

# Shenzhen Toby Technology Co., Ltd.



Report No.: TBR-C-202203-0298-16

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# **Radio Test Report**

FCC ID: 2A376-HL100A & IC: 27908-HL100A

**Report No.** : TBR-C-202203-0298-16

**Applicant**: Smart Harvest Instruments Inc.

**Equipment Under Test (EUT)** 

**EUT Name** : Light Hotspot Miner

Model No. : HL100

Series Model No. : ----

Brand Name : Smart Harvest Instruments

Sample ID : 202203-0298-3-1#& 202203-0298-3-2#

**Receipt Date** : 2021-04-06

**Test Date** : 2022-04-06 to 2022-05-26

Issue Date : 2022-05-26

Standards : FCC Part 15 Subpart C 15.247

RSS-247 Issue 2 February 2017

RSS-Gen Issue 5 March 2019

**Test Method** : ANSI C63.10: 2013

KDB 558074 D01 15.247 Meas Guidance v05r02

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above.

Witness Engineer :

Engineer Supervisor : JWW SV

Engineer Manager :

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1. 0



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# **Revision History**

Report No.	Version	Description	Issued Date
TBR-C-202203-0298-16	Rev.01	Initial issue of report	2022-05-26
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### 1. General Information about EUT

### 1.1 Client Information

Applicant : Smart Harvest Instruments Inc.		Smart Harvest Instruments Inc.	
Address : 1		180 Northfield Drive West, Unit 4 Waterloo Canada N2L 0C7	
Manufacturer		Smart Harvest Instruments Inc.	
Address		180 Northfield Drive West, Unit 4 Waterloo Canada N2L 0C7	

### 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	:	Light Hotspot Miner				
HVIN/Models No.	÷	HL100				
Model Different	3					
		Operation Frequency:	LoRa(500KHz): 923.3MHz-927.5MHz			
Product		Number of Channel:	8 channels			
Description		Antenna Gain:	3dBi External Antenna			
		Bit Rate of Transmitter:	50kbps			
Power Rating		Adapter: LX10AA-050210-ZU Input:100-240V~50/60Hz 0.35A Output:5V2.1A				
Software Version		v1.0.0-211201				
Hardware Version	20	N/A				
	_					

- (1) The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Antenna information provided by the applicant. And the type of antenna please see the external photos.



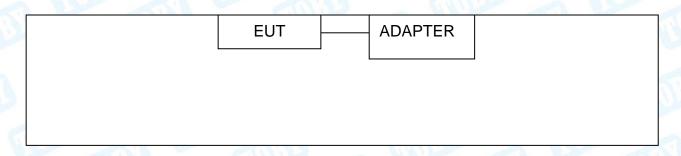
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### (4) Channel List:

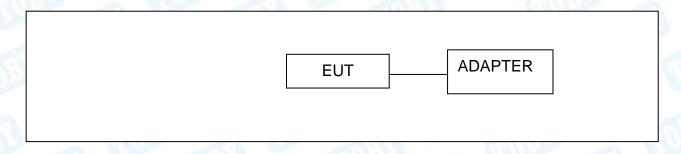
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	923.3	04	925.1	07	926.9
02	923.9	05	925.7	08	927.5
03	924.5	06	926.3		

## 1.3 Block Diagram Showing the Configuration of System Tested

### **Conducted Test**



#### **Radiated Test**





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### 1.4 Description of Support Units

Equipment Information							
Name	Model	FCC ID/SDOC	Manufacturer	Used "√"			
Adapter	Williams.		LvXiangYuan	10B)			
Cable Information							
Number	Shielded Type	Ferrite Core	Length	Note			
(CO)			(I				

### 1.5 Description of Test Mode

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 follow was evaluated respectively.

For Conducted Test					
Final Test Mode Description					
Mode 1 TX Mode					
	For Radiated Test				
Final Test Mode Description					
Mode 2 TX Mode					
Mode 3 TX Mode (Channel 01/04/08)					

#### Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.
  - According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



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### 1.6 Description of Test Software Setting

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

Test Software Version		SecureCRT	
Frequency	923.3MHz	925.1MHz	927.5MHz
LoRa	26	26	26

### 1.7 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 %.

Test Item	Parameters	Expanded Uncertainty (U <sub>Lab</sub> )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	$\pm 3.50~\mathrm{dB}$ $\pm 3.10~\mathrm{dB}$
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



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### 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

#### IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



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# 2. Test Summary

Standard	Section	Toot Itom	Tag( Campula(a)	ludament	D
FCC	IC	Test Item	Test Sample(s)	Judgment	Remark
FCC 15.207(a)	RSS-Gen 8.8	Conducted Emission	202203-0298-3-1#	PASS	N/A
FCC 15.209 & 15.247(d)	RSS-Gen 8.9 & RSS 247 5.5	Radiated Unwanted Emissions	202203-0298-3-1#	PASS	N/A
FCC 15.203	RSS-247 6.8	Antenna Requirement	202203-0298-3-2#	PASS	N/A
FCC 15.247(a)(2)	RSS-247 5.2(a)	6dB Bandwidth	202203-0298-3-2#	N/A	N/A
	RSS-Gen 6.7	99% Occupied bandwidth	202203-0298-3-2#	PASS	N/A
FCC 15.247(b)(3)	RSS-247 5.4(d)	Peak Output Power and E.I.R.P	202203-0298-3-2#	PASS	N/A
FCC 15.247(e)	RSS-247 5.2(b)	Power Spectral Density	202203-0298-3-2#	PASS	N/A
FCC 15.247(d)	RSS-Gen 8.10& RSS-247 5.5	Band Edge Measurements	202204-0312-3-2#	PASS	N/A
FCC 15.207(a)	RSS-Gen 8.10& RSS-247 5.5	Conducted Unwanted Emissions	202203-0298-3-2#	PASS	N/A
FCC 15.247(d)	RSS-Gen 8.9 & RSS 247 5.5	Emissions in nonrestricted frequency bands	202203-0298-3-2#	PASS	N/A
	RSS-Gen 8.10& RSS-247 5.5	On Time and Duty Cycle	202203-0298-3-2#	1	N/A

Note: N/A is an abbreviation for Not Applicable.

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted  Measurement	MTS-8310	MWRFtest	V2.0.0.0
RF Test System	JS1120	Tonscend	V2.6.88.0336



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# 4. Test Equipment

<b>Conducted Emission</b>	on Test				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 02, 2021	Jul. 01, 2022
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 02, 2021	Jul. 01, 2022
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 02, 2021	Jul. 01, 2022
LISN	Rohde & Schwarz	ENV216	101131	Jul. 02, 2021	Jul. 01, 2022
Radiation Emission	n Test (A Site)		<del>-</del>		<del>`</del>
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 02, 2021	Jul. 01, 2022
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Feb. 27, 2022	Feb. 26, 2024
Horn Antenna	ETS-LINDGREN	3117	00143207	Feb. 26, 2022	Feb. 25, 2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 26, 2022	Feb. 25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
Pre-amplifier	SONOMA	310N	185903	Feb. 26, 2022	Feb. 25, 2023
Pre-amplifier	HP (	8449B	3008A00849	Feb. 26, 2022	Feb. 25, 2023
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Sep. 03, 2021	Sep. 02, 2022
Radiation Emissior	Test (B Site)		-		<u> </u>
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Sep. 03, 2021	Sep. 02, 2022
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472	Feb. 26, 2022	Feb. 25, 2023
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Dec. 05, 2021	Dec. 04, 2023
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	May 20, 2021	May 19, 2023
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 26, 2022	Feb. 25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Sep. 03, 2021	Sep. 02, 2022
HF Amplifier	Tonscend	TAP051845	AP21C806141	Sep. 03, 2021	Sep. 02, 2022
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Sep. 03, 2021	Sep. 02, 2022
Antenna Conducte	d Emission				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 02, 2021	Jul. 01, 2022
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 03, 2021	Sep. 02, 2022
Spectrum Analyzer	KEYSIGT	N9020B	MY60110172	Sep. 03, 2021	Sep. 02, 2022
TILOR	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 03, 2021	Sep. 02, 2022
DE Daway C	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 03, 2021	Sep. 02, 2022
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 03, 2021	Sep. 02, 2022
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 03, 2021	Sep. 02, 2022
RF Control Unit	Tonsced	JS0806-2	21F8060439	Sep. 03, 2021	Sep. 02, 2022



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### 5. Conducted Emission

#### 5.1 Test Standard and Limit

5.1.1 Test Standard

RSS-Gen 8.8

FCC Part 15.207

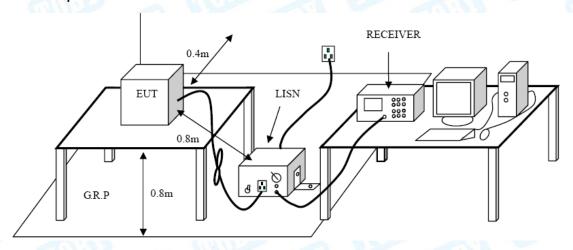
5.1.2 Test Limit

F	Maximum RF Line	Voltage (dBμV)
Frequency	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

#### 5.2 Test Setup



#### 5.3 Test Procedure

- ●The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected 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.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- ●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.
- ●LISN at least 80 cm from nearest part of EUT chassis.
- ●The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.



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### 5.4 Deviation From Test Standard

No deviation

### 5.5 EUT Operating Mode

Please refer to the description of test mode.

#### 5.6 Test Data

Please refer to the Attachment A.



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### 6. Radiated and Conducted Unwanted Emissions

#### 6.1 Test Standard and Limit

6.1.1 Test Standard

RSS-Gen 8.9 & RSS 247 5.5 FCC Part 15.209 & FCC Part 15.247(d)

#### 6.1.2 Test Limit

	Genera	al field strength limits	at frequencies Below	30MHz
Ī	Frequency	Field Strength	Field Strength	Measurement
	(MHz)	(μA/m)*	(microvolt/meter)**	Distance (meters)
ľ	0.009~0.490	6.37/F (F in kHz)	2400/F(KHz)	300
Ī	0.490~1.705	63.7/F (F in kHz)	24000/F(KHz)	30
4	1.705~30.0	0.08	30	30

**Note:** 1, The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

2, \*is for RSS Standard, \*\*is for FCC Standard.

General field s	strength limits at frequenc	ies above 30 MHz
Frequency (MHz)	Field strength (µV/m at 3 m)	Measurement Distance (meters)
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

General field strer	gth limits at frequencies	S Above 1000MHz
Frequency	Distance of	3m (dBuV/m)
(MHz)	Peak	Average
Above 1000	74	54
Above 1000	74	54

#### Note:

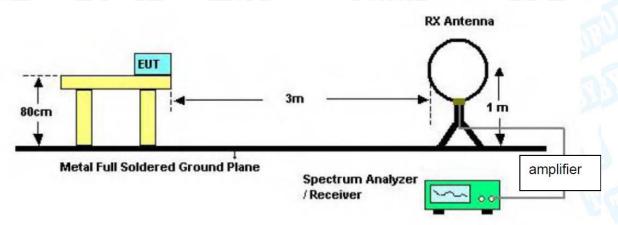
- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

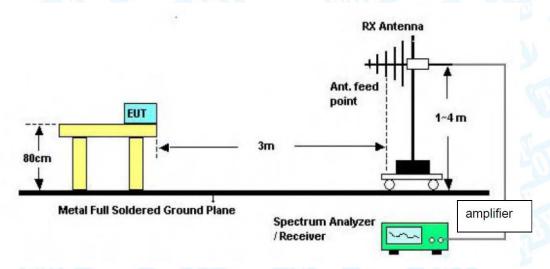


6.2 Test Setup

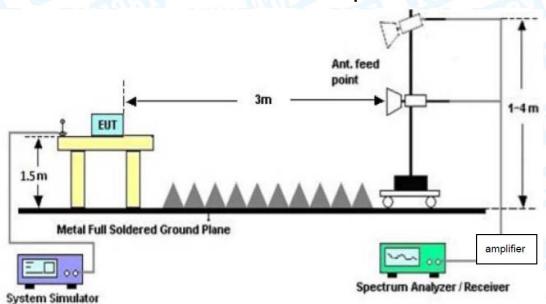
#### Radiated measurement



#### **Below 30MHz Test Setup**



#### **Below 1000MHz Test Setup**

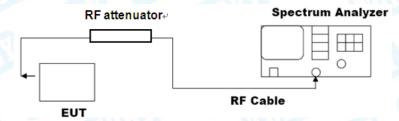


**Above 1GHz Test Setup** 



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#### **Conducted measurement**



#### 6.3 Test Procedure

#### ---Radiated measurement

- The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- 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.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- Testing frequency range 30MHz-1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection. Testing frequency range 9KHz-150Hz the measuring instrument use VBW=200Hz with Quasi-peak detection. Testing frequency range 9KHz-30MHz the measuring instrument use VBW=9kHz with Quasi-peak detection.
- Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- For the actual test configuration, please see the test setup photo.



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#### --- Conducted measurement

#### Reference level measurement

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to≥1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW≥[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 PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

#### Emission level measurement

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≥[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. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

#### 6.4 Deviation From Test Standard

No deviation

### 6.5 EUT Operating Mode

Please refer to the description of test mode.

#### 6.6 Test Data

Please refer to the Attachment B.



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### 7. Emissions in nonrestricted frequency bands

#### 7.1 Test Standard and Limit

7.1.1 Test Standard

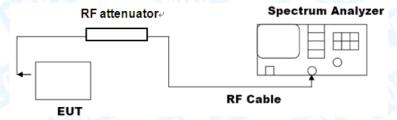
RSS-Gen 8.10 & RSS 247 5.5 FCC Part 15.205 & FCC Part 15.247(d)

#### 7.1.2 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

### 7.2 Test Setup

#### **Conducted measurement**



#### 7.3 Test Procedure

#### Reference level measurement

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW ≥ [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 PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.



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#### **Emission level measurement**

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 ≥ [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.

#### 7.4 Deviation From Test Standard

No deviation

### 7.5 EUT Operating Mode

Please refer to the description of test mode.

#### 7.6 Test Data

Please refer to the Attachment C.



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### 8. Bandwidth Test

#### 8.1 Test Standard and Limit

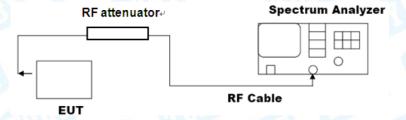
8.1.1 Test Standard

RSS-Gen 6.7 & RSS 247 5.2(a) FCC Part 15.205 & FCC Part 15.247(d)

8.1.2 Test Limit

Test Item	Limit
-6dB bandwidth (DTS bandwidth )	>=500 KHz
99% occupied bandwidth	

#### 8.2 Test Setup



#### 8.3 Test Procedure

#### --- DTS bandwidth

- The steps for the first option are as follows:
- a) Set RBW = 100 kHz.
- b) Set the VBW≥[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.

#### ---occupied bandwidth

- ●The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:
- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.



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c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

#### 8.4 Deviation From Test Standard

No deviation

#### 8.5 EUT Operating Mode

Please refer to the description of test mode.

#### 8.6 Test Data

Please refer to the Attachment D.



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## 9. Peak Output Power

#### 9.1 Test Standard and Limit

9.1.1 Test Standard

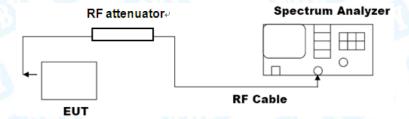
RSS 247 5.4

FCC Part 15.247(b)(3)

9.1.2 Test Limit

Test Item	Limit
Peak Output Power	not exceed 1 W or 30dBm
E.I.R.P	not exceed 4 W or 36dBm

### 9.2 Test Setup



#### 9.3 Test Procedure

#### ---RBW≥DTS bandwidth

● The following procedure shall be used when an instrument with a resolution bandwidth that is greater than

the DTS bandwidth is available to perform the measurement:

- a) Set the RBW≥DTS bandwidth.
- b) Set VBW≥[3\*RBW].
- c) Set span≥[3\*RBW].
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

#### 9.4 Deviation From Test Standard

No deviation

### 9.5 EUT Operating Mode

Please refer to the description of test mode.

#### 9.6 Test Data

Please refer to the Attachment E.



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## 10. Power Spectral Density

#### 10.1 Test Standard and Limit

10.1.1 Test Standard

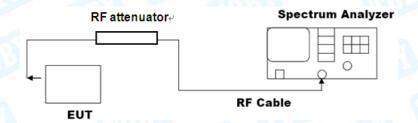
RSS 247 5.2(b)

FCC Part 15.247(e)

10.1.2 Test Limit

Test Item	Limit
Power Spectral Density	8dBm(in any 3 kHz)

#### 10.2 Test Setup



#### 10.3 Test Procedure

- The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:
- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to 3 kHz≤RBW≤100 kHz.
- d) Set the VBW ≥[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 requirement, then reduce RBW (but no less than 3 kHz) and repeat.

#### 10.4 Deviation From Test Standard

No deviation

#### 10.5 Antenna Connected Construction

Please refer to the description of test mode.

#### 10.6 Test Data

Please refer to the Attachment F.



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### 11. Antenna Requirement

#### 11.1 Test Standard and Limit

11.1.1 Test Standard

RSS 247 6.8 FCC Part 15.203

#### 11.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 11.2 Deviation From Test Standard

No deviation

#### 11.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 2.5dBi, and the antenna de-signed with Unique connector antenna and consideration of replacement. Please see the EUT photo for details.

#### 11.4 Test Data

The EUT antenna is a External Antenna. It complies with the standard requirement.

Antenna Type	
Permanent attached antenna	
Professional installation antenna	



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# **Attachment A--Conducted Emission Test Data**

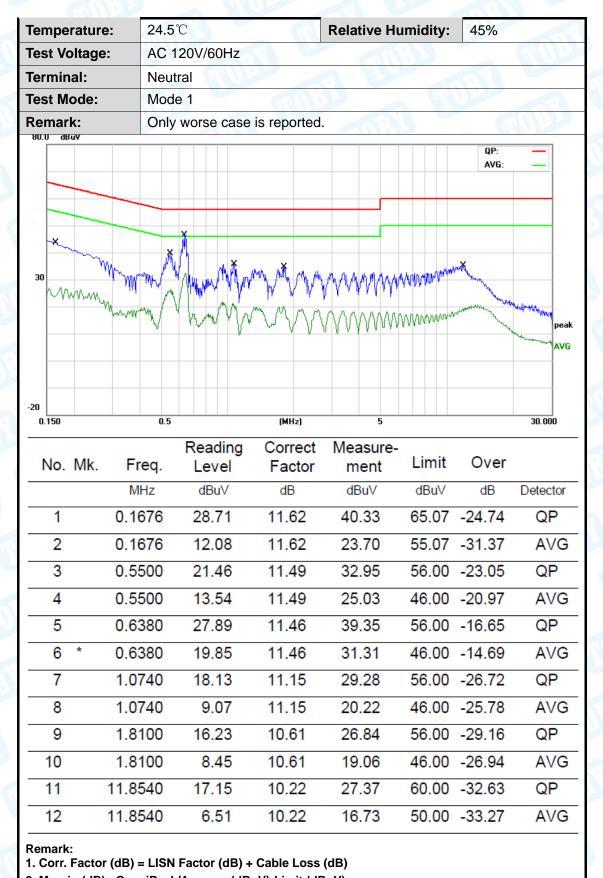
	rature:	24.5℃		Re	elative Hum	idity:	45%	CALL
Test Vo	ltage:	AC 12	0V/60Hz		a Wy		Time.	3
Termin	al:	Line		an!	13	a W	Miles	
Test Mo	ode:	Mode	1	1000		1	-	MILE
Remarl	k:	Only w	orse case is	reported.	AHUE			
30 AB	SuV Market		M		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Mymm	QP: AVG:	pea
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INO.	IVIK.	Freq.	Level	Factor dB	ment	dBu∨		Detector
			dBuV		dBuV		dB	Detector
1		0.1539	29.53	11.62	41.15	65.78	-24.63	QP
2		0.1539	12.31	11.62	23.93	55.78		AVG
3		0.6419	12.31 25.30	11.44	36.74	56.00	-19.26	QP
						56.00		
3	*	0.6419	25.30	11.44	36.74	56.00 46.00	-19.26	QP
3 4	*	0.6419	25.30 22.57	11.44 11.44	36.74 34.01	56.00 46.00 56.00	-19.26 -11.99	QP AVG
3 4 5	*	0.6419 0.6419 1.0700	25.30 22.57 14.16	11.44 11.44 11.15	36.74 34.01 25.31	56.00 46.00 56.00 46.00	-19.26 -11.99 -30.69	QP AVG QP
3 4 5 6	*	0.6419 0.6419 1.0700 1.0700	25.30 22.57 14.16 11.21	11.44 11.44 11.15 11.15	36.74 34.01 25.31 22.36	56.00 46.00 56.00 46.00 56.00	-19.26 -11.99 -30.69 -23.64	QP AVG QP AVG
3 4 5 6 7	*	0.6419 0.6419 1.0700 1.0700 1.8220	25.30 22.57 14.16 11.21 12.06 9.19	11.44 11.44 11.15 11.15 10.67	36.74 34.01 25.31 22.36 22.73	56.00 46.00 56.00 46.00 56.00 46.00	-19.26 -11.99 -30.69 -23.64 -33.27	QP AVG QP AVG QP
3 4 5 6 7 8 9	*	0.6419 0.6419 1.0700 1.0700 1.8220 1.8220 2.5900	25.30 22.57 14.16 11.21 12.06 9.19 11.83	11.44 11.44 11.15 11.15 10.67 10.67 10.37	36.74 34.01 25.31 22.36 22.73 19.86 22.20	56.00 46.00 56.00 46.00 56.00 56.00	-19.26 -11.99 -30.69 -23.64 -33.27 -26.14 -33.80	QP AVG QP AVG QP AVG QP
3 4 5 6 7 8	*	0.6419 0.6419 1.0700 1.0700 1.8220 1.8220	25.30 22.57 14.16 11.21 12.06 9.19	11.44 11.44 11.15 11.15 10.67 10.67	36.74 34.01 25.31 22.36 22.73 19.86	56.00 46.00 56.00 46.00 46.00 56.00 46.00	-19.26 -11.99 -30.69 -23.64 -33.27 -26.14	QP AVG QP AVG QP AVG

- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





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### **Attachment B--Unwanted Emissions Data**

#### ---Radiated Unwanted Emissions

#### 9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB

Below the permissible value has no need to be reported.

#### 30MHz~1GHz

Temperatur	re: 23.5°	C	13	Relative H	umidity:	46%	1375
Test Voltage	<b>e</b> : AC 1	20V/60Hz					
Ant. Pol.	Horiz	contal			40 P		" BA
Test Mode:	Mode	e 2 (923.3MF	Hz)		635		
Remark:	Only	worse case	is reported	Miles		Marie Contract	
80.0 dBuV/m	<u>'</u>						
70				Fundamenta	al Frequency		
60						$\nearrow \searrow$	
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10 WWW	asher Adam Andrews	ng plak all property and the second	**************************************	TO THE PARTY OF THE TOP THE	Mary Mineral de la	harbyeller freshirten der Arm	W. W. C. C.
10 WANTE	60.00	APPRILADITATION OF THE PROPERTY OF THE PROPERT	(MHz)	300	).00	harbifullate Shirtley of Min	1000.0
10 0 -10 -20 30.000		Reading			0.00		1000.0
10 0 -10 -20 30.000	60.00 requency (MHz)	Reading (dBuV)	(MHz)	Level (dBuV/m)	0.000 Limit	Margin	1000.0
10 0 -10 -20 30.000	requency	_	Factor	Level	0.000 Limit	Margin	1000.0
10 0 -10 -20 30.000 No.	requency (MHz)	(dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.0
10 0 -10 -20 30.000 No. F	requency (MHz) 47.8260	(dBuV) 46.56	Factor (dB/m) -22.66	Level (dBuV/m) 23.90	Limit (dBuV/m) 40.00	Margin (dB) -16.10	Detector peak
10 0 -10 -20 30.000 F 1 2 3	requency (MHz) 47.8260 71.8320	(dBuV) 46.56 49.58	Factor (dB/m) -22.66 -24.76	Level (dBuV/m) 23.90 24.82	Limit (dBuV/m) 40.00 40.00	Margin (dB) -16.10 -15.18	Detector peak peak
10 0 -10 -20 30.0000 F 1 2 3 4 1	requency (MHz) 47.8260 71.8320 95.7622	(dBuV) 46.56 49.58 56.42	Factor (dB/m) -22.66 -24.76 -25.75	Level (dBuV/m) 23.90 24.82 30.67	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -16.10 -15.18 -12.83	Detector peak peak peak

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
   QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)





Temper	rature:	23.5°	C		F	Relative Hur	midity:	46%	
Test Vo	Itage:	AC 1	20V/6	60Hz		CIT	183		
Ant. Po	ol.	Vertic	cal	EM)		a W	1	17.0	
Test Mo	ode:	Mode	2 (9:	23.3MI	Hz)		a GN	1 Page	1
Remark	k:	Only	worse	e case	is reported.	100	13		11:37
80.0 dB	BuV/m								
70						Fundamen	ntal Frequency		
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20 1 10 0	Maryaka May	60.00	\h!\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	rally value of the second	(MHz)	300	1.00	ghother who	1000.00
20 10 10 10 10 10 10 10 10 10 10 10 10 10	1		**************************************	rallty displayed	1	I	I	photograph of h	
20 10 10 10 10 10 10 10 10 10 10 10 10 10	Frequ (MF	ency		ading BuV)	(MHz) Factor (dB/m)	Level	Limit (dBuV/m)	Margin (dB)	
20 10 0 -10 -20 30.000	Frequ	ency łz)	(dE	_	Factor	Level	Limit	_	1000.00
20 10 0 -10 -20 30.000 No.	Frequ (MF	ency Iz) 279	(dE	BuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	(dB)	1000.00
20 10 0 10 10 10 10 10 10 10 10 10 10 10	Frequ (MH	ency Iz) 279 586	(dE 43 46	BuV) 3.26	Factor (dB/m) -23.13	Level (dBuV/m) 20.13	Limit (dBuV/m) 40.00	(dB) -19.87	1000.00  Detector  peak
20 10 0 10 0 10 10 10 10 10 10 10 10 10 1	Frequ (MH 33.32 47.69	ency Iz) 279 586	(dE 43 46 47	3uV) 3.26 3.97	Factor (dB/m) -23.13 -22.66	Level (dBuV/m) 20.13 24.31	Limit (dBuV/m) 40.00 40.00	(dB) -19.87 -15.69	Detector peak peak
20 10 0 10 0 10 10 10 10 10 10 10 10 10 1	Frequ (MH 33.33 47.69 60.00	ency (z) 279 586 691	(dE 43 46 47 53	3.26 3.97 7.81	Factor (dB/m) -23.13 -22.66 -23.62	Level (dBuV/m) 20.13 24.31 24.19	Limit (dBuV/m) 40.00 40.00 40.00	(dB) -19.87 -15.69 -15.81	Detector peak peak peak

#### Remark:

\*:Maximum data

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

x:Over limit !:over margin

3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)





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Гетрег	rature:	23.5°	C		Relative Hu	ımidity:	46%	
Test Vo	Itage:	AC 12	20V/60Hz		6.11	1830		
Ant. Po	ol.	Horiz	ontal		aV			
Test Mo	ode:	Mode	2 (925.1MH	Hz)		J AM	) in the second	
Remark	<b>K</b> :	Only	worse case	is reported.		13		Mile
80.0 dB	luV/m						_	
70					Fundamenta	I Frequency		
60						1 1	C 3M Radiation	, _
40					6	Margin -6 dE	8	
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					d n			
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20 10 0 -10 -20	Freque (MH	ency	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	
20 1 10 0 -10 -20 30.000	Freque	ency lz)	Reading	Factor	Level	Limit	_	1000.0
20 1 10 0 -10 -20 30.000	Freque (MH	ency Iz) 279	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	(dB)	1000.00
20 1 10 0 -10 -20 30.000 No.	Freque (MH 33.32	ency lz) 279 586	Reading (dBuV) 43.26	Factor (dB/m) -23.13	Level (dBuV/m) 20.13	Limit (dBuV/m) 40.00	(dB) -19.87	1000.00  Detector
20 1 10 0 -10 -20 30.000 No.	Freque (MH 33.32 47.65	ency (z) 279 586	Reading (dBuV) 43.26 46.97	Factor (dB/m) -23.13 -22.66	Level (dBuV/m) 20.13 24.31	Limit (dBuV/m) 40.00 40.00	(dB) -19.87 -15.69	Detector peak peak
20 1 10 0 -10 -20 30.000 No.	Freque (MH 33.32 47.65 60.06	ency 1z) 279 586 691	Reading (dBuV) 43.26 46.97 47.81	Factor (dB/m) -23.13 -22.66 -23.62	Level (dBuV/m) 20.13 24.31 24.19	Limit (dBuV/m) 40.00 40.00 40.00	(dB) -19.87 -15.69 -15.81	Detector peak peak peak

<sup>\*:</sup>Maximum data x:Over limit !:over margin

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)





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Tempe	erature:	23.5°	C	R	Relative Hun	nidity:	46%	
Test Vo	oltage:	AC 1	20V/60Hz		6.111	(88)		CHIN:
Ant. Po	ol.	Vertic	cal		aV		150	
Test M	lode:	Mode	e 2 (925.1MH	Hz)		2 BAT	1	
Remar	rk:	Only	worse case	is reported.		13		
80.0 d	dBuV/m							
70					Fundame	ntal Frequency		
60								
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10 -10 -20	Fre	quency	Reading (dBuV)	Factor	Level	Limit	Margin	
10 -10 -20 30.000	Fre		Reading (dBuV) 54.12	1		Limit	Margin	1000.c
10 0 -10 -20 30.000	Fre- (f	quency MHz)	(dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.0
10 0 -10 -20 30.000 No.	Fre- (f 36	quency MHz) .1272	(dBuV) 54.12	Factor (dB/m) -23.06	Level (dBuV/m) 31.06	Limit (dBuV/m) 40.00	Margin (dB) -8.94	Detector peak
10 0 -10 -20 30.000 No.	Free (1) 36 47 56	quency MHz) .1272 .8260	(dBuV) 54.12 56.82	Factor (dB/m) -23.06 -22.66	Level (dBuV/m) 31.06 34.16	Limit (dBuV/m) 40.00 40.00	Margin (dB) -8.94 -5.84	Detector peak peak
10 0 -10 -20 30.000 No. 1 2 ! 3 !	Fre- (f) 36 47 56	quency MHz) .1272 .8260	(dBuV) 54.12 56.82 57.68	Factor (dB/m) -23.06 -22.66 -23.18	Level (dBuV/m) 31.06 34.16 34.50	Limit (dBuV/m) 40.00 40.00 40.00	Margin (dB) -8.94 -5.84 -5.50	Detector peak peak peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)





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Tempe	ature:	23.5°	C		Relative H	umidity:	46%	
Test Vo	Itage:	AC 1	20V/60Hz			1830		
Ant. Po	ı.	Horiz	ontal	Min.	av		Nist.	1500
Test Mo	ode:	Mode	2 (927.5	MHz)		~ BN		
Remark	<b>&lt;:</b>	Only	worse ca	se is reported		NO T		Mil
80.0 dE	uV/m							
70					Fundament	al Frequency		
60						(RF)FCC 15	iC 3M Radiatio	
50					4	Margin -6 d	IB	
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20 10 10 0	harjanga daka perb	60.00	* Nyw	(MHz	300		possopida talania d <sup>a</sup> lah	1000.0
20 10 0 -10 -20	Freque (MH	60.000 ency	Readin (dBuV)	<sub>(мнz</sub> g Factor	Level (dBuV/m)	Limit	Margin	
20 1 10 0 -10 -20 30.000	Freque	ency	Reading	<sub>(мнz</sub> g Factor	Level	Limit	Margin	1000.0
20 1 X X X X X X X X X X X X X X X X X X	Freque (MH	60.00 ency dz) 279	Readin (dBuV)	g Factor (dB/m) -23.13	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.0
20 x x x x x x x x x x x x x x x x x x x	Freque (MH	ency dz) 279	Readin (dBuV) 42.77	g Factor (dB/m) -23.13 -26.63	Level (dBuV/m) 19.64	Limit (dBuV/m) 40.00	Margin (dB) -20.36	Detector peak
20 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Freque (MH 33.32 79.52	ency Hz) 279 209	Readin (dBuV) 42.77 47.05	g Factor (dB/m) -23.13 -26.63	Level (dBuV/m) 19.64 20.42	Limit (dBuV/m) 40.00 40.00	Margin (dB) -20.36 -19.58	Detector peak peak
20 1 1 1 2 3	Freque (MH 33.32 79.52 159.2	ency dz) 279 209 251	Readin (dBuV) 42.77 47.05 51.48	g Factor (dB/m) -23.13 -26.63 -21.45	Level (dBuV/m) 19.64 20.42 30.03	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -20.36 -19.58 -13.47	Detector peak peak peak

#### Remark:

\*:Maximum data

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)

x:Over limit !:over margin





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Tempera	perature: 23.5°C					Relative Hur	midity: 2	46%	
Test Vol	tage:	AC 12	20V/6	60Hz			187		
Ant. Pol		Vertic	al	W.		av		17.	
Test Mod	de:	Mode	2 (9	27.5M	Hz)		2 BAI	No.	
Remark:		Only	worse	e case	is reported		13		MU
80.0 dt	BuV/m								
70						Fundamen	tal Frequency		
60							(BE)ECC 15	C 3M Radiation	
50							Margin -6 dl		
40	2		3		4 ×	6			
30					1 July 1	Mulaha	n.e. 1		ы∭реа
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10	<sup>Ma</sup> happinana	face Varyand	AL MAN	,	Managar 1	AYNA AY POYON	And the state of t	Alfred All States Andread	Matalanto V
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10 0	<sup>PR</sup> YND-HIPHPON	60.00	M. M.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(MH2	) 300	0.00	etiende <sub>e</sub>	1000.00
10 0 -10 -20	Frequ (MH	ency		ading	Factor (dB/m)	Level		Margin	
10 0 -10 -20 30.000		ency Iz)	(dl	_	Factor	Level	0.00 Limit	Margin	1000.00
10 0 -10 -20 30.000	(MF	ency Hz) 385	(dl 54	BuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.00
10 0 -10 -20 30.000 No.	(MH	ency Hz) 385 146	(dl 54	BuV) 4.91	Factor (dB/m) -23.08	Level (dBuV/m) 31.83	Limit (dBuV/m) 40.00	Margin (dB) -8.17	Detector peak
10 0 -10 -20 30.000 No.	34.6 39.7	ency Hz) 385 146 208	(dl 54 57 61	BuV) 4.91 7.74	Factor (dB/m) -23.08 -23.04	Level (dBuV/m) 31.83 34.70	Limit (dBuV/m) 40.00 40.00	Margin (dB) -8.17 -5.30	Detector peak peak
10 0 -10 -20 30.000 No. 1 2! 3!	34.6 39.7 79.5	ency Hz) 385 146 208	(dl 54 57 61 58	BuV) 4.91 7.74 1.21	Factor (dB/m) -23.08 -23.04 -26.63	Level (dBuV/m) 31.83 34.70 34.58	Limit (dBuV/m) 40.00 40.00 40.00	Margin (dB) -8.17 -5.30 -5.42	Detector peak peak peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)





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#### Above 1GHz

Temperature:	23.2℃	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 923.3MHz	70	
Remark:	Only worse case is reported	I. (TILL)	3 110

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	1846.764	51.32	-7.44	43.88	54.00	-10.12	AVG
2	1846.847	62.12	-7.44	54.68	74.00	-19.32	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.

Temperature:	<b>23.2</b> ℃	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		UKUL
Ant. Pol.	Vertical		
Test Mode:	TX 923.3MHz		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	1846.867	50.91	-7.44	43.47	54.00	-10.53	AVG
2	1846.882	63.06	-7.44	55.62	74.00	-18.38	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.





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Temperature:	23.2℃	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 925.1MHz	NO W	
Remark:	Only worse case is reported	d.	a William

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	1850.641	62.88	-7.40	55.48	74.00	-18.52	peak
2 *	1850.728	51.24	-7.40	43.84	54.00	-10.16	AVG

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.

Temperature:	23.2℃	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz	WILLIAM STATE	MAG
Ant. Pol.	Vertical		
Test Mode:	TX 925.1M		

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1 *	1850.452	51.68	-7.40	44.28	54.00	-9.72	AVG
2	1850.511	63.02	-7.40	55.62	74.00	-18.38	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.





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Temperature:	23.2℃	Relative Humidity:	41%		
Test Voltage:	AC 120V/60Hz				
Ant. Pol.	Horizontal				
Test Mode:	TX 927.5MHz				
Remark:	Only worse case is reported				

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	1855.248	61.89	-7.37	54.52	74.00	-19.48	peak
2 *	1855.328	51.65	-7.37	44.28	54.00	-9.72	AVG

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.

The State of the S			Later than the second
Temperature:	23.2℃	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz		MAG
Ant. Pol.	Vertical	THE STATE OF THE S	
Test Mode:	TX 927.5MHz		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	1855.347	52.05	-7.37	44.68	54.00	-9.32	AVG
2	1855.448	62.72	-7.36	55.36	74.00	-18.64	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-10GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.





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#### --- Conduction Unwanted Emissions

Condition	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	923.3	Ant1	-49.94	-20	Pass
NVNT	925.1	Ant1	-49.03	-20	Pass
NVNT	927.5	Ant1	-48.7	-20	Pass







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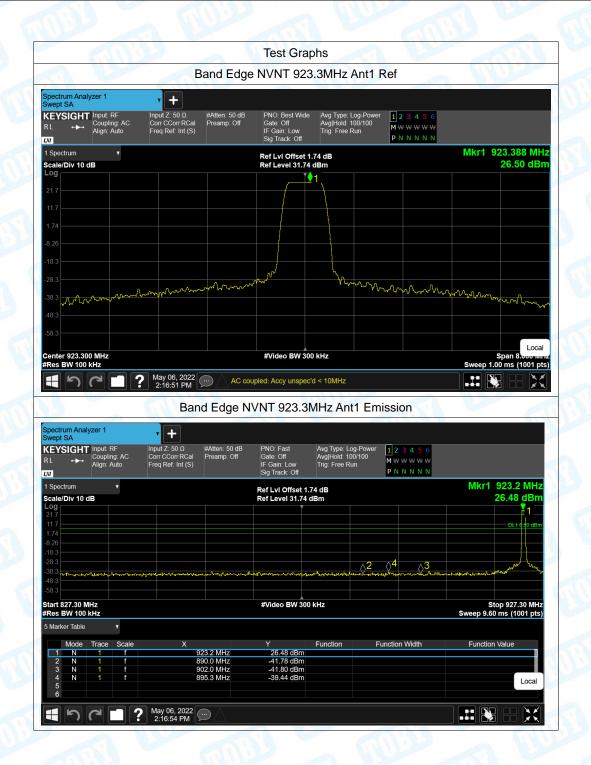




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## Attachment C--Emissions In Nonrestricted Frequency Bands Data

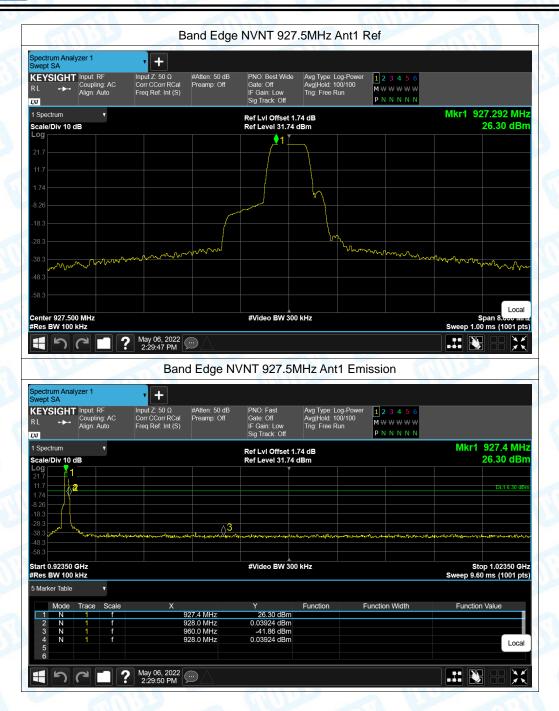
Condition	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	923.3	Ant1	-65.94	-20	Pass
NVNT	927.5	Ant1	-26.26	-20	Pass







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## **Attachment D--Bandwidth Data**

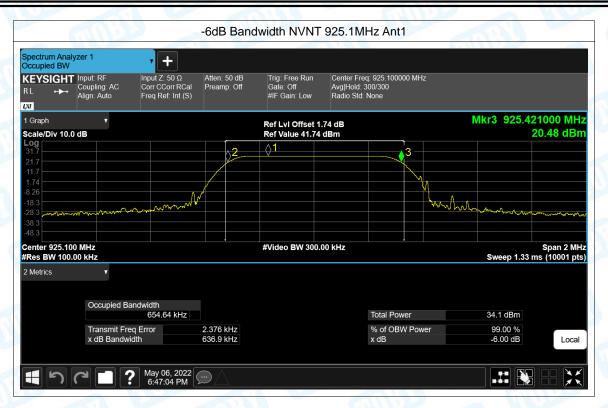
Condition	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	923.3	0.6365	0.5	Pass
NVNT	925.1	0.6369	0.5	Pass
NVNT	927.5	0.6369	0.5	Pass

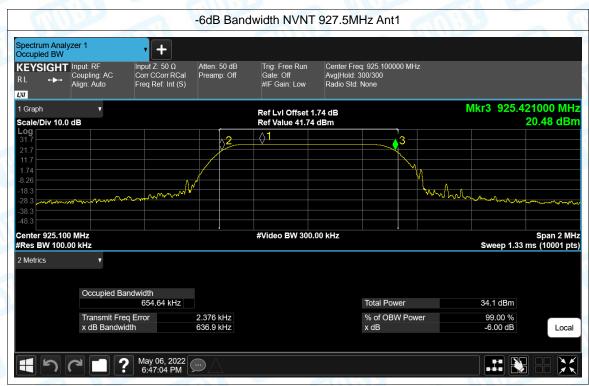






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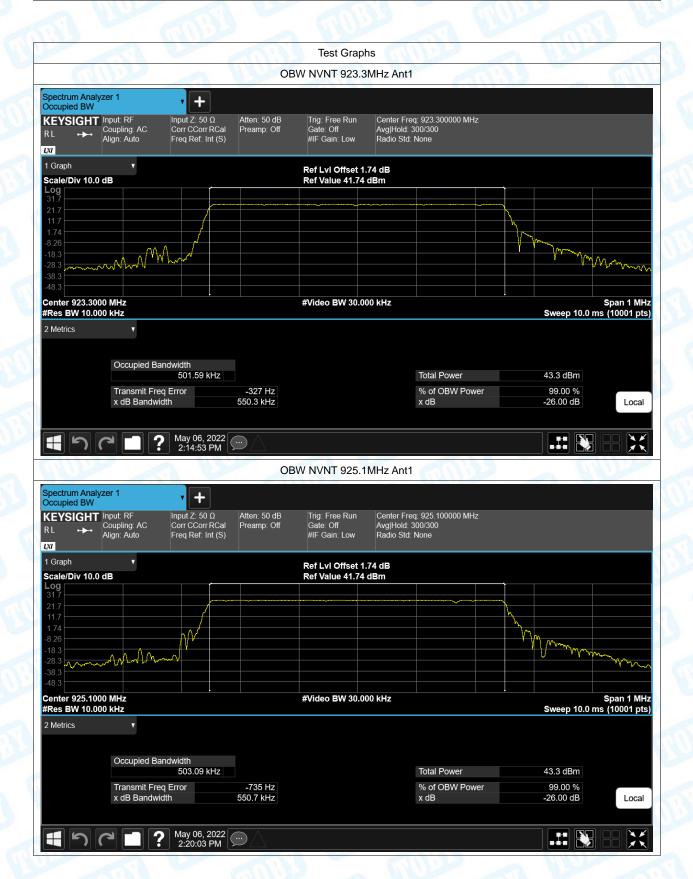






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Condition	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	923.3	Ant1	0.502
NVNT	925.1	Ant1	0.503
NVNT	927.5	Ant1	0.502







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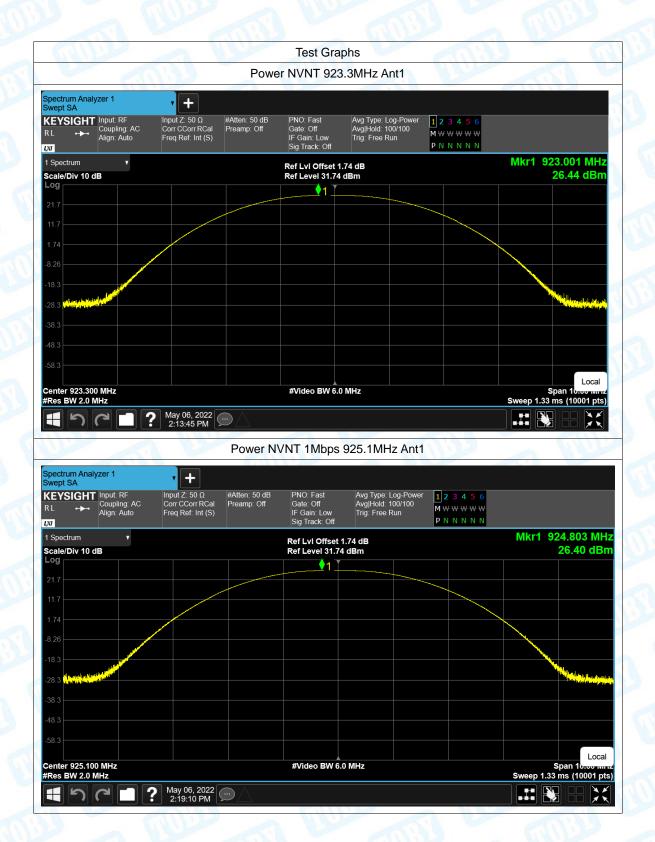




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## **Attachment E—Peak Output Power Data**

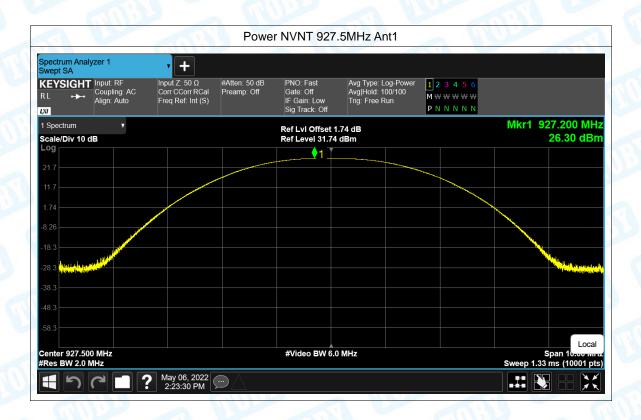
Condition	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	923.3	26.44	30	Pass
NVNT	925.1	26.40	30	Pass
NVNT	927.5	26.30	30	Pass





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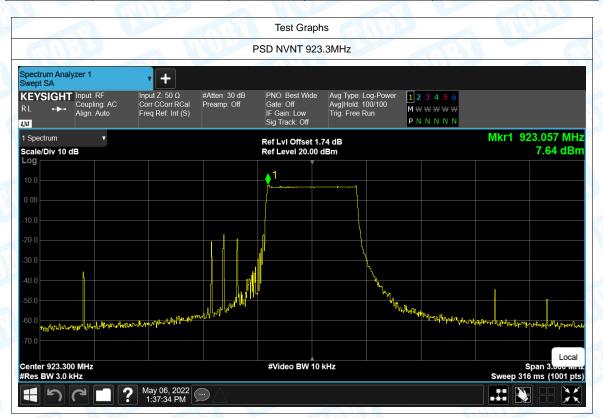


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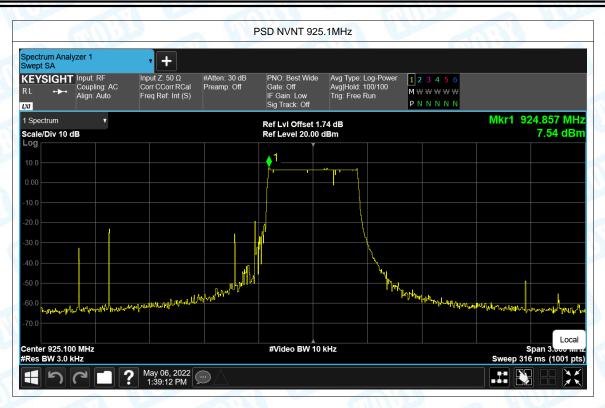
## **Attachment F—Power Spectral Density Data**

Condition	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	923.3	Ant1	7.64	8	Pass
NVNT	925.1	Ant1	7.54	8	Pass
NVNT	927.5	Ant1	7.52	8	Pass





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----END OF REPORT-----