

RADIO TEST REPORT FCC ID: 2ABU6-DS116

Product: Electronic Shelf Label

Trade Mark:



Model No.: DS116 Family Model: DS116R, DS116Y, DS116Q Report No.: S23112201728001 Issue Date: Dec 07. 2023

Prepared for

Shenzhen Minew Technologies Co., Ltd.

3rd Floor, I Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China

Prepared by

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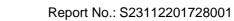




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ACCREDITED Certificate #4298.01

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1 TEST RESULT CERTIFICATION				
Applicant's name: Shenzhen Minew Technologies Co., Ltd.				
Address:	3rd Floor, I Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China			
Manufacturer's Name:	Shenzhen Minew Technologie	s Co., Ltd.		
Address:	Building 3, Instrument World Ir Guiyue Road, Longhua Distric	ndustrial Park, No. 306, Guanlan st, Shenzhen		
Product description				
Product name:	Electronic Shelf Label			
Model and/or type reference :	DS116			
Family Model	DS116R, DS116Y, DS116Q			
Test Sample Number:	S231122017028			
Date (s) of performance of tests.	Nov 22. 2023 ~ Dec 07. 2023			
Measurement Procedure Used:	L			
	APPLICABLE STANDARD	S		
APPLICABLE STANDAR		TEST RESULT		
FCC 47 CFR Pa	art 2, Subpart J			
FCC 47 CFR Par	rt 15, Subpart C			
KDB 174176 D01 Line (Conducted FAQ v01r01	Complied		
ANSI C63	.10-2013			
KDB 558074 D01 15.247	Meas Guidance v05r02			
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. This report shall not be reproduced except in full, without the written approval of Shenzhen NTEK Testing Technology Co., Ltd., this document may be altered or revised by Shenzhen NTEK Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document. The test results of this report relate only to the tested sample identified in this report.				
Prepared : Mary Hu Reviewed : Aawn Cheng Approved : Alex Li By Mary Hu By Aaron Cheng				
(Project Engineer)	(Supervisor)			



	FCC Part15 (15.247), Subpart	С	
Standard Section	Test Item	Verdict	Remark
15.207	Conducted Emission	N/A	1
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.209 (a) 15.205 (a)	Radiated Spurious Emission	PASS	
15.247 (e)	Power Spectral Density	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

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. 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).
	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location :	1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang
	Street, Bao'an District, Shenzhen 518126 P.R. 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	Occupied Bandwidth	±3.70dB



4 GENERAL DESCRIPTION OF EUT

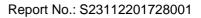
Product Feature and Specification				
Equipment Electronic Shelf Label				
Trade Mark				
FCC ID	2ABU6-DS116			
Model No.	DS116			
Family Model	DS116R, DS116Y, DS116Q			
Model Difference	All models have the same circuit and RF module, but the screen colors are different.			
Operating Frequency	2402MHz~2480MHz			
Modulation	GFSK			
Number of Channels	40 Channels			
Antenna Type	PCB Antenna			
Antenna Gain	3.7 dBi			
Adapter	N/A			
Power Supply	DC 3V from battery			
Hardware Version	N/A			
Software Version	N/A			

Note: 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
S23112201728001	Rev.01	Initial issue of report	Dec 07. 2023





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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.

Certificate #4298 01

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/2Mbps for GFSK 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	2404
19	2440
20	2442
38	2478
39	2480

Note: fc=2402MHz+kx2MHz k=0 to 39

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

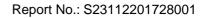
Test Cases			
Test Item Data Rate/ Modulation			
	Mode 1: normal link mode		
Radiated Test	Mode 2: Bluetooth Tx Ch00_2402MHz_1Mbps/2Mbps		
Cases	Mode 3: Bluetooth Tx Ch19_2440MHz_1Mbps/2Mbps		
	Mode 4: Bluetooth Tx Ch39_2480MHz_1Mbps/2Mbps		
Conducted Test	Mode 2: Bluetooth Tx Ch00_2402MHz_1Mbps/2Mbps		
Conducted Test	Mode 3: Bluetooth Tx Ch19_2440MHz_1Mbps/2Mbps		
Cases	Mode 4: Bluetooth Tx Ch39_2480MHz_1Mbps/2Mbps		

Note:

- 1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
- 2. AC power line Conducted Emission was tested under maximum output power.
- 3. For radiated test cases, the worst mode data rate 2Mbps 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.
- 4. EUT built-in battery-powered, the battery is fully-charged.



6 SETUP OF EQUIPMENT UNDER TEST	
6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM	
For Radiated Test Cases	
EUT	
For Conducted Test Cases	
C-1 Measurement	
Instrument EUT	
Noto:The temperary enterna connector is coldered on the PCP heard in order	to porform conducted
Note:The temporary antenna connector is soldered on the PCB board in order tests and this temporary antenna connector is listed in the equipment list.	to perform conducted





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.

ACCREDITED Certificate #4298.01

Item	Equipment	Model/Type No.	Series No.	Note
EUT	Electronic Shelf Label	DS116	N/A	

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	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

Radiation& Conducted Test equipment

		corequipment					
	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibrati on period
1	Spectrum Analyzer	Agilent	E4440A	MY41000130	2023.03.27	2024.03.26	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023.05.29	2024.05.28	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2023.05.29	2024.05.28	1 year
4	Test Receiver	R&S	ESPI7	101318	2023.03.27	2024.03.26	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.15	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
7	Horn Antenna	SCHWARZBE CK	BBHA 9120 D	2816	2023.01.12	2024.01.11	1 year
8	Broadband Horn Antenna	SCHWARZBE CK	BBHA 9170	803	2022.11.07	2025.11.06	3 year
9	Amplifier	EMC	EMC051835 SE	980246	2023.05.29	2024.05.28	1 year
10	Active Loop Antenna	SCHWARZBE CK	FMZB 1519 B	055	2023.11.03	2024.11.02	1 year
11	Power Meter	DARE	RPR3006W	15I00041SN 084	2023.05.29	2024.05.28	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2022.06.17	2025.06.16	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	2023.03.27	2026.03.26	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	2023.03.27	2024.03.26	1 year
2	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
3	LISN	SCHWARZB ECK	NNLK 8129	8129245	2023.03.27	2024.03.26	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2023.05.06	2026.05.05	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
7	Test Cable (9KHz-30MHz)	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.



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	

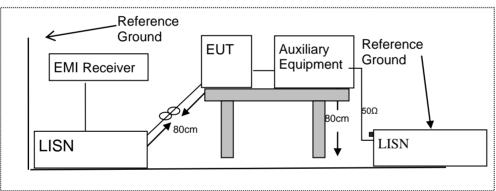
Note: 1. *Decreases with the logarithm of the frequency

- 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 Measuring Instruments

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

7.1.4 **Test Configuration**



7.1.5 **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.



7.1.6 Test Results

EUT:	Electronic Shelf Label	Model Name :	DS116	
Temperature:	22 °C	Relative Humidity:	57%	
Pressure:	1010hPa	Phase :	N/A	
Test Voltage :	N/A	Test Mode:	N/A	

Note: Not Applicable



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 FOC Farths.200, Restricted bands					
MHz	MHz	GHz			
16.42-16.423	399.9-410	4.5-5.15			
16.69475-16.69525	608-614	5.35-5.46			
16.80425-16.80475	960-1240	7.25-7.75			
25.5-25.67	1300-1427	8.025-8.5			
37.5-38.25	1435-1626.5	9.0-9.2			
73-74.6	1645.5-1646.5	9.3-9.5			
74.8-75.2	1660-1710	10.6-12.7			
123-138	2200-2300	14.47-14.5			
149.9-150.05	2310-2390	15.35-16.2			
156.52475-156.52525	2483.5-2500	17.7-21.4			
156.7-156.9	2690-2900	22.01-23.12			
162.0125-167.17	3260-3267	23.6-24.0			
167.72-173.2	3332-3339	31.2-31.8			
240-285	3345.8-3358	36.43-36.5			
322-335.4	3600-4400	(2)			
	MHz 16.42-16.423 16.69475-16.69525 16.80425-16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 123-138 149.9-150.05 156.52475-156.52525 156.7-156.9 162.0125-167.17 167.72-173.2 240-285	MHzMHz16.42-16.423399.9-41016.69475-16.69525608-61416.80425-16.80475960-124025.5-25.671300-142737.5-38.251435-1626.573-74.61645.5-1646.574.8-75.21660-1710123-1382200-2300149.9-150.052310-2390156.52475-156.525252483.5-2500156.7-156.92690-2900162.0125-167.173260-3267167.72-173.23332-3339240-2853345.8-3358			

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)

Frequency(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)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. 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.

7.2.3 **Measuring Instruments**

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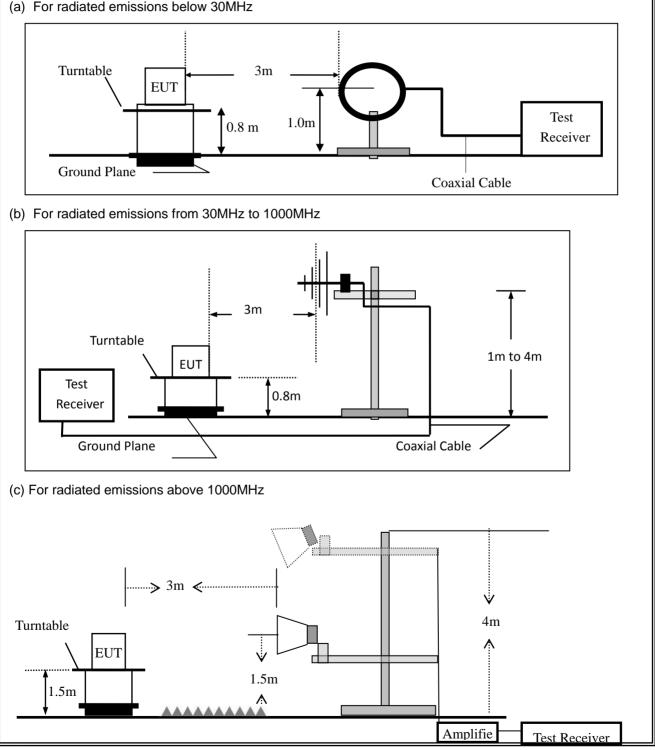
The Measuring equipment is listed in the section 6.3 of this test report.

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7.2.4 **Test Configuration**

(a) For radiated emissions below 30MHz





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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.

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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 / 1MHz 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



Du	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	
	Above 1000	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

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mary Hu

Freq.	Ant.Pol.	Emission L	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		r(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.



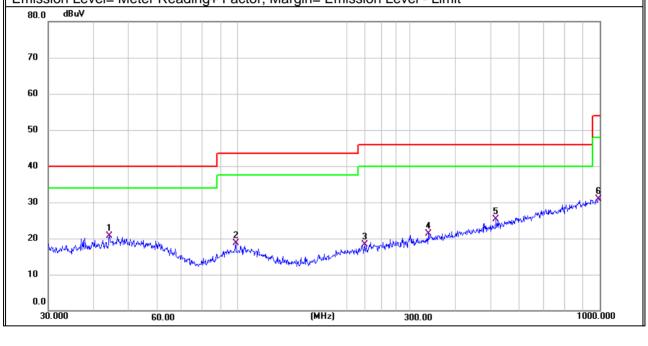
 Spurious Emission below 1GHz (30MHz to 1GHz) All the modulation modes have been tested, and the worst result was report as below:
 EUT: Electronic Shelf Label Model Name : DS116
 Temperature: 20 °C
 Relative Humidity: 48%

Temperature:	20 0	Relative Humbing:	4078
Pressure:	1010hPa	Test Mode:	BLE 2M CH39
Test Voltage :	DC 3V from Battery		

Polar	Frequency	Meter Reading	Factor Limits		Limits	Margin	Remark	
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		
V	44.2752	0.01	20.65	20.66	40.00	-19.34	QP	
V	98.8324	-0.12	18.73	18.61	43.50	-24.89	QP	
V	224.5192	-0.14	18.50	18.36	46.00	-27.64	QP	
V	336.0351	0.32	20.93	21.25	46.00	-24.75	QP	
V	517.2480	1.33	23.95	25.28	46.00	-20.72	QP	
V	993.0114	0.90	29.99	30.89	54.00	-23.11	QP	

Remark:

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





Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Remain
Н	50.9420	-0.43	21.06	20.63	40.00	-19.37	QP
Н	103.4421	-0.48	18.96	18.48	43.50	-25.02	QP
Н	189.0743	0.39	17.53	17.92	43.50	-25.58	QP
Н	541.3725	1.00	24.27	25.27	46.00	-20.73	QP
Н	696.8567	2.13	26.72	28.85	46.00	-17.15	QP
Н	925.7563	1.44	29.45	30.89	46.00	-15.11	QP
	n Level= Meter F dBu¥	Reading+ Fac	ctor, Margin=	= Emission Lev	vel - Limit		
70							
60							
50							
40							
30						5	North Contraction
20	14/10/10/10/10/10/10/10/10/10/10/10/10/10/	Why when when the	nother address to the second	3 San Kanghallan Markalan	werdente boder der son Afri	watereer.	
10							
0.0 30.00	D 60.			IHz)	300.00		1000.000



Spuriou	ıs Emi <u>s</u>	ssion	Above	1GHz (1G	Hz to 250	Hz)		_		
EUT:	1	Elect	ronic Sh	elf Label		Model No.	:	DS116		
Temperatur	e: 2	20 °C				Relative H	lumidity:	48%		
Test Mode:	1	Mode	e2/Mode	3/Mode4		Test By:		Mary Hu		
Frequenc		ead evel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Remark	Comment
(MHz)	(dB	βµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
				Low Cha	annel (240	2 MHz)(GFS	K)Above	1G		
4802.53	64	.27	5.21	35.59	44.30	60.77	74.00	-13.23	Pk	Vertical
4802.53	43	.21	5.21	35.59	44.30	39.71	54.00	-14.29	AV	Vertical
7206.12	60	.71	6.48	36.27	44.60	58.86	74.00	-15.14	Pk	Vertical
7206.12	43	.65	6.48	36.27	44.60	41.80	54.00	-12.20	AV	Vertical
4804.44	62	.54	5.21	35.55	44.30	59.00	74.00	-15.00	Pk	Horizontal
4804.44	43	.25	5.21	35.55	44.30	39.71	54.00	-14.29	AV	Horizontal
7206.64	61	.22	6.48	36.27	44.52	59.45	74.00	-14.55	Pk	Horizontal
7206.64	43	.14	6.48	36.27	44.52	41.37	54.00	-12.63	AV	Horizontal
	Mid Channel (2440 MHz)(GFSK)Above 1G									
4880.253	3 60	.76	5.21	35.66	44.20	57.43	74.00	-16.57	Pk	Vertical
4880.253	3 43	.48	5.21	35.66	44.20	40.15	54.00	-13.85	AV	Vertical
7320.595	5 64	.42	7.10	36.50	44.43	63.59	74.00	-10.41	Pk	Vertical
7320.595	5 43	.43	7.10	36.50	44.43	42.60	54.00	-11.40	AV	Vertical
4880.455	5 63	.51	5.21	35.66	44.20	60.18	74.00	-13.82	Pk	Horizontal
4880.455	5 43	.74	5.21	35.66	44.20	40.41	54.00	-13.59	AV	Horizontal
7320.182	2 62	.10	7.10	36.50	44.43	61.27	74.00	-12.73	Pk	Horizontal
7320.182	2 43	.32	7.10	36.50	44.43	42.49	54.00	-11.51	AV	Horizontal
				High Cha	annel (2480) MHz)(GFS	K) Above	1G		
4960.110) 62	.76	5.21	35.52	44.21	59.28	74.00	-14.72	Pk	Vertical
4960.110) 43	.87	5.21	35.52	44.21	40.39	54.00	-13.61	AV	Vertical
7440.769	9 63	.28	7.10	36.53	44.60	62.31	74.00	-11.69	Pk	Vertical
7440.769	9 43	.13	7.10	36.53	44.60	42.16	54.00	-11.84	AV	Vertical
4960.071	1 64	.59	5.21	35.52	44.21	61.11	74.00	-12.89	Pk	Horizontal
4960.071	1 43	.04	5.21	35.52	44.21	39.56	54.00	-14.44	AV	Horizontal
7440.933	3 64	.57	7.10	36.53	44.60	63.60	74.00	-10.40	Pk	Horizontal
7440.933	3 43	.69	7.10	36.53	44.60	42.72	54.00	-11.28	AV	Horizontal

Note:

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



	Spurious	Emissior	n in Resti	ricted Ban	d 2310-23	90MHz an	d 2483.5-25	500MHz		
E	UT:		Electron	ic Shelf La	ıbel	Model	No.:	DS116	;	
	emperature	:	20 °C			Relativ	e Humidity:	y: 48%		
	est Mode:		Mode2/	Mode4		Test B	Test By: Mary Hu			
								-		
	Frequency	Meter Reading	Cable Loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector	Comment
	(MHz)	(dBµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	
	2Mbps(GFSK)									
	2310.00	62.41	2.97	27.80	43.80	49.38	74	-24.62	Pk	Horizontal
	2310.00	39.48	2.97	27.80	43.80	26.45	54	-27.55	AV	Horizontal
	2310.00	63.84	2.97	27.80	43.80	50.81	74	-23.19	Pk	Vertical
	2310.00	43.81	2.97	27.80	43.80	30.78	54	-23.22	AV	Vertical
	2390.00	64.98	3.14	27.21	43.80	51.53	74	-22.47	Pk	Vertical
	2390.00	43.39	3.14	27.21	43.80	29.94	54	-24.06	AV	Vertical
	2390.00	62.12	3.14	27.21	43.80	48.67	74	-25.33	Pk	Horizontal
	2390.00	43.17	3.14	27.21	43.80	29.72	54	-24.28	AV	Horizontal
	2483.50	61.42	3.58	27.70	44.00	48.70	74	-25.30	Pk	Vertical
	2483.50	43.17	3.58	27.70	44.00	30.45	54	-23.55	AV	Vertical
	2483.50	64.66	3.58	27.70	44.00	51.94	74	-22.06	Pk	Horizontal
	2483.50	43.13	3.58	27.70	44.00	30.41	54	-23.59	AV	Horizontal

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



EUT:	F		tronic S	icted Banc helf Label		Model No.:	No.: DS116				
Temperature		20 °				Relative H		48%			
Test Mode:			le4		Test By:	arriarty.	Mary H	u			
Frequency	Readir Leve	-	Cable Loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector	Comment	
(MHz)	(dBµ∖	/)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре		
3260	61.19	9	4.04	29.57	44.70	50.10	74	-23.90	Pk	Vertical	
3260	43.46	6	4.04	29.57	44.70	32.37	54	-21.63	AV	Vertical	
3260	60.55	5	4.04	29.57	44.70	49.46	74	-24.54	Pk	Horizontal	
3260	43.59	9	4.04	29.57	44.70	32.50	54	-21.50	AV	Horizontal	
3332	64.79	9	4.26	29.87	44.40	54.52	74	-19.48	Pk	Vertical	
3332	43.05	5	4.26	29.87	44.40	32.78	54	-21.22	AV	Vertical	
3332	61.16	6	4.26	29.87	44.40	50.89	74	-23.11	Pk	Horizontal	
3332	43.00	0	4.26	29.87	44.40	32.73	54	-21.27	AV	Horizontal	
17797	48.98	В	10.99	43.95	43.50	60.42	74	-13.58	Pk	Vertical	
17797	34.96	6	10.99	43.95	43.50	46.40	54	-7.60	AV	Vertical	
17788	49.38	В	11.81	43.69	44.60	60.28	74	-13.72	Pk	Horizontal	
17788	34.21	1	11.81	43.69	44.60	45.11	54	-8.89	AV	Horizontal	

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

(2)Only the worst data is recorded in the report, the data rates (2Mbps for GFSK modulation) test result is the worst



7.3 6DB BANDWIDTH

7.3.1 Applicable Standard

According to FCC Part 15.247(a)(2) and KDB 558074 D01 15.247 Meas Guidance v05r02 Section 8.2.

7.3.2 **Conformance Limit**

The minimum permissible 6dB bandwidth is 500 kHz.

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 Subclause 11.8 of ANSI C63.10

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:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) \ge 3*RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3.6 Test Results

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mary Hu



7.4 DUTY CYCLE

7.4.1 Applicable Standard

According to KDB 558074 D01 15.247 Meas Guidance v05r02s Section 6.

7.4.2 Conformance Limit

No limit requirement.

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 zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW \geq OBW if possible; otherwise, set RBW to the largest available value. Set VBW \geq RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T \leq 16.7 microseconds.)

The transmitter output is connected to the Spectrum Analyzer. We tested accroding to the zero-span measurement method, 6.0)b) in KDB 558074

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if $T \le 6.25$ microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/T.

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 = Zero Span RBW = 8MHz(the largest available value) VBW = 8MHz (\geq RBW) Number of points in Sweep >100 Detector function = peak Trace = Clear write Measure T_{total} and T_{on} Calculate Duty Cycle = T_{on} / T_{total}



7.4.6 Test Results

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	N/A	Test By:	N/A

Note: Not Applicable



7.5 **PEAK OUTPUT POWER**

7.5.1 Applicable Standard

According to FCC Part 15.247(b)(3) and KDB 558074 D01 15.247 Meas Guidance v05r02 Section 8.3.1.

7.5.2 **Conformance Limit**

The maximum peak conducted output power of the intentional radiator for systems using digital modulation in the 2400 - 2483.5 MHz bands shall not exceed: 1 Watt (30dBm). If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

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 Subclause 11.9.1.1 of ANSI C63.10 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: Set the RBW \geq DTS bandwidth. Set VBW =3*RBW. Set the span \geq 3*RBW Set Sweep time = auto couple. Set Detector = peak. Set Trace mode = max hold. Allow trace to fully stabilize. Use peak marker function to determine the peak amplitude level.

7.5.6 Test Results

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mary Hu



7.6 **POWER SPECTRAL DENSITY**

7.6.1 Applicable Standard

According to FCC Part 15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02 Section 8.4.

7.6.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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 Measurement Procedure Subclause 11.10.2 of ANSI C63.10 This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

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.

a) Set analyzer center frequency to DTS channel center frequency.

b) Set the span to 1.5*DTS bandwidth.

c) Set the RBW to: $3 \text{ kHz} \le \text{RBW} \le 100 \text{ kHz}$.

- d) Set the VBW \geq 3 RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



7.6.6 Test Results

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mary Hu



7.7 CONDUCTED BAND EDGE MEASUREMENT

7.7.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 Section 8.7.

7.7.2 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.

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 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 Section 8.7.

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.

Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

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.

7.7.6 Test Results

EUT:	Electronic Shelf Label	Model No.:	DS116
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode4	Test By:	Mary Hu



7.8 SPURIOUS RF CONDUCTED EMISSIONS

7.8.1 Conformance Limit

Below -20dB of the highest emission level in operating band.
 Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

7.8.2 Measuring Instruments

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

7.8.3 Test Setup

Please refer to Section 6.1 of this test report.

7.8.4 **Test Procedure**

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBW= 300KHz to measure the peak field strength , and measure frequency range from 30MHz to 25GHz.

7.8.5 Test Results

Remark: The measurement frequency range is from 30MHz 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.



7.9 ANTENNA APPLICATION

7.9.1 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.

7.9.2 **Result**

The EUT antenna is permanent attached PCB Antenna (Gain: 3.7dBi). It comply with the standard requirement.

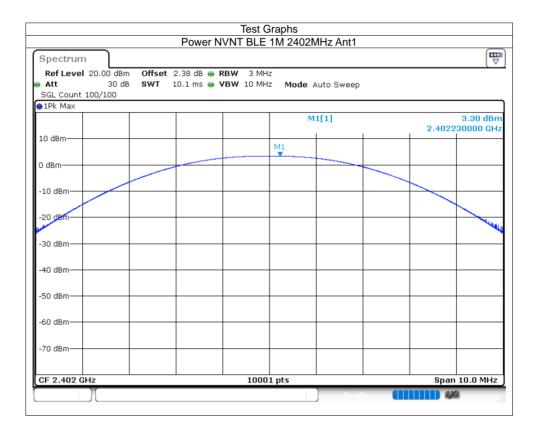


8 TEST RESULTS

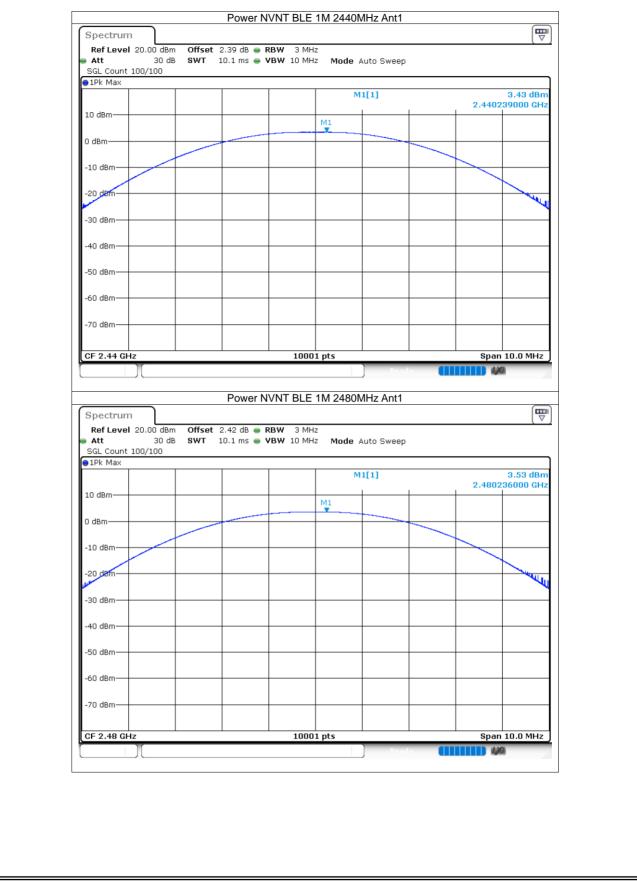
8.1 **1M**

8.1.1 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	3.3	30	Pass
NVNT	BLE 1M	2440	Ant1	3.43	30	Pass
NVNT	BLE 1M	2480	Ant1	3.53	30	Pass









8.1.2 -6dB	Bandwidth					
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.688	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.685	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.69	0.5	Pass
	Spectrum Ref Level 20.0			t Graphs JT BLE 1M 2402MHz Ant1		

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Ref Level Att	30 d		_	RBW 100 kHz VBW 300 kHz	Mode Auto FF	т			
SGL Count 2		0	2010 pp 🖕	1211 000 1412	Houe Autori				
1Pk Max									
					M1[1]		3.27 dBi		
10 dBm							2.402260170 GH		
				M2[1]			-2.73 dBn 2.401660000 GH		
) dBm			M2		$ \longrightarrow $	M3	2.40160	0000 GH	
10 dBm									
20 dBm									
20 0000									
30 dBm									
40 dBm		-							
-50 dBm									
-50 aBm									
-60 dBm									
-70 dBm									
CF 2.402 GH	lz		1	10001 p	ts		Span	2.0 MHz	
1arker									
Type Ref		X-valu		Y-value	Function	Fund	Function Result		
M1	1	2.40226017 GHz		3.27 dBm					
M2 1 M3 1		2.40166 GHz 2.402348 GHz		-2.73 dBm -2.74 dBm					
MU		2.4023		2.74 UBIII					



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1 ₽ Spectrum Ref Level 20.00 dBm Offset 2.39 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT SGL Count 300/300 1Pk Max M1[1] 3.39 dBn 2.440261770 GHz 10 dBm-M2[1] -2.61 dBm 2.439659000 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm· Span 2.0 MHz CF 2.44 GHz 10001 pts Marker Type | Ref | Trc X-value Y-value Function **Function Result** 2.44026177 GHz 3.39 dBm M1 1 М2 2.439659 GHz -2.61 dBm ΜЗ 1 2.440344 GHz -2.63 dBm LXI -6dB Bandwidth NVNT BLE 1M 2480MHz Ant1 ₽ Spectrum Ref Level 20.00 dBm Offset 2.42 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT SGL Count 300/300 ●1Pk Max M1[1] 3.27 dBm 2.480010600 GHz 10 dBm· M2[1] -2.75 dBm 2.479670000 GHz 0 dBm -10 dBm -20 dBm· -30 dBm -40 dBm -50 dBm -60 dBm· -70 dBm· Span 2.0 MHz CF 2.48 GHz 10001 pts Marker Type | Ref | Trc | Function Function Result X-value Y-value 2.4800106 GHz 3.27 dBm Μ1 1 М2 2.47967 GHz -2.75 dBm M3 1 2.48036 GHz -2.74 dBm

Span 1.032 MHz

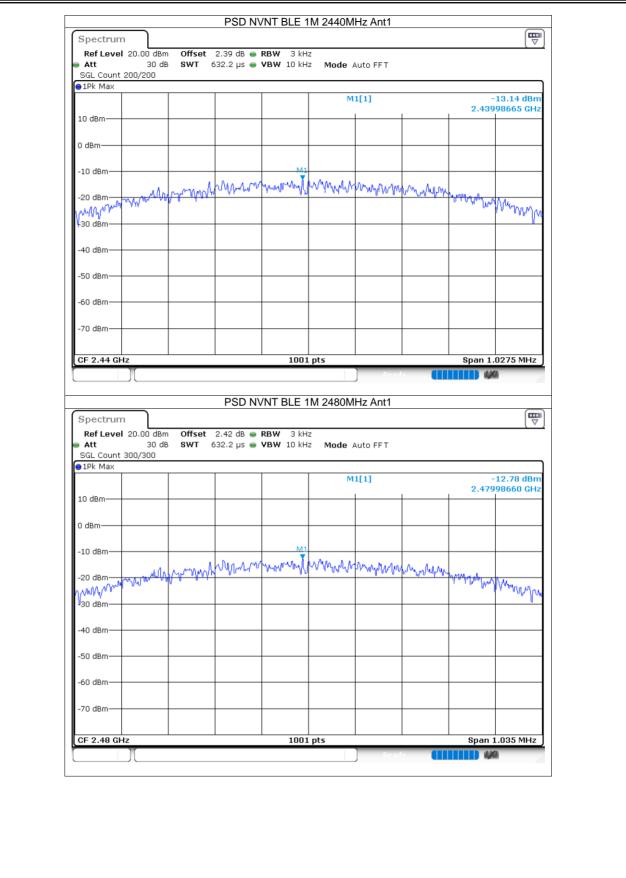
N'	rek :	比测®		CREDITED Cate #4298.01	F	Report No.	.: S231122
8.1.3	Maximum Pow	ver Spectral	Density Leve	el			
	Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Limit (dBm)	Verdict
	NVNT	BLE 1M	2402	Ant1	-13.11	8	Pass
		BLE 1M	2440	Ant1	-13.14	8	Pass
	NVNT	BLE 1M	2480	Ant1	-12.78	8	Pass
				est Graphs BLE 1M 2402M	1Hz Ant1		
	Spectrum Ref Level : Att SGL Count 3	30 dB SWT	t 2.38 dB 👄 RBW 631.9 μs 👄 VBW	3 kHz 10 kHz Mode	Auto FFT		
	10 dBm			M	11[1]		8.11 dBm 2580 GHz
	0 dBm						
	-10 dBm		Antonio	www.www.	mounter	Weiter all a	
	130 dBm	J.M.,				JAND MAN	MAN AN
	-40 dBm						
	-50 dBm						

1001 pts

-70 dBm·

CF 2.402 GHz







8.1.4 **Band Edge** Condition Mode Frequency (MHz) Antenna Max Value (dBc) Limit (dBc) Verdict NVNT BLE 1M 2402 Ant1 -53.77 -20 Pass **NVNT** BLE 1M 2480 Ant1 -46.37 -20 Pass Test Graphs Band Edge NVNT BLE 1M 2402MHz Ant1 Ref ₩ Spectrum Ref Level 20.00 dBm Offset 2.38 dB 👄 RBW 100 kHz 35 dB SWT 18.9 µs 👄 VBW 300 kHz Att Mode Auto FET SGL Count 100/100 1Pk Max M1[1] 2.94 dBn 2.40201600 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm 40 dBm -50 dBm mount ωA ... -60 dBm -70 dBm CF 2.402 GHz 1001 pts Span 8.0 MHz LX. Band Edge NVNT BLE 1M 2402MHz Ant1 Emission ₩ Spectrum Ref Level 20.00 dBm Offset 2.38 dB 曼 RBW 100 kHz SWT 227.5 µs 🖷 VBW 300 kHz Att 35 dB Mode Auto FFT SGL Count 100/100 ●1Pk Max M1[1] 2.79 dBm 2.40205000 GHz 10 dBm -51.28^VdBm 2.40000000/GHz M2[1] 0 dBm -10 dBm· D1 -17.058 -20 dBm--30 dBm -40 dBm М4 M: -50 dBm wowwww. Hurnedan unorbighter application your harmhyme www.www.wordAwalerallung hand have not -60 dBm -70 dBm Start 2.306 GHz 1001 pts Stop 2.406 GHz Marker Function **Function Result** Type | Ref | Trc X-value Y-value 2.40205 GHz 2.79 dBm M1 1 М2 2.4 GHz -51.28 dBm 1 ΜЗ 2.39 GHz -56.24 dBm 1 M4 1 2.34 GHz -50.84 dBm

ACCREDITED Certificate #4298.01



Report No.: S23112201728001

		d Edge NVNT BLE			
SGL Count 100/10	dB SWT 18.	2 dB 👄 RBW 100 kHz 9 μs 🌰 VBW 300 kHz	Mode Auto FFT		
●1Pk Max			M1[1]	2.48	3.35 dBm 026370 GHz
20 dBm					
10 dBm			M1		
0 dBm		\sim	~~		
-10 dBm					
-20 dBm					
-30 dBm					
-40 dBm	mm	r		hann	mm -
-50 dBm					
-60 dBm					
CF 2.48 GHz		1001	pts	Sp	an 8.0 MHz
Att 45 SGL Count 100/10		7.5 μs 👄 VBW 300 kH:	z Mode Auto FFT		
			M1[1]	2.48	3.22 dBm 025000 GHz
20 dBm			M2[1]	2.48	-45.45 dBm 350000 GHz
0 d 8 m					
-10 cBmD1 -16	.646 dBm				
-30 dBm					
-40 dBm; 2	M4 M3	mulaumourourourourourourourourourourourourouro	www.www.www.	marching have marked the have	UM your your ha
-50 dBm					
-60 dBm		1001	pts		2.576 GHz
-60 dBm Start 2.476 GHz			Function	E	
	X-value	Y-value	Function	Function Resu	lt 🔤
Start 2.476 GHz Marker Type Ref Trc M1 1 M2 1	2.48025	5 GHz 3.22 dB 5 GHz -45.45 dB	m n	Function Resu	lt
Start 2.476 GHz Marker Type Ref Trc M1 1	2.48025 2.4835 2.5	5 GHz 3.22 dB 5 GHz -45.45 dB 5 GHz -43.81 dB	m m	Function Resu	It

Verdict

Pass

Pass

Pass

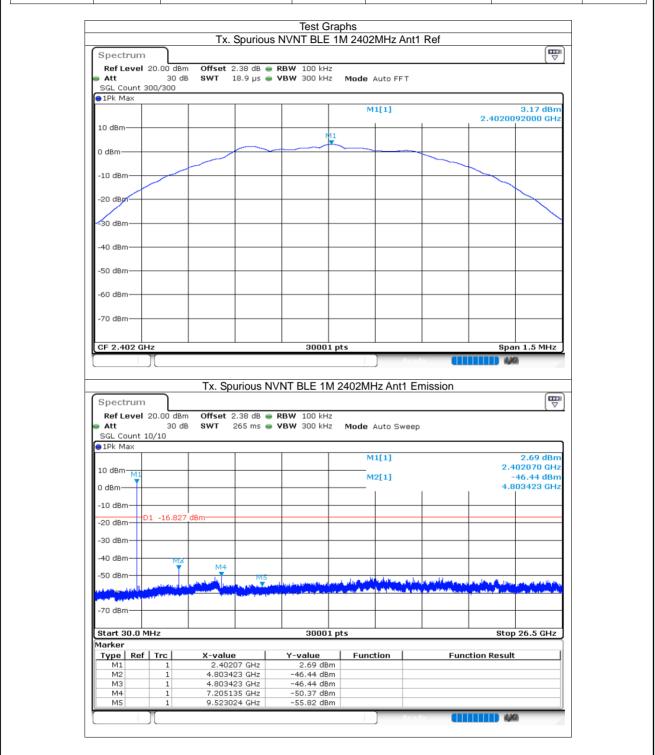
Limit (dBc)

-20

-20

-20

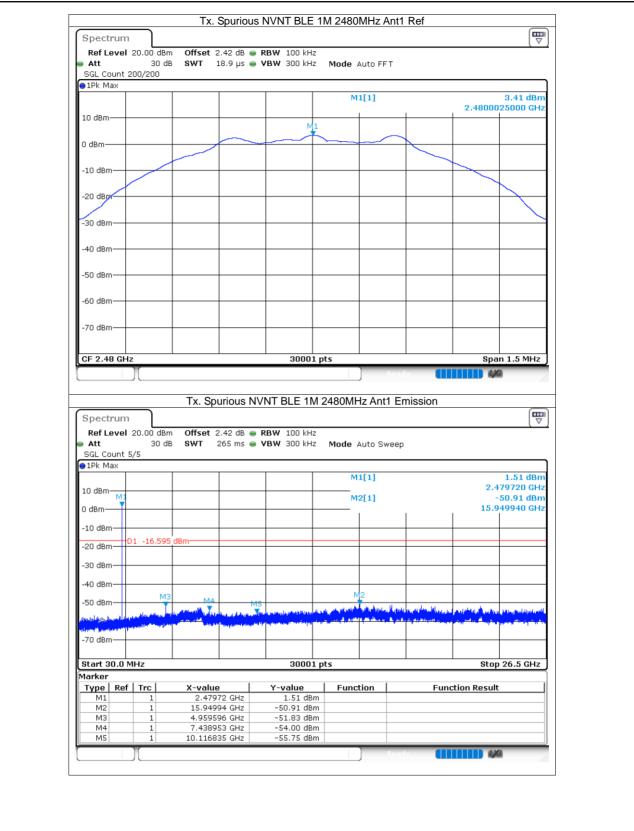
® **NTEK** 北视 AC-MR ACCREDITED Certificate #4298.01 8.1.5 Conducted RF Spurious Emission Condition Mode Frequency (MHz) Max Value (dBc) Antenna NVNT 2402 BLE 1M Ant1 -49.61 NVNT 2440 -51.62 BLE 1M Ant1 NVNT BLE 1M 2480 Ant1 -54.32 Test Graphs Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref Spectrum Ref Level 20.00 dBm Offset 2.38 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT





SGL Count	20.00 dBm 30 dB 100/100	SWT	18.9 µs 👄						
⊜1Pk Max					MI	1[1]			2.51 dBm
10 dBm						-[-]	1	2.4397	7486580 GHz
10 UBIII			M1						
0 dBm					\sim				
-10 dBm							~		
-20 dBm									
-30 dBm									
40 dBm									
-40 dBm									
-50 dBm				+					
-60 dBm									
-70 dBm									
CF 2.44 GH	7			30001	1 nts			Sr	oan 1.5 MHz
	-			00001	- P.S				
	20.00 dBm	Offset	2.39 dB 👄	/NT BLE 1N	z				
Ref Level Att SGL Count	20.00 dBm 30 dB	Offset	2.39 dB 👄		z				
Ref Level Att SGL Count 1Pk Max	20.00 dBm 30 dB	Offset	2.39 dB 👄	RBW 100 kH:	z z Mode A				1.96 dBm
Ref Level Att SGL Count 1Pk Max 10 dBm	20.00 dBm 30 dB	Offset	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count 1Pk Max 10 dBm 0 dBm	20.00 dBm 30 dB	Offset	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz
Ref Level Att SGL Count 1Pk Max 10 dBm 10 dBm -10 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count ID dBm 0 dBm -10 dBm	20.00 dBm 30 dB	Offset SWT	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count PIPk Max 10 dBm -10 dBm -20 dBm -30 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz -49.11 dBm
Nef Level Att SGL Count 1Pk Max 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 👄	RBW 100 kH:	z z Mode A M3	Auto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count PIPk Max 10 dBm -10 dBm -20 dBm -30 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 👄	RBW 100 kH:	Z Mode A M3 M2 M2	Luto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count IPk Max 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 265 ms	RBW 100 kH:	Z Mode A M3 M2 M2	Luto Swee			1.96 dBm .440010 GHz -49.11 dBm
Nef Level Att SGL Count 1Pk Max 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 265 ms	RBW 100 kH:	Z Mode A M3 M2 M2	Luto Swee			1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count ID dBm 10 dBm -10 dBm -20 dBm -30 dBm -50 dBm -50 dBm -70 dBm Start 30.0	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 265 ms	RBW 100 kH:	Z Mode A	Luto Swee		4	1.96 dBm .440010 GHz -49.11 dBm
Ref Level Att SGL Count ID dBm 10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm Start 30.0 ff Marker Type	20.00 dBm 30 dB 10/10 01 -17.490 M2 M2 MHz	Offset SWT dBm	2.39 dB 265 ms	RBW 100 kH; VBW 300 kH;	Z Mode A	Luto Swee		4	1.96 dBm .440010 GHz -49.11 dBm .879304 GHz
Ref Level Att SGL Count ID dBm 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm Start 30.0 ff Marker	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 265 ms	RBW 100 kH: VBW 300 kH: 	z Mode A M3 1 pts 1 pts	Luto Swee		4	1.96 dBm .440010 GHz -49.11 dBm .879304 GHz
Ref Level Att SGL Count ID dBm 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm Start 30.0 ff M1 M2 M3	20.00 dBm 30 dB 10/10 01 -17.490 M2 M2 M2 M1 Trc 1 1 1	Offset SWT	2.39 dB 265 ms 265 ms	RBW 100 kH: VBW 300 kH:	2 2 Mode A M3 M2 M2 M3 M3 M3 M3 M3 M3 M3 M3 M3 M3 M3 M3 M3	Luto Swee		4	1.96 dBm .440010 GHz -49.11 dBm .879304 GHz
Ref Level Att SGL Count ID dBm 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm Start 30.0 ft Marker Type M1 M2	20.00 dBm 30 dB 10/10	Offset SWT	2.39 dB 265 ms 265 ms	RBW 100 kH: VBW 300 kH:	z Mode A	Luto Swee		4	1.96 dBm .440010 GHz -49.11 dBm .879304 GHz







8.2.1 Maximum Conducted Output Power

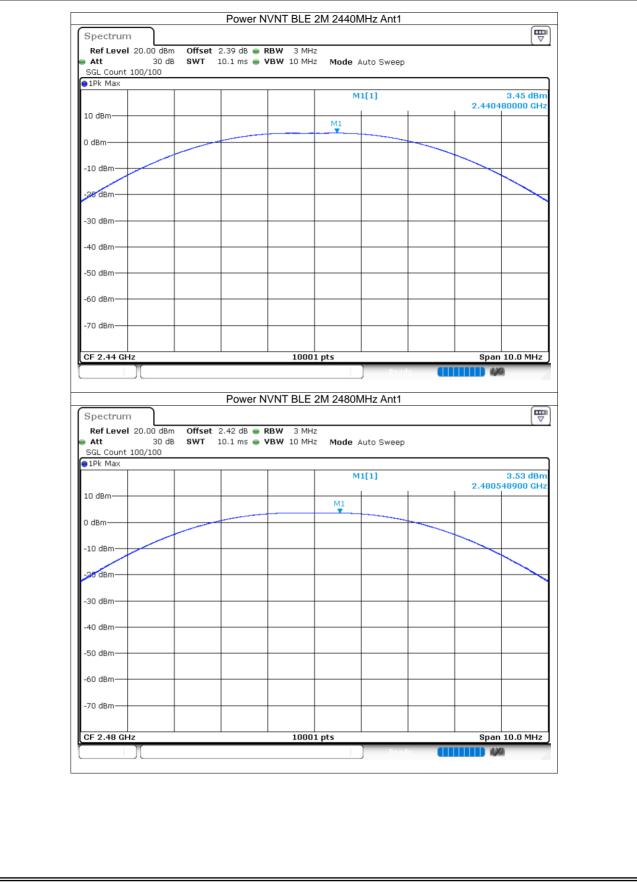
NTEK 北测[®]

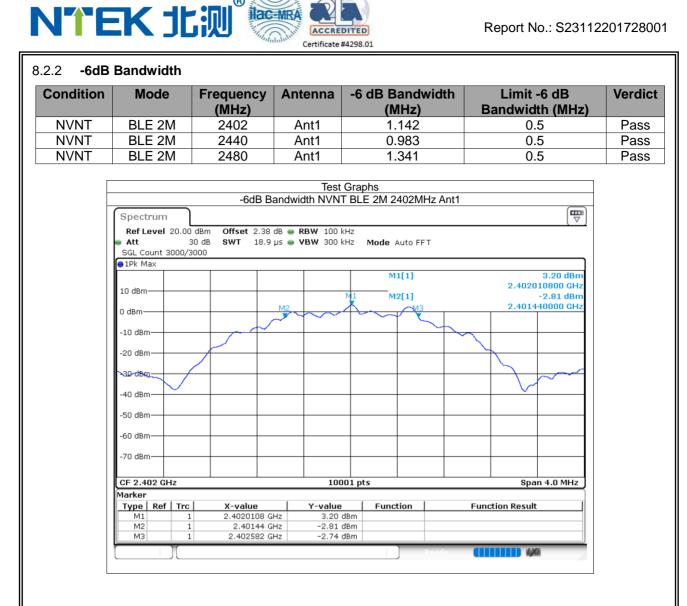
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 2M	2402	Ant1	3.31	30	Pass
NVNT	BLE 2M	2440	Ant1	3.45	30	Pass
NVNT	BLE 2M	2480	Ant1	3.53	30	Pass

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		Power N	VNT BLE 2	VI 2402MH	z Ant1		G
Spectrum							L L L L L L L L L L L L L L L L L L L
Ref Level 20.00 Att 3 SGL Count 100/10	30 dB SWT	2.38 dB 👄 🖡 10.1 ms 👄 🕻	RBW 3 MHz /BW 10 MHz	Mode Auto) Sweep		
1Pk Max	10						
				M1[1]	2.402	3.31 dBi 473000 GH
10 dBm				M1			
0 dBm						_	
-10 dBm	1						
-28 dBm							
-30 dBm							
-40 dBm							
-50 dBm							
-60 dBm							
-70 dBm							
CF 2.402 GHz			10001	pts		Spar	1 10.0 MHz







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AC-MR

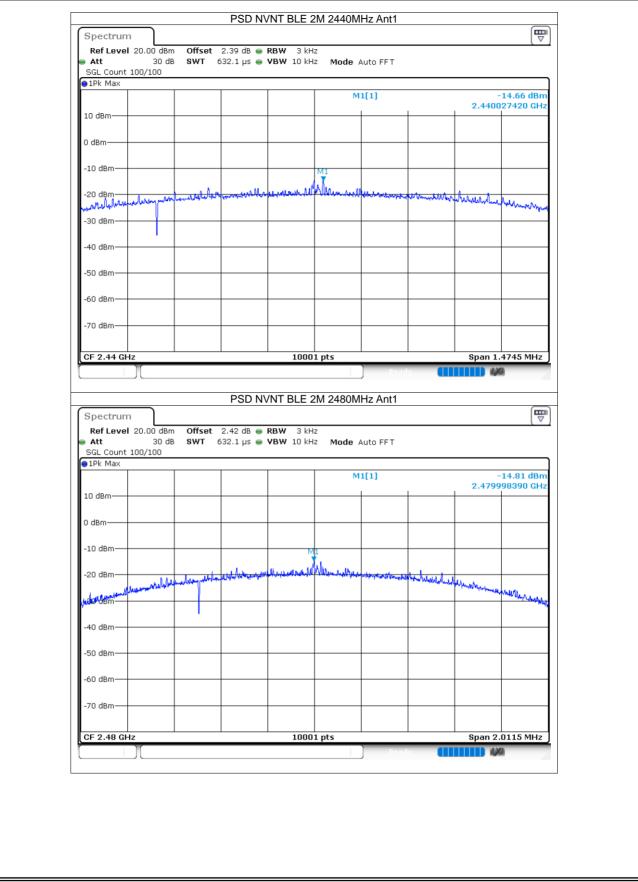


-6dB Bandwidth NVNT BLE 2M 2440MHz Ant1 ₽ Spectrum Ref Level 20.00 dBm Offset 2.39 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 💿 VBW 300 kHz Mode Auto FFT SGL Count 100/100 1Pk Max M1[1] 2.90 dBm 2.440013200 GHz 10 dBm· -3.13 dBm 2.439443000 GHz M2[1] 0 dBm -10 dBm -20 dBm 30. dBm--40 dBm -50 dBm -60 dBm -70 dBm· Span 4.0 MHz CF 2.44 GHz 10001 pts Marker Type | Ref | Trc X-value Y-value Function **Function Result** 2.4400132 GHz 2.90 dBm M1 1 М2 2.439443 GHz -3.13 dBm МЗ 1 2.440426 GHz -3.08 dBm LXI -6dB Bandwidth NVNT BLE 2M 2480MHz Ant1 ₽ Spectrum Ref Level 20.00 dBm Offset 2.42 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT SGL Count 100/100 ●1Pk Max M1[1] 1.31 dBm 2.480493550 GHz 10 dBm· M2[]] -4.67 dBm 2.479326000 GHz 0 dBm -10 dBm -20 dBm 30 dBm -40 dBm -50 dBm -60 dBm -70 dBm· Span 4.0 MHz CF 2.48 GHz 10001 pts Marker Type | Ref | Trc | Function Function Result X-value Y-value 2.48049355 GHz 1.31 dBm Μ1 1 М2 2.479326 GHz -4.67 dBm M3 1 2.480666 GHz -4.68 dBm



Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Limit (dBm)	Verdic
NVNT	BLE 2M	2402	Ant1	-14.64	8	Pass
NVNT	BLE 2M	2440	Ant1	-14.66	8	Pass
NVNT	BLE 2M	2480	Ant1	-14.81	8	Pass
		т	act Crapha			
			est Graphs 3LE 2M 2402N	IHz Ant1		
Spectrum						
Ref Level e Att	30 dB SWT	et 2.38 dB 👄 RBW 632.1 µs 👄 VBW		Auto FFT		
SGL Count 6	000/6000					
TEK Max			M	1[1]		4.64 dBm
10 dBm					2.40202	7580 GHz
0 dBm						
-10 dBm			IMI			
			1 🔻			
-20 dBm	hyberne werden	was seen for the second of the	askald Willson in all y	and the state of t	under the	
-30 dBm					- marked	In mark the theory
-50 dbiii						
-40 dBm						
-50 dBm						
-50 dBm						
-60 dBm						
-70 dBm						
CF 2.402 GF	47		10001 pts		Snan 1	13 MHz
			recerpts		opanian	10 11 2
[CF 2.402 GF	1					







8.2.4 **Band Edge** Condition Mode Frequency (MHz) Antenna Max Value (dBc) Limit (dBc) Verdict NVNT BLE 2M 2402 Ant1 -53.73 -20 Pass NVNT BLE 2M 2480 Ant1 -53.47 -20 Pass Test Graphs Band Edge NVNT BLE 2M 2402MHz Ant1 Ref ₩ Spectrum Ref Level 20.00 dBm Offset 2.38 dB 👄 RBW 100 kHz 35 dB SWT 18.9 µs 👄 VBW 300 kHz Att Mode Auto FET SGL Count 1500/1500 1Pk Max M1[1] 3.00 dBn 2.40200800 GHz 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm 40 dBm -50 dBm -60 dBm -70 dBm CF 2.402 GHz 1001 pts Span 8.0 MHz LX. Band Edge NVNT BLE 2M 2402MHz Ant1 Emission ₩ Spectrum Ref Level 20.00 dBm Offset 2.38 dB 曼 RBW 100 kHz SWT 227.5 µs 😑 VBW 300 kHz Att 35 dB Mode Auto FFT SGL Count 100/100 ●1Pk Max M1[1] 2.98 dBm 2.40205000 GHz 10 dBm -30.61^MBm M2[1] 2.40000000GHz 0 dBm -10 dBm· D1 -17.000 -20 dBm-M -30 dBm -40 dBm -50 dBm with or murder and want has been all really and more thank when the last ALAP werman with the whole who who and the Mr. Hulmer -60 dBm -70 dBm Start 2.306 GHz 1001 pts Stop 2.406 GHz Marker Y-value Function **Function Result** Type | Ref | Trc X-value 2.40205 GHz 2.98 dBm M1 1 М2 2.4 GHz -30.61 dBm ΜЗ 2.39 GHz -56.32 dBm M4 1 2.3459 GHz -50.74 dBm

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Ref Level 20.0 Att SGL Count 200/	35 dB SWT		RBW 100 kHz VBW 300 kHz	Mode Auto FFT			
1Pk Max	1						0.11.40
				M1[1]		2.4805	2.11 dBm 50350 GHz
10 dBm					+ +		
				M1 X			
0 dBm			_~~~	~ 1			
-10 dBm			\mathcal{N}				
10 0.0		1					
-20 dBm		+					
-30 dBm				1	Mr.		
-40 dBm		V)	$4 \rightarrow 1$		
	Jun Jun					2	
-50 dBm	~~{		+		++	how	0
~~~~						Ĭ	00
-60 dBm							
-70 dBm		_					
CF 2.48 GHz			1001	ate		Snar	1 8.0 MHz
Ref Level 20.0	O dBm Offset	2.42 dB 👄	RBW 100 kHz		mission		
Ref Level 20.0 Att SGL Count 100/	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz		mission		
Ref Level 20.0 Att SGL Count 100/	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz		mission		(₩ ▽) 0.39 dBm
Ref Level 20.0 Att SGL Count 100, 1Pk Max	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission		0.39 dBm 95000 GHz
Ref Level 20.0 Att SGL Count 100, 1Pk Max	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm
Ref Level         20.0           Att         SGL Count         100/           IPk Max         10 dBm         10 dBm           M1         0 dBm         0 dBm	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Ref Level         20.0           Att         SGL Count         100/           IPk Max         100 dBm         100 dBm           0 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Ref Level         20.0           Att         SGL Count         100/           IPk Max         100 dBm         100 dBm           0 dBm	0 dBm Offset 35 dB SWT	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Ref Level         20.0           Att         SGL Count         100/           IPk Max         100 dBm         100 dBm           0 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Att SGL Count 100/ 1Pk Max 10 dBm 10 dBm -10 dBm -20 dBm D1 -	0 dBm Offset 35 dB SWT /100	2.42 dB 👄	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Ref Level         20.0           Att         SGL Count         100,           1Pk Max         ID         ID           0 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB  227.5 µs	RBW 100 kHz	Mode Auto FFT	mission	-8	0.39 dBm 95000 GHz 51.37 dBm
Ref Level         20.0           Att         SGL Count 100/           IPk Max         10 dBm           10 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB  227.5 µs	RBW 100 kHz VBW 300 kHz	Mode Auto FFT		-5	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count         100/           IPk Max         10 dBm         10           0 dBm         -10         dBm           -20 dBm         D1         -30 dBm           -40 dBm         -40 dBm         -40 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB  227.5 µs	RBW 100 kHz VBW 300 kHz	Mode Auto FFT M1[1] M2[1] 		-5	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count 100/           IPk Max         10 dBm           10 dBm	0 dBm Offset 35 dB SWT /100	2.42 dB  227.5 µs	RBW 100 kHz VBW 300 kHz	Mode Auto FFT M1[1] M2[1] 		-5	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count 100/           IPk Max         10 dBm           0 dBm         -0           -10 dBm         -0           -20 dBm         D1 -           -30 dBm         -0           -60 dBm         -0           -70 dBm         -0	-17.894 dBm	2.42 dB  227.5 µs	RBW         100 kHz           VBW         300 kHz	Mode Auto FFT		-5 2.4833	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count         100/           IPk Max         M1         0           0 dBm         -0         -0           -10 dBm         -0         -0           -20 dBm         D1         -30 dBm           -50 dBm         -0         -0           -70 dBm         -70 dBm         -70 dBm           -70 dBm         -70 dBm         -70 dBm	-17.894 dBm	2.42 dB  227.5 µs	RBW 100 kHz VBW 300 kHz	Mode Auto FFT		-5 2.4833	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count         100/p           SGL Count         100/p         100/p           ID dBm         0         0           M1         0         0         0           0 dBm         0         0         0           -20 dBm         01         -         -           -30 dBm         01         -         -           -50 dBm         01         -         -           -70 dBm         -         -         -           Start 2.476 GH         Marker         -         -	0 dBm Offset 35 dB SWT /100 	2.42 dB  227.5 µs	RBW         100 kHz           VBW         300 kHz	Mode Auto FFT M1[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1] M2[1]		-5 2.4833	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count 100,           IPk Max         IO dBm           0 dBm         -0           -10 dBm         -0           -20 dBm         D1           -30 dBm         -0           +0 dBm         -0           -60 dBm         -0           -70 dBm         -70 dBm	Odfset Offset Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva Sva	2.42 dB 227.5 μs 227.5 μs	RBW         100 kHz           VBW         300 kHz	Mode         Auto FFT           M1[1]		- 5 2.4833 مراب ^{(س} ارامی) مراب ( ^س ارامی) Stop 2	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count         100/p           SGL Count         100/p           IPk Max         10         dBm           10 dBm	O dBm Offset 35 dB SWT /100     /100     /100     /100     /17.894 dBm     /17.894 dBm     /100     /17.894 dBm     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //////////	2.42 dB  227.5 µs 227.5 µs	RBW         100 kHz           VBW         300 kHz	Mode Auto FFT M1[1] M2[1] M2[1] M2[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1]		- 5 2.4833 مراب ^{(س} ارامی) مراب ( ^س ارامی) Stop 2	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz
Ref Level         20.0           Att         SGL Count         100/           1Pk Max         M1         0           10 dBm         -         -           10 dBm         -         -           -10 dBm         -         -           -20 dBm         D1         -           -30 dBm         -         -           -50 dBm         -         -           -60 dBm         -         -           -70 dBm         -         -	O dBm Offset 35 dB SWT /100     /100     /100     /100     /17.894 dBm     /17.894 dBm     /100     /17.894 dBm     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     /100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //100     //////////	2.42 dB  227.5 µs 227.5 µs	RBW         100 kHz           VBW         300 kHz	Mode Auto FFT M1[1] M2[1] M2[1] M2[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1] M32[1]		- 5 2.4833 مراب ^{(س} ارامی) مراب ( ^س ارامی) Stop 2	0.39 dBm 55000 GHz 51.37 dBm 50000 GHz

Verdict

Pass

Pass

Pass

Limit (dBc)

-20

-20

-20

### ® **NTEK** 北视 AC-MR ACCREDITED Certificate #4298.01 **Conducted RF Spurious Emission** 8.2.5 Condition Mode Frequency (MHz) Max Value (dBc) Antenna 2402 NVNT BLE 2M Ant1 -54.15 NVNT 2440 -48.45 BLE 2M Ant1 NVNT BLE 2M 2480 Ant1 -54.75 Test Graphs Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref Spectrum Ref Level 20.00 dBm Offset 2.38 dB 👄 RBW 100 kHz Att 30 dB SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT SGL Count 3000/3000 ●1Pk Max M1[1] 10 dBm M 0 dBm -10 dBm -20 dBm

