



BUREAU  
VERITAS

Test Report No.: W7L-P21120015RF05



# FCC TEST REPORT (Part 15, Subpart C)



Applicant:	Ingenious Technology LLC
Address:	111 Deerwood Road, Suite 200, San Ramon, Ca, 94583

Manufacturer or Supplier:	Shenzhen Hoverstar Innovations Technology Co.,Ltd.
Address:	5F ,block B,Aerospace Micro-motor Building,No. 25 North 2nd Road of Science and technology,Nanshan
Product:	Osprey Electronics Hotspot G1
Brand Name:	Osprey Electronics
Model Name:	Hotspot G1
FCC ID:	2A3TX-HG1V1
Date of tests:	Dec. 01, 2021 ~ Mar. 03, 2022

The tests have been carried out according to the requirements of the following standard:

- FCC Part 15, Subpart C, Section 15.247
- ANSI C63.10-2013

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
	
Date: Mar. 03, 2022	Date: Mar. 03, 2022

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute you unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



# TABLE OF CONTENTS

**RELEASE CONTROL RECORD ..... 5**

**1 SUMMARY OF TEST RESULTS..... 6**

1.1 MEASUREMENT UNCERTAINTY ..... 6

**2 GENERAL INFORMATION ..... 7**

2.1 GENERAL DESCRIPTION OF EUT ..... 7

2.2 DESCRIPTION OF TEST MODES ..... 8

2.2.1 CONFIGURATION OF SYSTEM UNDER TEST ..... 8

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL..... 8

2.3 DUTY CYCLE OF TEST SIGNAL ..... 11

2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS ..... 12

2.5 DESCRIPTION OF SUPPORT UNITS ..... 12

**3 TEST TYPES AND RESULTS..... 13**

3.1 CONDUCTED EMISSION MEASUREMENT ..... 13

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT ..... 13

3.1.2 TEST INSTRUMENTS..... 13

3.1.3 TEST PROCEDURES ..... 14

3.1.4 DEVIATION FROM TEST STANDARD ..... 14

3.1.5 TEST SETUP ..... 15

3.1.6 EUT OPERATING CONDITIONS ..... 15

3.1.7 TEST RESULTS ..... 16

3.2 RADIATED EMISSION MEASUREMENT ..... 18

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT ..... 18

3.2.2 TEST INSTRUMENTS..... 19

3.2.3 TEST PROCEDURES ..... 20

3.2.4 DEVIATION FROM TEST STANDARD ..... 20

3.2.5 TEST SETUP ..... 21

3.2.6 EUT OPERATING CONDITIONS ..... 22

3.2.7 TEST RESULTS ..... 23

3.3 6 DB BANDWIDTH MEASUREMENT ..... 32

3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT ..... 32

3.3.2 TEST INSTRUMENTS..... 32

3.3.3 TEST PROCEDURE..... 32

3.3.4 DEVIATION FROM TEST STANDARD ..... 33



3.3.5 TEST SETUP ..... 33

3.3.6 EUT OPERATING CONDITIONS ..... 33

3.3.7 TEST RESULTS ..... 34

3.4 CONDUCTED OUTPUT POWER..... 35

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT ..... 35

3.4.2 TEST SETUP ..... 35

3.4.3 TEST INSTRUMENTS..... 35

3.4.4 TEST PROCEDURES ..... 35

3.4.5 DEVIATION FROM TEST STANDARD ..... 35

3.4.6 EUT OPERATING CONDITIONS ..... 35

3.4.7 TEST RESULTS ..... 36

3.4.7.1 MAXIMUM PEAK OUTPUT POWER ..... 36

3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)..... 37

3.5 POWER SPECTRAL DENSITY MEASUREMENT ..... 38

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT ..... 38

3.5.2 TEST SETUP ..... 38

3.5.3 TEST INSTRUMENTS..... 38

3.5.4 TEST PROCEDURE..... 38

3.5.5 DEVIATION FROM TEST STANDARD ..... 38

3.5.6 EUT OPERATING CONDITION ..... 38

3.5.7 TEST RESULTS ..... 39

3.6 OUT OF BAND EMISSION MEASUREMENT ..... 40

3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT ..... 40

3.6.2 TEST SETUP ..... 40

3.6.3 TEST INSTRUMENTS..... 40

3.6.4 TEST PROCEDURE..... 40

3.6.5 DEVIATION FROM TEST STANDARD ..... 41

3.6.6 EUT OPERATING CONDITION ..... 41

3.6.7 TEST RESULTS ..... 41

**4 PHOTOGRAPHS OF THE TEST CONFIGURATION ..... 42**

**5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB  
43**

**6 APPENDIX 1..... 44**

DTS BANDWIDTH ..... 44

TEST RESULT ..... 44

TEST GRAPHS..... 45



OCCUPIED CHANNEL BANDWIDTH ..... 47  
    TEST RESULT ..... 47  
    TEST GRAPHS..... 48  
MAXIMUM CONDUCTED OUTPUT POWER ..... 50  
    TEST RESULT PEAK ..... 50  
    TEST RESULT AVERAGE ..... 50  
MAXIMUM POWER SPECTRAL DENSITY ..... 51  
    TEST RESULT ..... 51  
    TEST GRAPHS..... 52  
BAND EDGE MEASUREMENTS ..... 54  
    TEST RESULT ..... 54  
    TEST GRAPHS..... 55  
CONDUCTED SPURIOUS EMISSION..... 56  
    TEST RESULT ..... 56  
    TEST GRAPHS..... 57  
DUTY CYCLE ..... 61  
    TEST RESULT ..... 61  
    TEST GRAPHS..... 61



**BUREAU**  
**VERITAS** Test Report No.: W7L-P21120015RF05

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21120015RF05	Original release	Mar. 03, 2022



# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
§15.207	AC Power Conducted Emission	Compliance
§15.205 §15.209	Radiated Emissions	Compliance
§15.247(d)	Out of band Emission Measurement	Compliance
§15.247(a) (2)	6dB bandwidth	Compliance
§15.247(b)	Conducted Output power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.203	Antenna Requirement	Compliance

Note : Except RSE and CE , other data please refer to Appendix

## 1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Osprey Electronics Hotspot G1
<b>BRAND NAME</b>	Osprey Electronics
<b>MODEL NAME</b>	Hotspot G1
<b>NOMINAL VOLTAGE</b>	5.0Vdc(adapter)
<b>MODULATION</b>	FSK
<b>OPERATING FREQUENCY</b>	923.3MHz~927.5MHz
<b>MAX. OUTPUT POWER</b>	39.99mW (Maximum)
<b>ANTENNA TYPE</b>	External Antenna with 3dBi gain
<b>HW VERSION</b>	G1
<b>SW VERSION</b>	G1
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	USB cable : unshielded without ferrite, 0.3 meter

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
Lora-DTS	1TX /1RX

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- CMD command was used for the testing.

**List of Accessory:**

ACCESSORIES	BRAND	MODEL	SPECIFICATION
AC Adapter	Sunshiny	XSD-0503000NEUD	I/P: 100-240Vac, 0.5A, O/P: 5.0Vdc, 3.0A
USB Cable	HCTL	AM TO TYPE-C-0.3M	Signal Line, 0.3meter



## 2.2 DESCRIPTION OF TEST MODES

8 channels are provided for DTS-Lora Mode :

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	923.3 MHz	5	925.7 MHz
2	923.9 MHz	6	926.3 MHz
3	924.5 MHz	7	926.9 MHz
4	925.1 MHz	8	927.5 MHz

### 2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

### 2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz      **RE≥1G**: Radiated Emission above 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

**NOTE:** No need to concern of Conducted Emission due to the EUT is powered by battery.

### RADIATED EMISSION TEST (BELOW 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION
Lora	1 to 8	1	DTS





**RADIATED EMISSION TEST (ABOVE 1GHz):**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION
Lora	1 to 8	1, 4, 8	DTS

**POWER LINE CONDUCTED EMISSION TEST**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION
Lora	1 to 8	1	DTS

**BANDEDGE MEASUREMENT:**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION
Lora	1 to 8	1, 8	DTS



**ANTENNA PORT CONDUCTED MEASUREMENT:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
Lora	1 to 8	1, 4, 8	DTS	-

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 5V By Adapter	Jace Hu
RE≥1G	23deg. C, 70%RH	DC5V By Adapter	Jace Hu
PLC	25deg. C, 52%RH	DC5V By Adapter	James Fu
APCM	25deg. C, 60%RH	DC5V By Adapter	James Fu



### 2.3 Duty Cycle of Test Signal

Please Refer to Appendix Of this test report.

**WORST-CASE DATA:**

Measured Duty Cycle	
Mode	Duty Cycle [%]
Lora-DTS Mode	100%

Note:

Duty cycle > 98%, duty factor need not be considered.



## 2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C, Section 15.247**

**KDB 558074 D01 DTS Meas Guidance v05r02**

**ANSI C63.10-2013**

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

## 2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thnikpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



### 3 TEST TYPES AND RESULTS

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

##### 3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Mar. 03,21	Mar. 02,22
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 25,21	Feb. 24,22
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 25,22	Feb. 24,23

- NOTE:**
1. The test was performed in CE shielded room.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



### 3.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

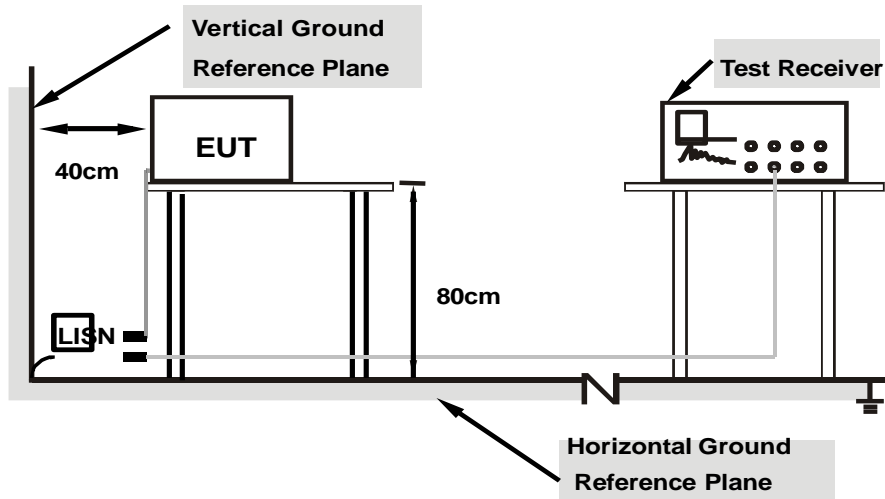
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



### 3.1.5 TEST SETUP



- Note:**
- 1.Support units were connected to second LISN.
  - 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 3.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



### 3.1.7 TEST RESULTS

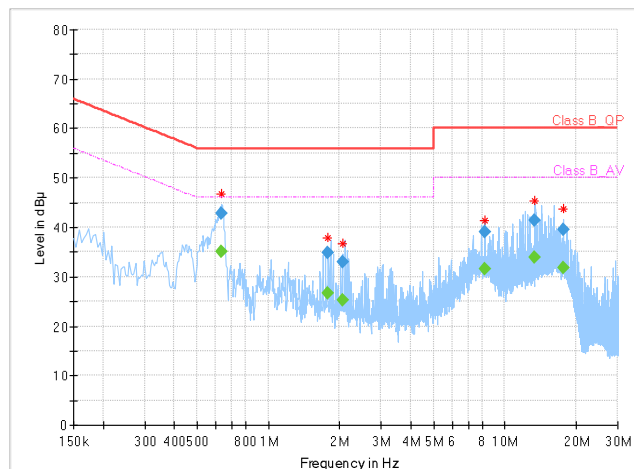
#### CONDUCTED WORST-CASE DATA:

<b>Frequency Range</b>	150KHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	26deg. C, 51%RH
<b>Tested By</b>	Carl xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.632000	---	35.16	46.00	10.84	L1	ON	9.7
0.632000	42.92	---	56.00	13.08	L1	ON	9.7
1.788000	---	26.62	46.00	19.38	L1	ON	9.7
1.788000	34.92	---	56.00	21.08	L1	ON	9.7
2.056000	---	25.18	46.00	20.82	L1	ON	9.7
2.056000	32.98	---	56.00	23.02	L1	ON	9.7
8.208000	---	31.59	50.00	18.41	L1	ON	9.7
8.208000	39.17	---	60.00	20.83	L1	ON	9.7
13.420000	---	33.99	50.00	16.01	L1	ON	9.8
13.420000	41.46	---	60.00	18.54	L1	ON	9.8
17.692000	---	31.74	50.00	18.26	L1	ON	9.8
17.692000	39.45	---	60.00	20.55	L1	ON	9.8

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Limit value - Emission level
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

Full Spectrum







**BUREAU  
VERITAS**

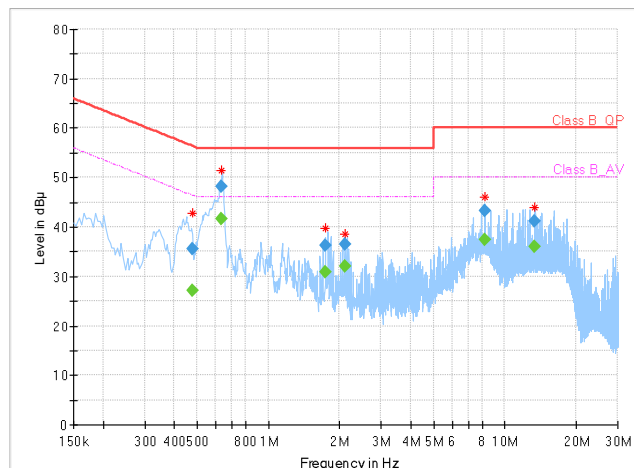
**Test Report No.: W7L-P21120015RF05**

<b>Frequency Range</b>	150KHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	26deg. C, 51%RH
<b>Tested By</b>	Carl xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.480000	---	27.18	46.34	19.16	N	ON	9.7
0.480000	35.46	---	56.34	20.88	N	ON	9.7
0.632000	---	41.54	46.00	4.46	N	ON	9.7
0.632000	48.12	---	56.00	7.88	N	ON	9.7
1.744000	---	30.92	46.00	15.08	N	ON	9.8
1.744000	36.16	---	56.00	19.84	N	ON	9.8
2.100000	---	31.94	46.00	14.06	N	ON	9.8
2.100000	36.51	---	56.00	19.49	N	ON	9.8
8.200000	---	37.53	50.00	12.47	N	ON	9.8
8.200000	43.38	---	60.00	16.62	N	ON	9.8
13.420000	---	36.07	50.00	13.93	N	ON	9.8
13.420000	41.16	---	60.00	18.84	N	ON	9.8

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Limit value - Emission level
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





### 3.2 RADIATED EMISSION MEASUREMENT

#### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

**3.2.2 TEST INSTRUMENTS**

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Apr. 02, 21	Apr. 01, 22
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 27,21	Apr. 26,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 30,21	Apr. 29,22
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 25,21	Aug. 24,22
Power Meter	Anritsu	ML2495A	1506002	Feb. 25,21	Feb. 24,22
Power Meter	Anritsu	ML2495A	1506002	Feb. 25,22	Feb. 24,23
Power Sensor	Anritsu	MA2411B	1339352	Feb. 25,21	Feb. 24,22
Power Sensor	Anritsu	MA2411B	1339352	Feb. 25,22	Feb. 24,22
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Feb 14,20	Feb. 13,23

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 3 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Chamber.
  3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



### 3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz)/1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

#### **Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

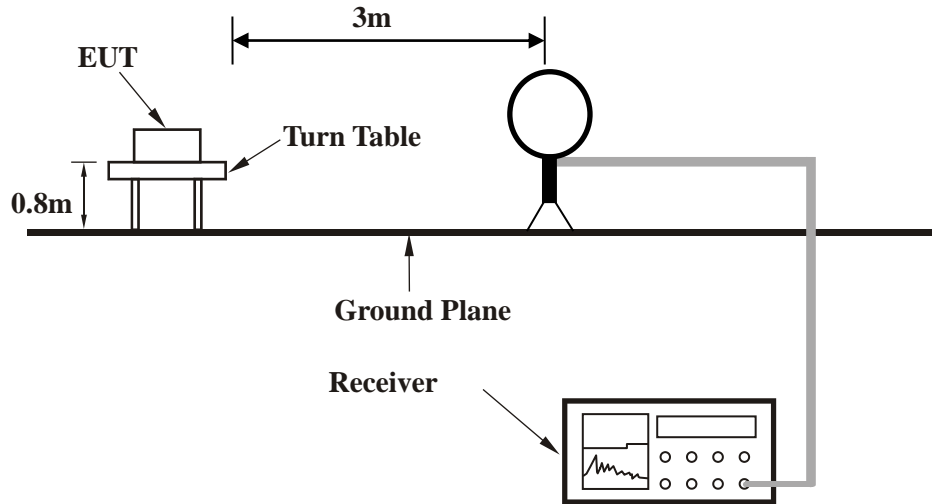
### 3.2.4 DEVIATION FROM TEST STANDARD

No deviation

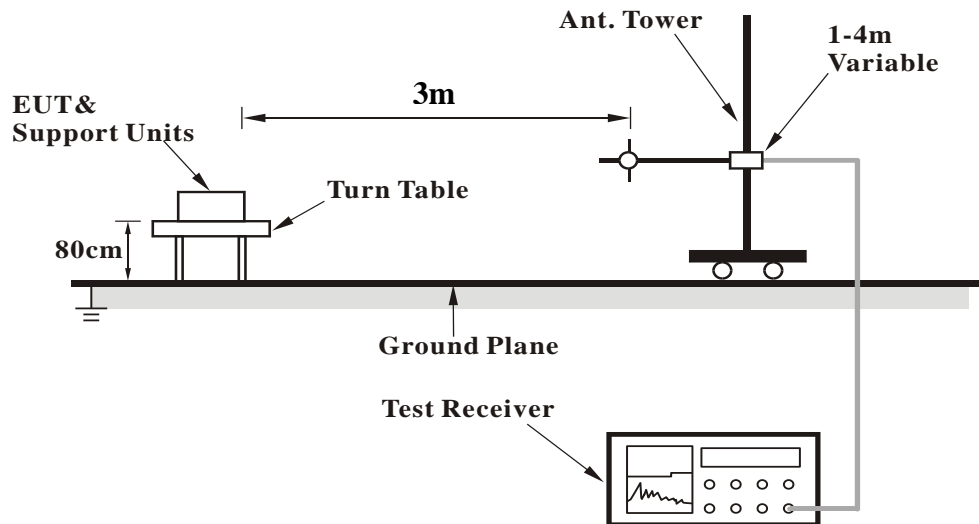


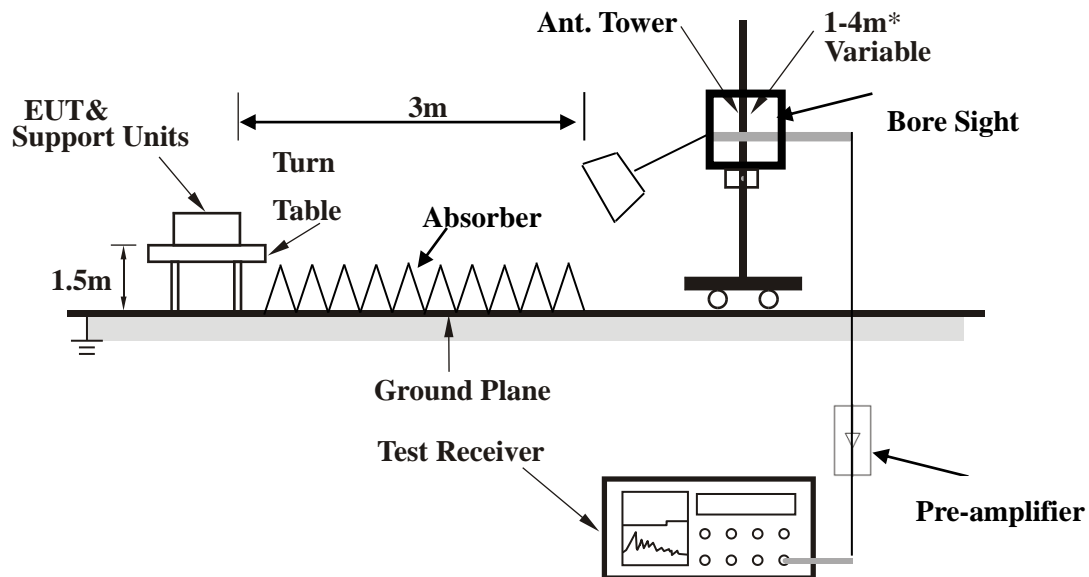
### 3.2.5 TEST SETUP

#### <Frequency Range 9KHz~30MHz >



#### < Frequency Range 30MHz~1GHz >



**<Frequency Range above 1GHz>**

**Note:** Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 3.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



### 3.2.7 TEST RESULTS

#### BELOW 1GHz WORST-CASE DATA:

**Note:** For frequency below 30MHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

#### 30 MHz – 1GHz data:

<b>CHANNEL</b>	Low Channel ( 923.3Mhz )	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
* 60.07	33.19	62.48	87.2	-54.01	7.6	0.44	37.33	200	360	QP
125.06	37.37	66.16	43.5	-6.13	7.65	0.6	37.04	200	360	QP
* 899.12	59.78	72.53	87.2	-27.42	23.3	1.7	37.75	200	360	QP
* 902.00	40.21	52.94	87.2	-46.99	23.32	1.7	37.75	100	0	QP
923.30	107.2	119.64	/	/	23.58	1.72	37.74	200	360	Peak
* 947.62	60.82	72.92	87.2	-26.38	23.87	1.75	37.72	200	360	QP

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 923.3MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.



<b>CHANNEL</b>	Low Channel ( 923.3Mhz )	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
* 48.43	36.48	63.94	87.43	-50.95	9.5	0.39	37.35	300	0	QP
125.06	35.06	63.6	43.5	-8.44	7.9	0.6	37.04	300	0	QP
* 633.34	49.43	64.08	87.43	-38	21.37	1.4	37.42	300	0	QP
* 887.48	53.98	66.24	87.43	-33.45	23.8	1.68	37.74	300	0	QP
* 902.00	36.47	48.62	87.43	-50.96	23.9	1.7	37.75	100	0	QP
923.30	107.43	119.55	/	/	23.9	1.72	37.74	300	0	Peak

**REMARKS:**

1. Emission Level(dBuV/m) = Read Level(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 923.3MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.





<b>CHANNEL</b>	Mid Channel ( 925.1Mhz )	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
*60.07	36.98	66.27	87.12	-50.14	7.6	0.44	37.33	300	0	QP
125.06	34.5	63.29	43.5	-9	7.65	0.6	37.04	300	0	QP
*471.35	40.43	58.02	87.12	-46.69	18.18	1.18	36.95	300	0	QP
*912.7	51.16	63.74	87.12	-35.96	23.45	1.71	37.74	300	0	QP
925.10	107.12	119.53	/	/	23.6	1.72	37.73	300	0	Peak
*949.56	52.88	64.96	87.12	-34.24	23.89	1.75	37.72	300	0	QP

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 925.1MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.



<b>CHANNEL</b>	Mid Channel (925.1Mhz)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
*41.64	36.25	61.68	87.4	-51.15	11.68	0.37	37.48	200	0	QP
*550.89	39.18	55.06	87.4	-48.22	20.02	1.29	37.19	200	0	QP
*575.14	41.66	57.16	87.4	-45.74	20.45	1.33	37.28	200	0	QP
*629.46	45.86	60.57	87.4	-41.54	21.31	1.4	37.42	200	0	QP
*901.06	52.83	64.98	87.4	-34.57	23.9	1.7	37.75	200	0	QP
925.10	107.4	119.51	/	/	23.9	1.72	37.73	200	0	Peak

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 925.1MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.



<b>CHANNEL</b>	High Channel ( 927.5Mhz )	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
125.06	37.86	66.65	43.5	-5.64	7.65	0.6	37.04	200	0	QP
*480.08	40.51	57.95	87.17	-46.66	18.34	1.19	36.97	200	0	QP
*915.61	50.17	62.71	87.17	-37	23.49	1.71	37.74	200	0	QP
927.50	107.17	119.54	/	/	23.63	1.73	37.73	200	0	Peak
*928.00	72.51	84.87	87.17	-14.66	23.64	1.73	37.73	100	0	QP
*939.86	55.52	67.73	87.17	-31.65	23.78	1.74	37.73	200	0	QP

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 927.5MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.



<b>CHANNEL</b>	High Channel ( 927.5Mhz )	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK	
125.06	35.47	64.01	43.5	-8.03	7.9	0.6	37.04	300	0	QP	
*624.61	55.29	70.07	87.45	-32.16	21.24	1.39	37.41	300	0	QP	
*891.36	50.32	62.55	87.45	-37.13	23.83	1.69	37.75	300	0	QP	
927.50	107.45	119.55	/	/	23.9	1.73	37.73	300	0	Peak	
*928.00	72.6	84.7	87.45	-14.85	23.9	1.73	37.73	100	0	QP	
*951.50	55.18	67.25	87.45	-32.27	23.9	1.75	37.72	300	0	QP	

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 927.5MHz: Fundamental frequency.
6. \* Represents that the point not falls in the restricted bands.



ABOVE 1GHz TEST DATA

Note: For higher frequency, the emission is too low to be detected.

CHANNEL	Low Channel ( 923.3Mhz )	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 10GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1850	50.78	62.34	74	-23.22	29.75	5.13	46.44	200	125	Peak
1850	35.09	46.65	54	-18.91	29.75	5.13	46.44	200	125	Average
2769.9	66.67	73.78	74	-7.33	32.42	6.37	45.9	200	125	Peak
2769.9	48.43	55.54	54	-5.57	32.42	6.37	45.9	200	125	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1846.6	51.36	62.55	74	-22.64	30.13	5.12	46.44	100	263	Peak
1846.6	35.44	46.63	54	-18.56	30.13	5.12	46.44	100	263	Average
2769.9	55.87	62.68	74	-18.13	32.72	6.37	45.9	100	263	Peak
2769.9	48.34	55.15	54	-5.66	32.72	6.37	45.9	100	263	Average

REMARKS:

- 1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.



<b>CHANNEL</b>	Mid Channel ( 925.1Mhz )	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 10GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1850.2	50.02	61.57	74	-23.98	29.75	5.13	46.43	125	310	Peak
1850.2	34.03	45.58	54	-19.97	29.75	5.13	46.43	125	310	Average
2775.3	55.84	62.92	74	-18.16	32.43	6.38	45.89	125	310	Peak
2775.3	48.54	55.62	54	-5.46	32.43	6.38	45.89	125	310	Average
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1850.2	49.32	60.47	74	-24.68	30.15	5.13	46.43	100	265	Peak
1850.2	34.58	45.73	54	-19.42	30.15	5.13	46.43	100	265	Average
2775.3	55.3	62.08	74	-18.7	32.73	6.38	45.89	100	265	Peak
2775.3	47.39	54.17	54	-6.61	32.73	6.38	45.89	100	265	Average

**REMARKS:**

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.



<b>CHANNEL</b>	High Channel ( 927.5Mhz )	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 10GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1855	52.09	63.62	74	-21.91	29.77	5.13	46.43	100	315	Peak
1855	35.1	46.63	54	-18.9	29.77	5.13	46.43	100	315	Average
2782.5	59.51	66.56	74	-14.49	32.44	6.39	45.88	100	315	Peak
2782.5	50.81	57.86	54	-3.19	32.44	6.39	45.88	100	315	Average
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1855	50.83	61.94	74	-23.17	30.19	5.13	46.43	100	260	Peak
1855	35.71	46.82	54	-18.29	30.19	5.13	46.43	100	260	Average
2782.5	56.71	63.46	74	-17.29	32.74	6.39	45.88	100	260	Peak
2782.5	49.97	56.72	54	-4.03	32.74	6.39	45.88	100	260	Average

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.



### 3.3 6 dB BANDWIDTH MEASUREMENT

#### 3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 25,21	Feb. 24,22
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 25,21	Feb. 24,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Apr. 26,21	Apr. 25,22
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 25,21	Feb. 24,22
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 25,22	Feb. 24,23

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

#### 3.3.3 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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.

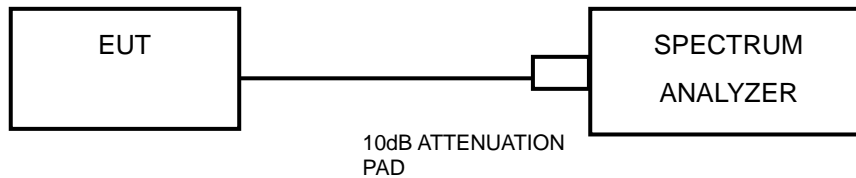




### 3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

### 3.3.5 TEST SETUP



### 3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



**BUREAU** Test Report No.: W7L-P21120015RF05  
**VERITAS**

### 3.3.7 TEST RESULTS

Please Refer to Appendix Of this test report.

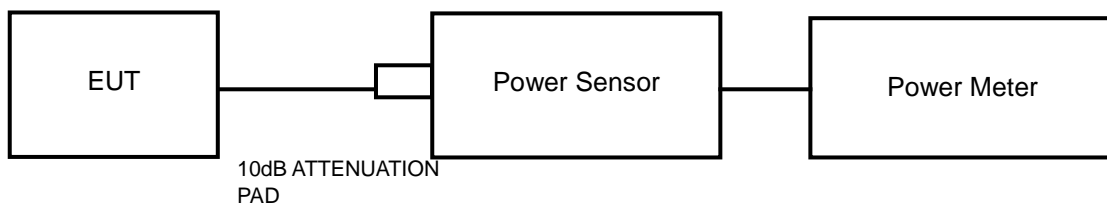


### 3.4 CONDUCTED OUTPUT POWER

#### 3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 902–928 MHz band: 1 Watt (30dBm)

#### 3.4.2 TEST SETUP



#### 3.4.3 TEST INSTRUMENTS

Refer to section 3.2.2 to get information of above instrument.

#### 3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

#### 3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



**BUREAU** Test Report No.: W7L-P21120015RF05  
**VERITAS**

### 3.4.7 TEST RESULTS

#### 3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.



**BUREAU  
VERITAS**

**Test Report No.: W7L-P21120015RF05**

### 3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

Please Refer to Appendix Of this test report.

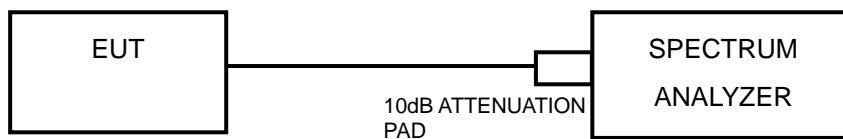


### 3.5 POWER SPECTRAL DENSITY MEASUREMENT

#### 3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

#### 3.5.2 TEST SETUP



#### 3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW  $\geq 3 \times$  RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

#### 3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



**BUREAU** Test Report No.: W7L-P21120015RF05  
**VERITAS**

### 3.5.7 TEST RESULTS

Please Refer to Appendix Of this test report.

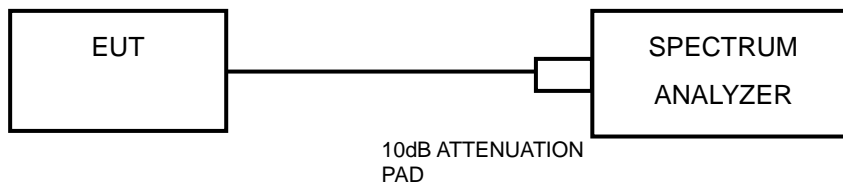


### 3.6 OUT OF BAND EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

#### 3.6.2 TEST SETUP



#### 3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.6.4 TEST PROCEDURE

##### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.





## MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

### 3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix 1/2 Of this test report.



**BUREAU** Test Report No.: W7L-P21120015RF05  
**VERITAS**

## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



**BUREAU VERITAS** Test Report No.: W7L-P21120015RF05

## 5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.



**BUREAU VERITAS** Test Report No.: W7L-P21120015RF05

## 6 Appendix 1 DTS BANDWIDTH

### TEST RESULT

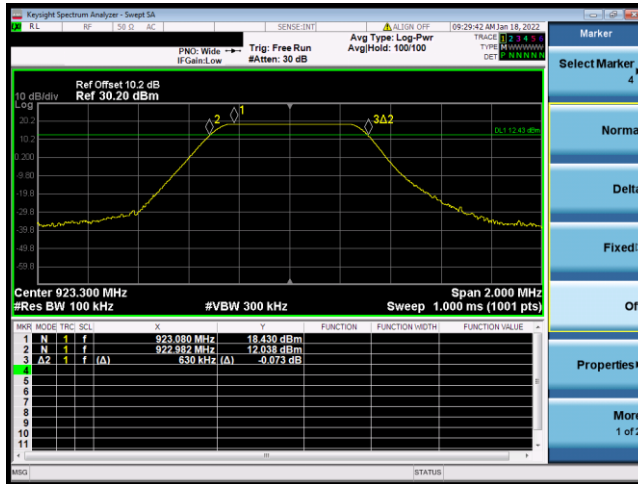
Test Mode	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DTS-Lora	923.3	0.630	922.982	923.612	0.5	PASS
	925.1	0.646	924.762	925.408	0.5	PASS
	927.5	0.630	927.182	927.812	0.5	PASS



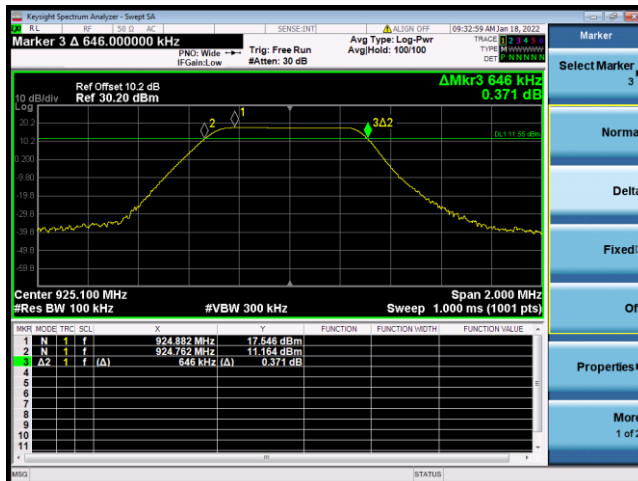
BUREAU VERITAS

Test Report No.: W7L-P21120015RF05

### TEST GRAPHS



923.3MHz

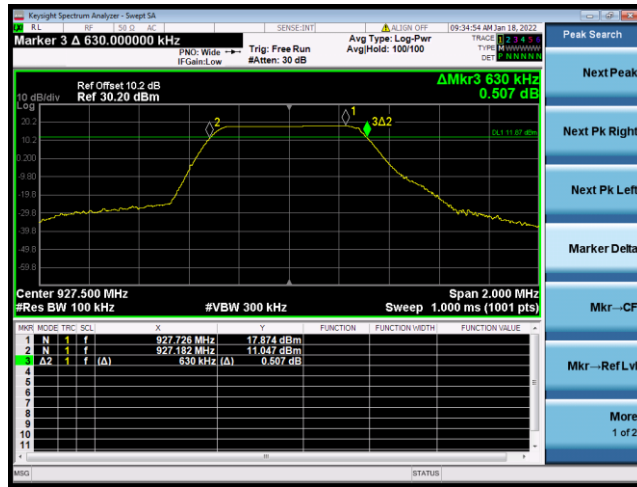


925.1MHz



BUREAU VERITAS

Test Report No.: W7L-P21120015RF05



927.5MHz



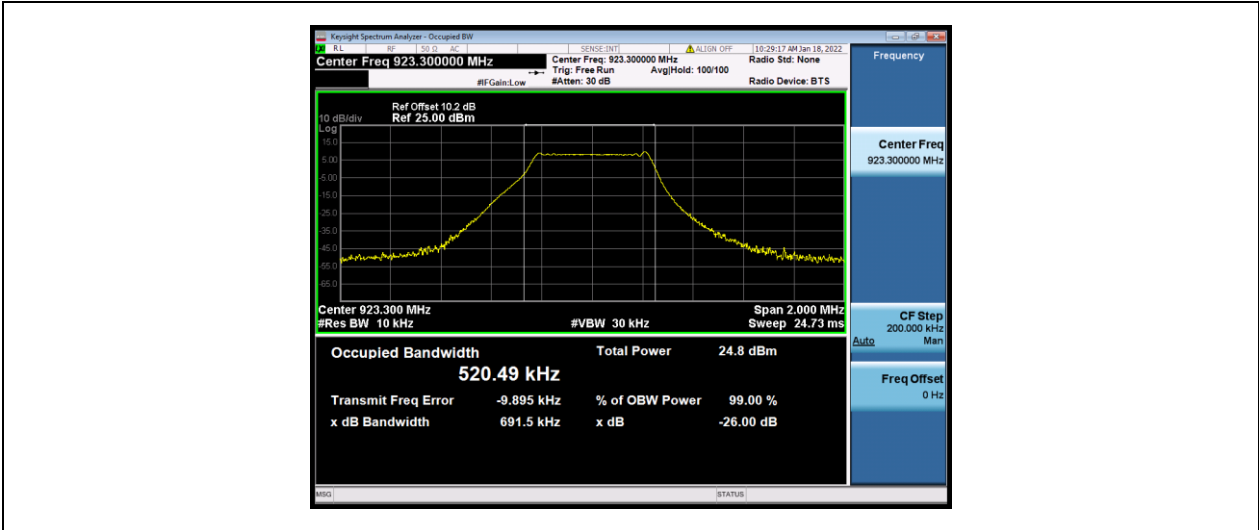
## OCCUPIED CHANNEL BANDWIDTH

### TEST RESULT

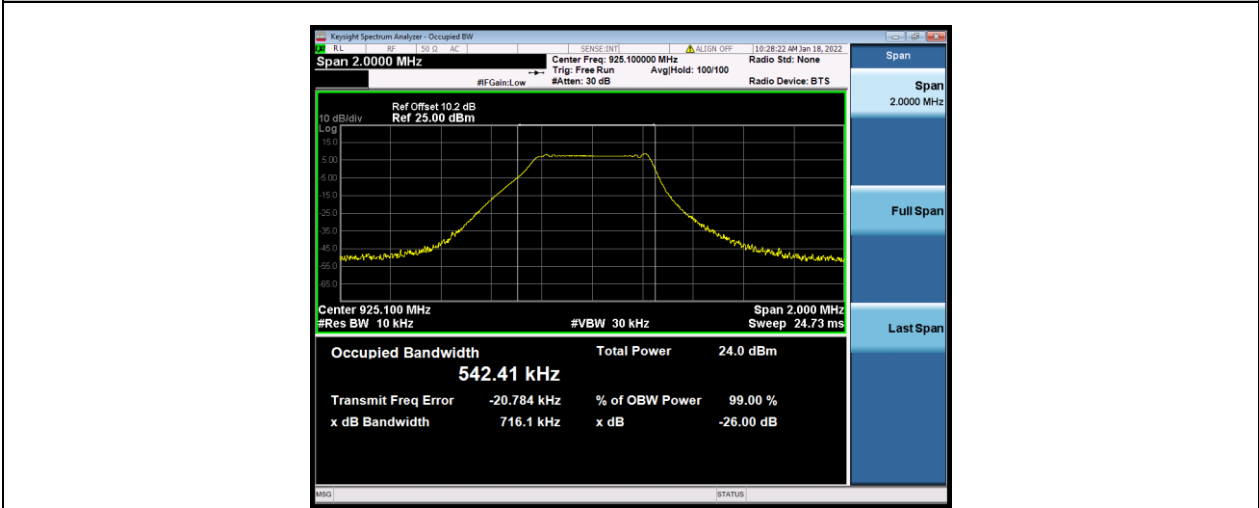
Test Mode	Channel	OCB [MHz]	Limit[MHz]	Verdict
DTS-Lora	923.3	0.520	---	PASS
	925.1	0.542	---	PASS
	927.5	0.502	---	PASS



### TEST GRAPHS



923.3MHz



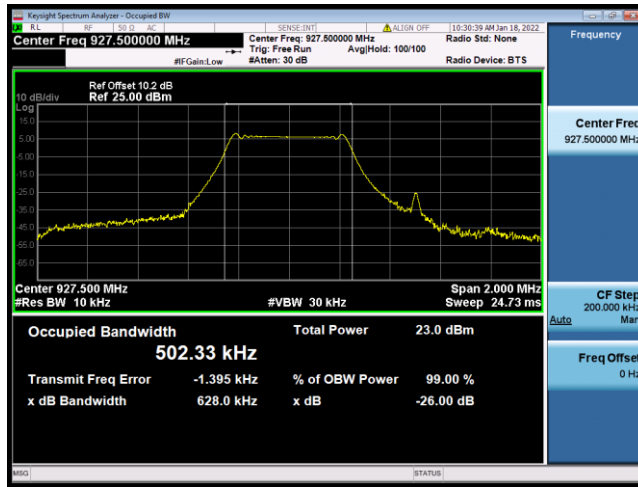
925.1MHz





**BUREAU  
VERITAS**

**Test Report No.: W7L-P21120015RF05**



927.5MHz



## MAXIMUM CONDUCTED OUTPUT POWER

### TEST RESULT PEAK

Test Mode	Channel	Peak Power[dBm]	Peak Power[mw]	Conducted Limit[dBm]	Verdict	Power setting
DTS-Lora	923.3	15.20	33.11	≤30	PASS	18
	925.1	15.71	37.24	≤30	PASS	18
	927.5	16.02	39.99	≤30	PASS	18

### TEST RESULT AVERAGE

Test Mode	Channel	Average Power	Conducted Limit[dBm]	Verdict	Power setting
DTS-Lora	923.3	15.12	/	PASS	18
	925.1	15.63	/	PASS	18
	927.5	15.90	/	PASS	18



## MAXIMUM POWER SPECTRAL DENSITY TEST RESULT

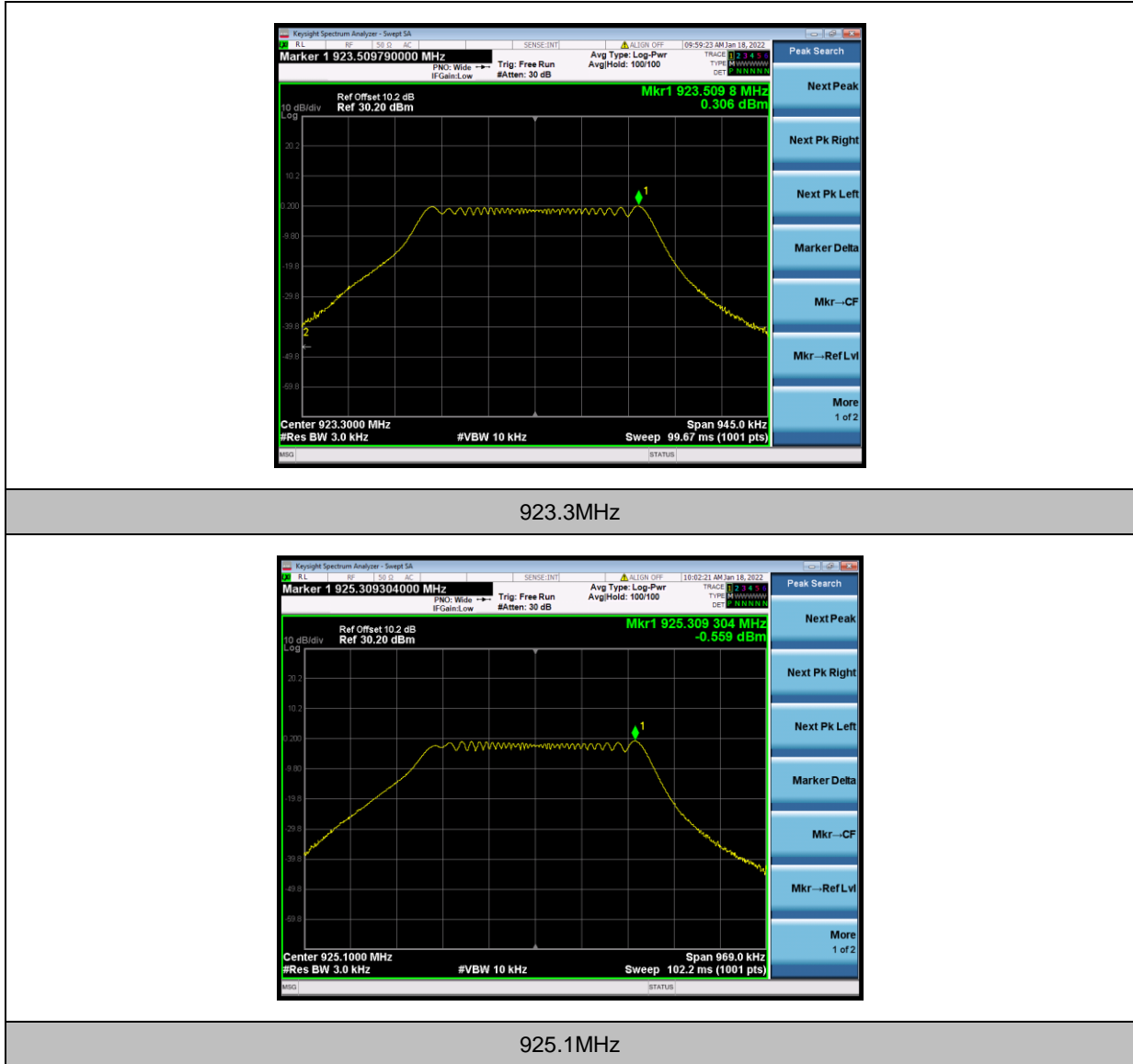
Test Mode	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
DTS-Lora	923.3	0.306	≤8	PASS
	925.1	-0.559	≤8	PASS
	927.5	-0.469	≤8	PASS



**BUREAU  
VERITAS**

Test Report No.: W7L-P21120015RF05

## TEST GRAPHS



BV 7Layers Communications Technology  
(Shenzhen) Co. Ltd

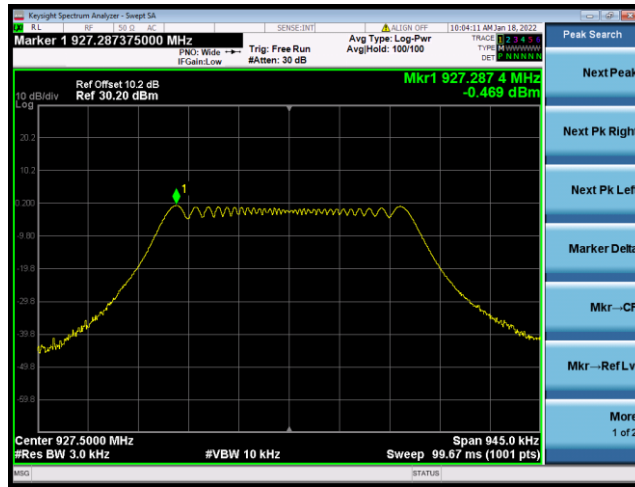
No.B102, Dazu Chuangxin Mansion, North of Beihuan  
Avenue, North Area, Hi-Tech Industrial Park, Nanshan  
District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566  
Fax: +86 755 8869 6577  
Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)



**BUREAU  
VERITAS**

**Test Report No.: W7L-P21120015RF05**



927.5MHz



## **BAND EDGE MEASUREMENTS**

### **TEST RESULT**

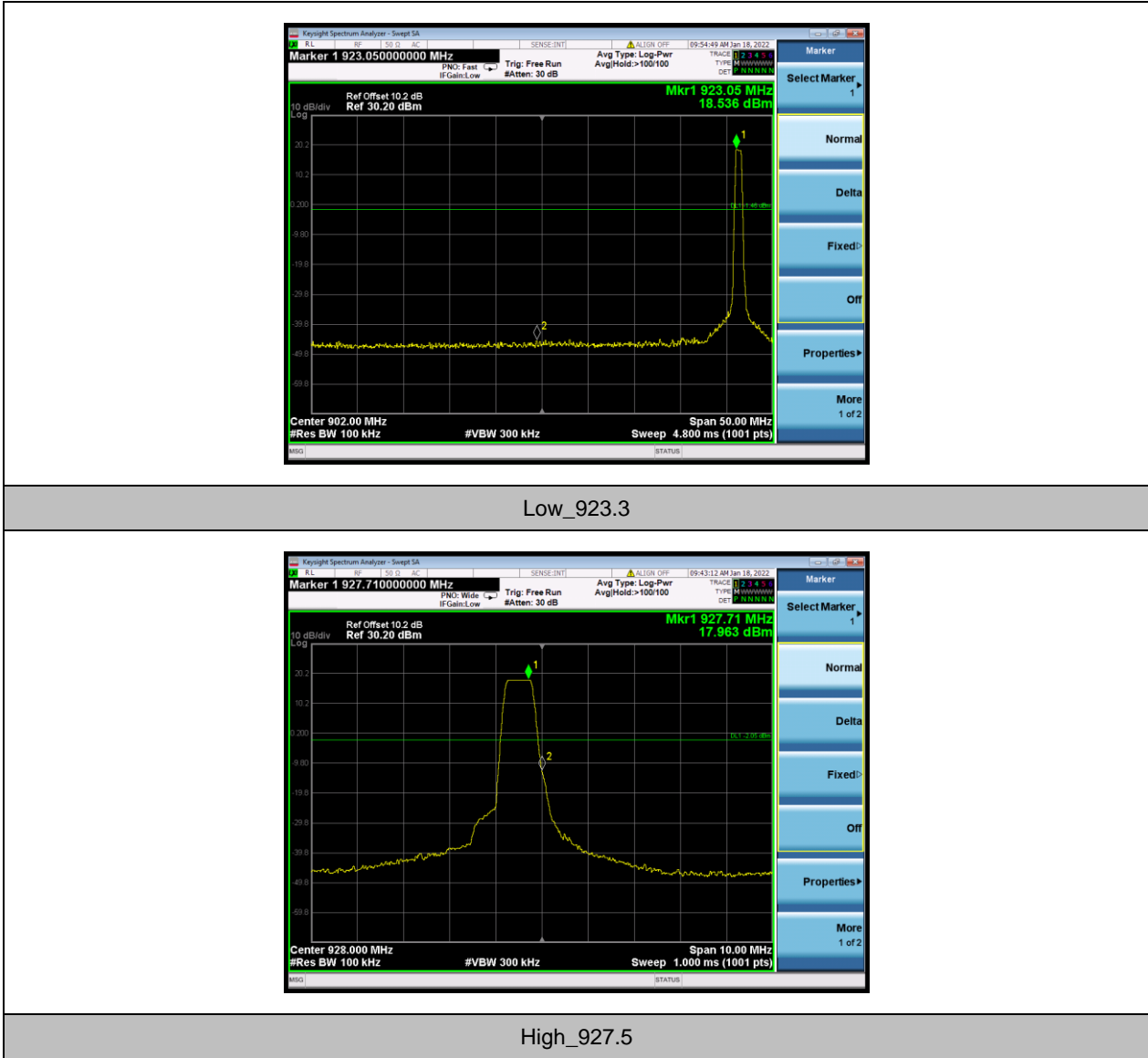
	ChName	Channel	Verdict
DTS-Lora	Low	923.3	PASS
	High	927.5	PASS



BUREAU  
VERITAS

Test Report No.: W7L-P21120015RF05

## TEST GRAPHS



BV 7Layers Communications Technology  
(Shenzhen) Co. Ltd

No.B102, Dazu Chuangxin Mansion, North of Beihuan  
Avenue, North Area, Hi-Tech Industrial Park, Nanshan  
District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566  
Fax: +86 755 8869 6577  
Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)



## CONDUCTED SPURIOUS EMISSION TEST RESULT

Test Mode	Channel	Verdict
DTS-Lora	923.3	PASS
	925.1	PASS
	927.5	PASS

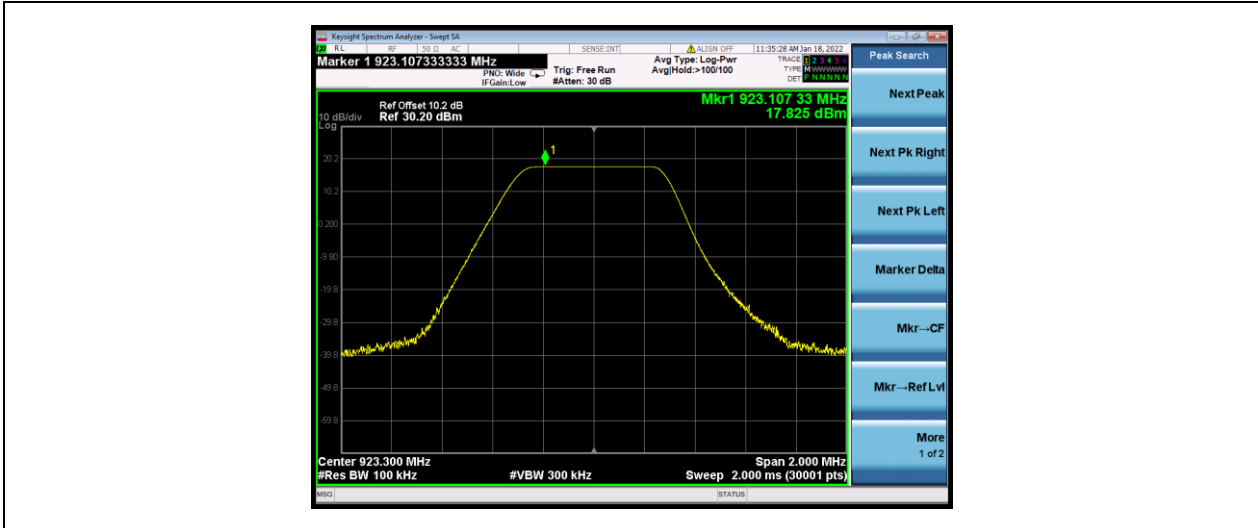




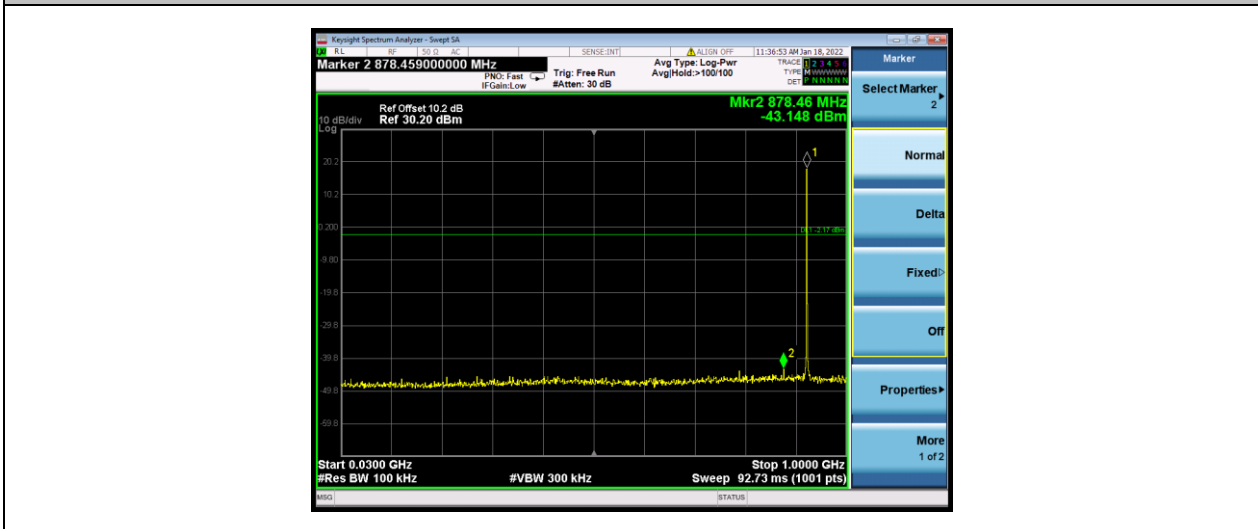
BUREAU  
VERITAS

Test Report No.: W7L-P21120015RF05

## TEST GRAPHS



923.3MHz~Reference

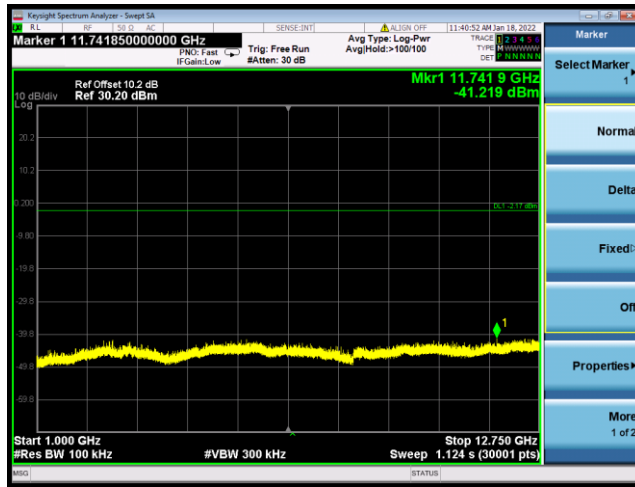


923.3MHz\_30~1000

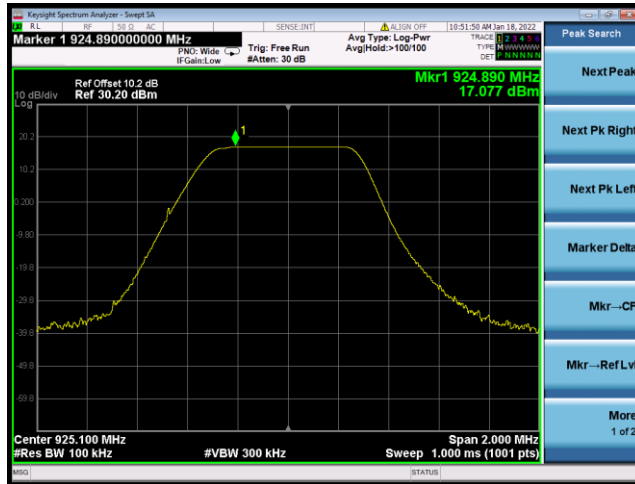


**BUREAU  
VERITAS**

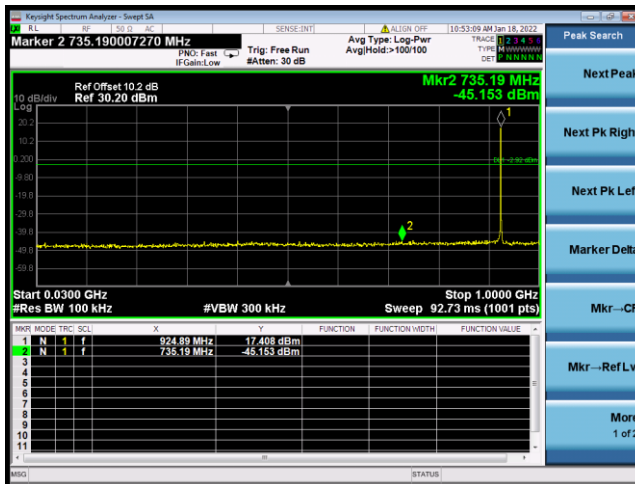
Test Report No.: W7L-P21120015RF05



923.3MHz \_1000~10000

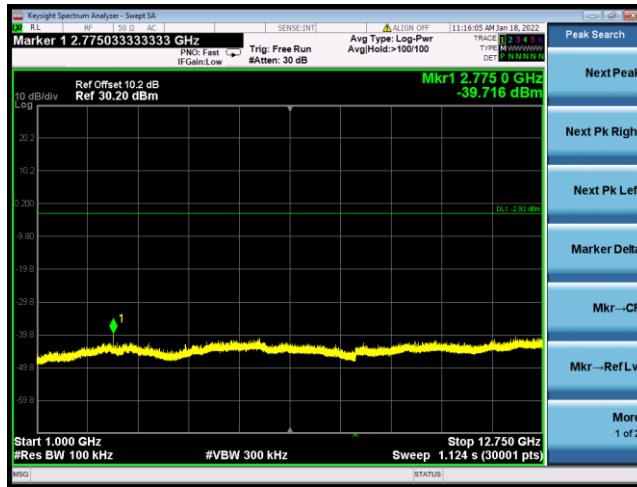


925.1MHz ~Reference

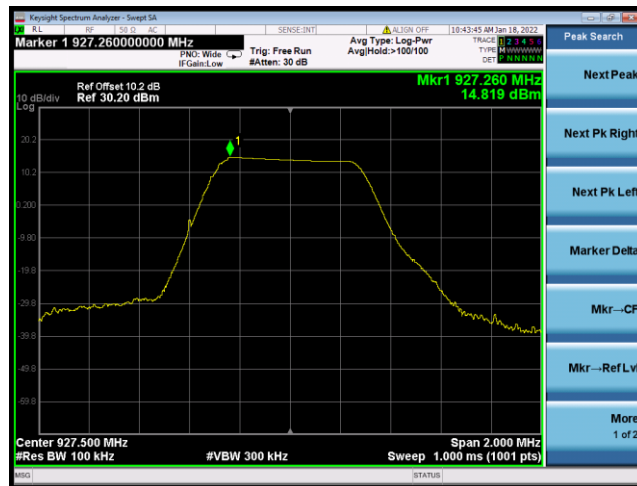




925.1MHz \_30~1000



925.1MHz \_1000~10000

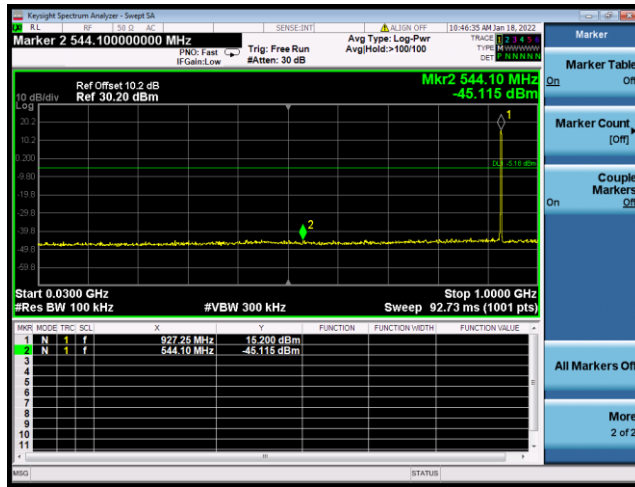


927.5MHz ~Reference

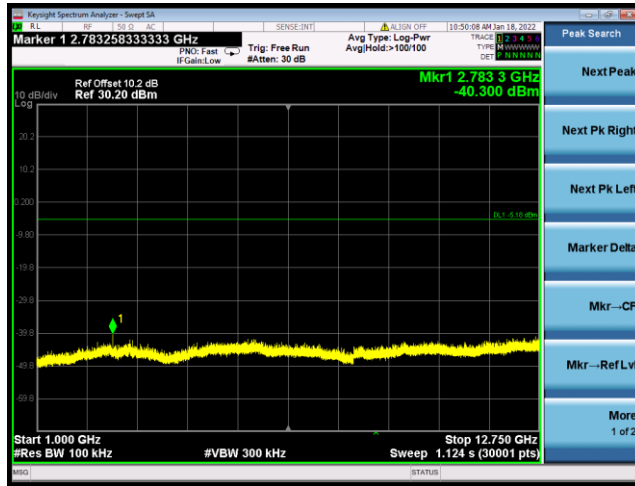


**BUREAU  
VERITAS**

**Test Report No.: W7L-P21120015RF05**



927.5MHz \_30~1000



927.5MHz \_1000~10000



## DUTY CYCLE TEST RESULT

Test Mode	Channel	DC [%]	Limit	Verdict
DTS-Lora	925.1	100	---	PASS

## TEST GRAPHS

