           -30 dBm         -00           -40 dBm         -00           -70	dBm Offset 2.3 5 dB SWT 63 00 May May May May May May May May May May	39 dB • Re 3.3 μs • VE	BW 30 kHz BW 100 kHz M M M M M M M M M M M M M M M M M M M	Mode Auto FF ⁻ M1[1] M2[1] 1 M2[1] 1 M2[1] 1 M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1	T	2.4410 -2 2.4403 M3 Span	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz
Ref Level         20.00           Att         3           SGL Count         100/10           • IPk Max         100           10 dBm         -           0 dBm         -           -10 dBm         -           -20 dBm         -           -30 dBm         -           -40 dBm         -           -50 dBm         -           -60 dBm         -           -70 dBm         -           CF 2.441 GHz         Marker           Type         Ref         Tro	dBm Offset 2.3 5 dB SWT 63 00 May May May May May May May May May May	39 dB • Re 3.3 μs • VE	BW 30 kHz BW 100 kHz M M M M M M M M M M M M M M M M M M M	Mode Auto FF ⁻ M1[1] M2[1] 1 M2[1] 1 M2[1] 1 M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1	T	2.4410 -2 2.4403 M3 Span	-6.46 dBm 14400 GHz 26.17 dBm 18600 GHz





Spectrum Ref Level 20.00 d	IBm Offset 2.42 dB 👄	RBW 30 kHz				
	dB SWT 63.2 µs 👄	<b>VBW</b> 100 kHz r	Mode Auto FFT			
SGL Count 100/100 1Pk Max	J					
TEK Max			M1[1]			-6.51 dBm
			with		2,480	19780 GHz
.0 dBm			M2[1]			25.58 dBm
I dBm					2.479	39100 GHz
ubiii			M1			
10 dBm		-	$\sim A + \dots$			
		$\gamma \sim \gamma \sim 0$	" home			
20 dBm	M			Ma Ma		
	, j [™]			T Y		
30 dBm				+		
10 10						
40 dBm						
50 dBm						~
and the second s	www.				www	m
50 dBm						
70 dBm						
F 2.48 GHz		1001 pt:	5		Spa	n 3.0 MHz
arker		•				
Type   Ref   Trc	X-value	Y-value	Function	Fund	tion Result	
M1 1	2.4801978 GHz	-6.51 dBm				
M2 1	2.479391 GHz	-25.58 dBm				
M3 1	2.48069 GHz	-26.28 dBm				

# NTEK 北测[®]



## 8.4 OCCUPIED CHANNEL BANDWIDTH

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH5	2402	Ant1	0.829
NVNT	1-DH5	2441	Ant1	0.845
NVNT	1-DH5	2480	Ant1	0.859
NVNT	2-DH5	2402	Ant1	1.193
NVNT	2-DH5	2441	Ant1	1.197
NVNT	2-DH5	2480	Ant1	1.199
NVNT	3-DH5	2402	Ant1	1.183
NVNT	3-DH5	2441	Ant1	1.187
NVNT	3-DH5	2480	Ant1	1.193

ACCRED

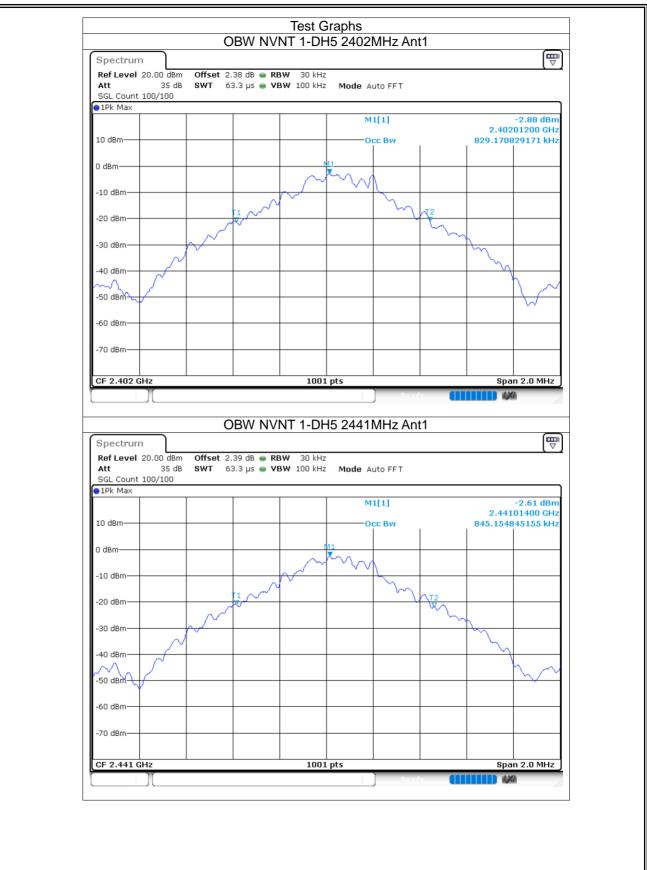
Certificate #4298.01

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ilac-MR

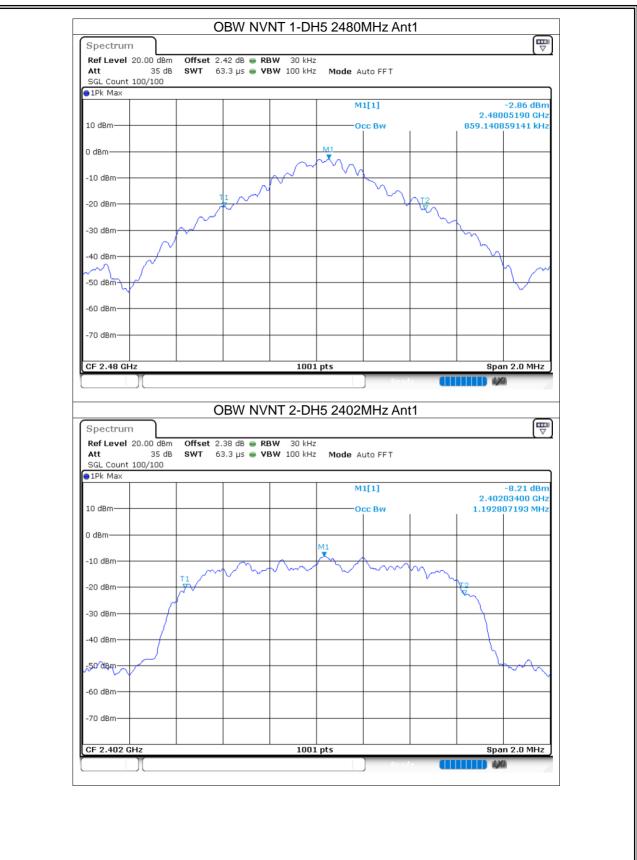






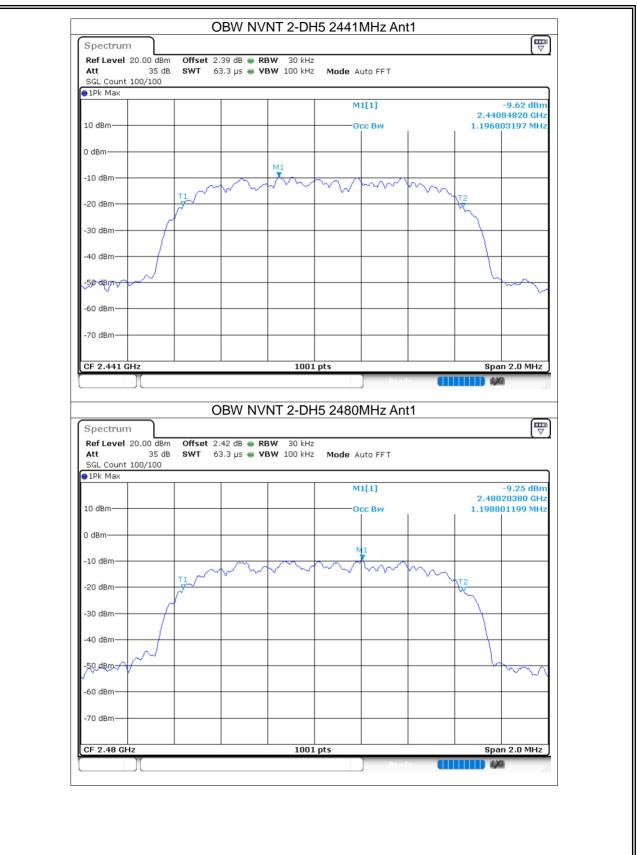






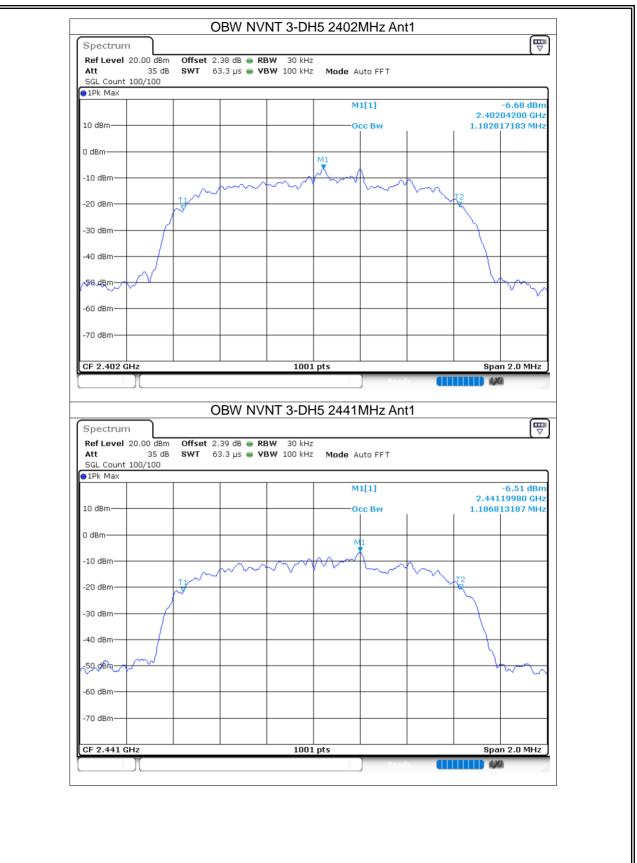






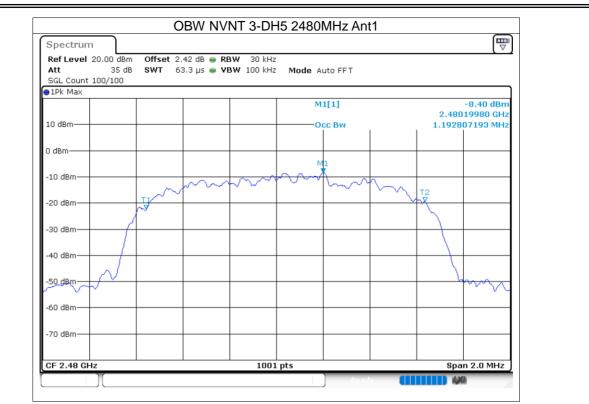














## 8.5 CARRIER FREQUENCIES SEPARATION

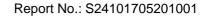
0.5 CARRIER	FREQUEN	ICIES SEPAR	ATION				
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.012	2403.012	1	0.628	Pass
NVNT	1-DH5	Ant1	2441.05	2442.05	1	0.624	Pass
NVNT	1-DH5	Ant1	2479.014	2480.014	1	0.62	Pass
NVNT	2-DH5	Ant1	2402.046	2403.046	1	0.887	Pass
NVNT	2-DH5	Ant1	2441.04	2442.018	0.978	0.893	Pass
NVNT	2-DH5	Ant1	2479.048	2480.048	1	0.891	Pass
NVNT	3-DH5	Ant1	2402.198	2403.198	1	0.871	Pass
NVNT	3-DH5	Ant1	2441.044	2442.028	0.984	0.872	Pass
NVNT	3-DH5	Ant1	2479.198	2480.2	1.002	0.866	Pass

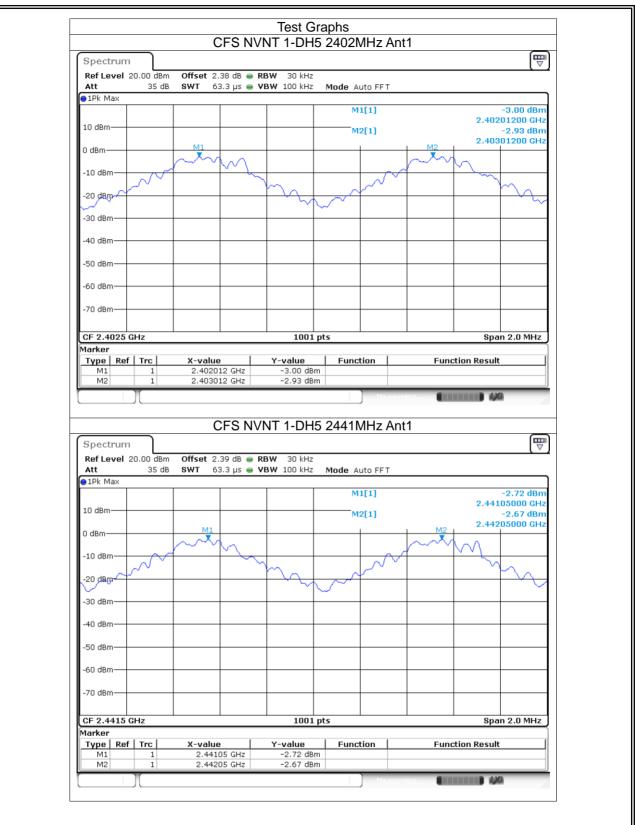
ACCREDITED Certificate #4298.01

ilac-MR/



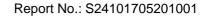
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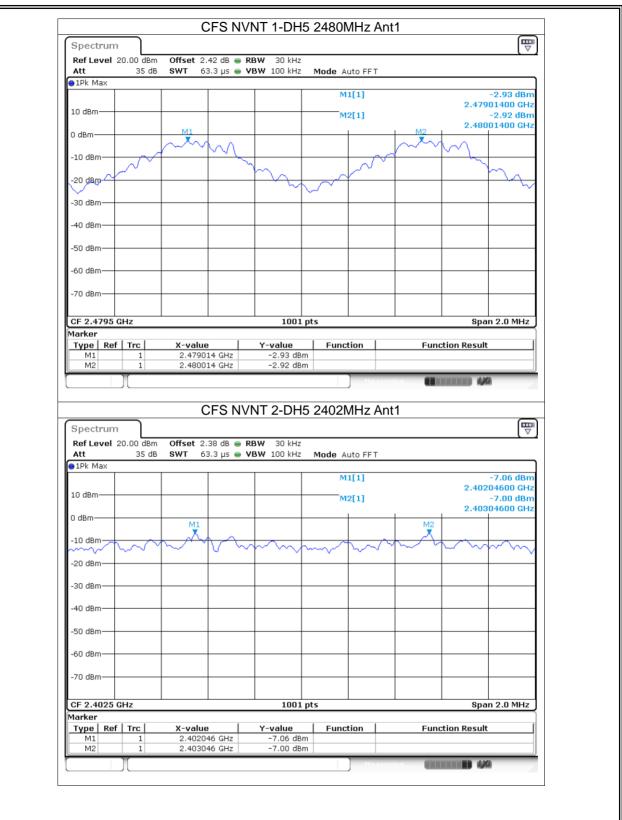






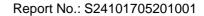
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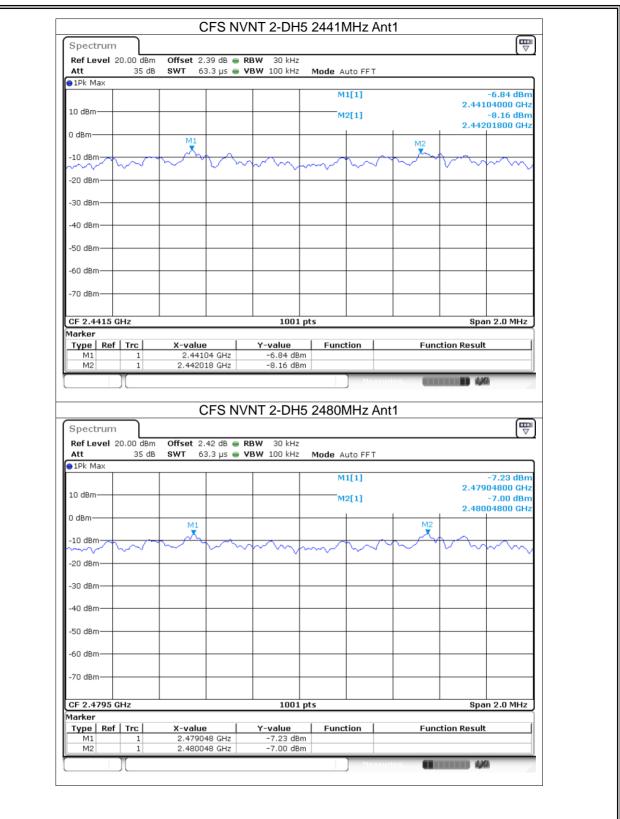






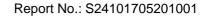
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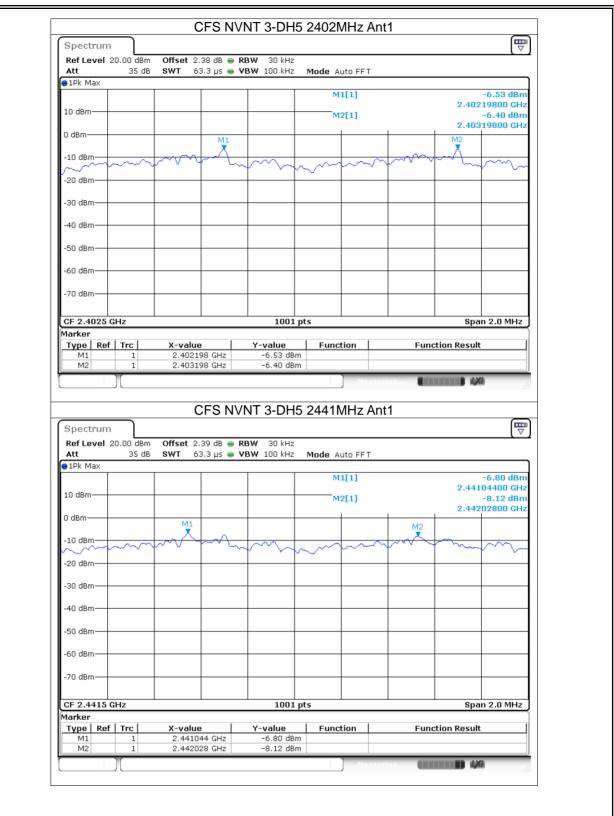






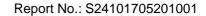
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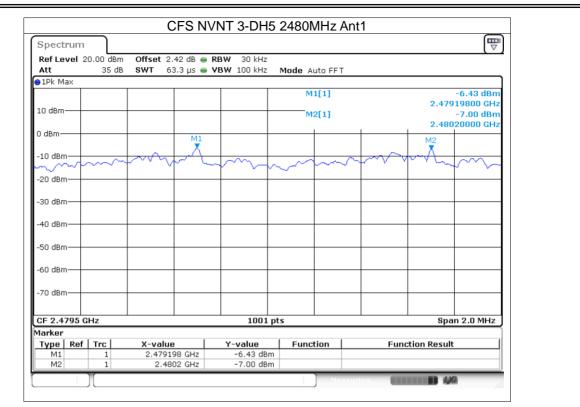






ACCREDITED









#### 8.6 NUMBER OF HOPPING CHANNEL

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	Condition	Mode	Antenna	Hopping Number	Limit	Verdict
	NVNT	1-DH5	Ant1	79	15	Pass
	NVNT	2-DH5	Ant1	79	15	Pass
	NVNT	3-DH5	Ant1	79	15	Pass





	Ηορρί	ina No.	Test G NVNT 1	iraphs -DH5 24	02MH	z Ant1		
Spectrum					1			
			BW 100 kHz BW 300 kHz		to Sweep			
●1Pk Max				M1	[1]			-1.20 dBn
10 dBm					(1)		2.40	20040 GH: -2.27 dBn
					1.41	1	2.48	02435 GH
E TATA MANA	ADANATATAA	NAMANA	INANANAN	AAAAAAAAAA	ABABAN	JAANANAN	haalaala	MAAAAT
	A A A A A A A A A A A A A A A A A A A	NYWW	UVYVYVY	WWWW	1111111	VYNYVN		
-20 dBm				010				
-30 dBm								
-40 dBm								
50 dBm								
-60 dBm								***
-70 dBm								
Start 2.4 GHz			1001	pts		1	Stop 2	.4835 GHz
Marker Type Ref Trc			Y-value	Funct	ion	Fun	ction Result	:
M1 1 M2 1			-1.20 dB -2.27 dB					
					Measu	ring		7
	Honni				Меаки ОЗМН	ring	44	
Spectrum	Норрі	ing No.	NVNT 2	-DH5 24	02MH	ring z Ant1		
Spectrum Ref Level 20.00	dBm Offset 2.3	8 dB 😑 RE	<b>BW</b> 100 kHz					
Ref Level 20.00	dBm Offset 2.3	8 dB 😑 RE						¶ (₩ ⊽
Ref Level 20.00 Att 3	dBm Offset 2.3	8 dB 😑 RE	<b>BW</b> 100 kHz	<b>Mode</b> Au			2.40	-7.00 dBn
Ref Level 20.00 Att 3	dBm Offset 2.3	8 dB 😑 RE	<b>BW</b> 100 kHz	Mode Au	to Sweep			-7.00 dBn 17535 GH: -7.59 dBn
Ref Level         20.00           Att         3:           IPk Max         10 dBm           0 dBm         0 dBm	dBm Offset 2.3 5 dB SWT	8 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           IPk Max         10 dBm           0 dBm         0 dBm	dBm Offset 2.3 5 dB SWT	8 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           IPk Max         10 dBm           0 dBm         0 dBm	dBm Offset 2.3 5 dB SWT	8 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           IPk Max         3:           IO dBm         0           M1         3:           IO dBm         10           Att         3:           IO dBm         10           3:         3:           IO dBm         3:           Att         3:           IO dBm         10           IO dBm         10           -20 dBm         -20	dBm Offset 2.3 5 dB SWT	8 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           IDk Max         10           0 dBm         0           M1         -10           -20 dBm         -20 dBm	dBm Offset 2.3 5 dB SWT	8 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level 20.00           Att         3:           ● 1Pk Max           10 dBm           0 dBm           -10 dBm           -20 dBm           -30 dBm           -40 dBm	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           IDk Max         10           0 dBm         0           M1         -10           -20 dBm         -20 dBm	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level 20.00           Att         3:           ● 1Pk Max           10 dBm           0 dBm           -10 dBm           -20 dBm           -30 dBm           -40 dBm	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level 20.00           Att         3:           ● 1Pk Max           10 dBm           0 dBm           -10 dBm           -20 dBm           -80 dBm           -90 dBm           -50 dBm           -50 dBm	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level         20.00           Att         3:           ● 1Pk Max         10           10 dBm         0           0 dBm         0           -10 dBm         -           -20 dBm         -           -30 dBm         -           -50 dBm         -           -50 dBm         -           -70 dBm         -	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 17535 GH: -7.59 dBn 04105 GH: M2 M2 M4 M4 M4 M4 M4 M4 M4 M4 M4 M4 M4 M4 M4
Ref Level         20.00           Att         3:           ● 1Pk Max         10           10 dBm         0           0 dBm         0           -10 dBm         -           -20 dBm         -           -30 dBm         -           -40 dBm         -           -50 dBm         -           -60 dBm         -	dBm Offset 2.3 5 dB SWT	38 dB 🖷 RE 1 ms 🖶 VI	BW 100 kHz BW 300 kHz	Mode Au M1 M2	to Sweep [1] 2[1]		2.48	-7.00 dBn 117535 GH; -7.59 dBn 04105 GH;
Ref Level 20.00           Att         3:           1Pk Max         10 dBm           0 dBm         -           -10 dBm         -           -20 dBm         -           -80 dBm         -           -50 dBm         -           -60 dBm         -           -70 dBm         -           -80 dBm         -           -90 dBm         -           -90 dBm         -           -90 dBm         -           -70 dBm         -           -70 dBm         -	dBm Offset 2.3 5 dB SWT	BB dB <b>PRE</b> 1 ms <b>VI</b>	BW 100 kHz BW 300 kHz	Mode Au M1 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2	to Sweep [1] [1] ///////////////////////////////		2.48	-7.00 dBn 17535 GH; -7.59 dBn 04105 GH; M2 H-M4 H-M4 H- H- H- H- H- H- H- H- H- H- H- H- H-
Ref Level         20.00           Att         3:           ● 1Pk Max         3:           10 dBm         0           0 dBm         0           -10 dBm         0           -20 dBm         0           -30 dBm         0           -30 dBm         0           -60 dBm         0           -70 dBm         0           Start 2.4 GHz         0           Marker         10           Type         Ref	dBm Offset 2.3 5 dB SWT	SB dB P RE 1 ms VI	3W 100 kHz BW 300 kHz	Mode         Au           M1         M2           My         M4           M2         M2           M3         M2           M4         M4           M4         M4           M4         M4           M4         M4           M4         M4           M4         M4           M4	to Sweep [1] [1] ///////////////////////////////	Fun	2.48	-7.00 dBn 17535 GH: -7.59 dBn 04105 GH: -7.59 dBn 04105 GH: -4835 GHz