



Shenzhen CTL Testing Technology Co., Ltd.  
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

# TEST REPORT

## FCC PART 15 SUBPART C 15.247 & RSS-247

Report Reference No. .... : CTL2304242041-WF

Compiled by:  
( position+printed name+signature)

Happy Guo  
(File administrators)

Happy Guo

Tested by:  
( position+printed name+signature)

Gary Gao  
(Test Engineer)

Gary Gao

Approved by:  
( position+printed name+signature)

Ivan Xie  
(Manager)

Ivan Xie

Product Name ..... : RFID Module

Model(HVIN) ..... : EC-RF200-T7

List Model(HVIN) ..... : N/A

Trade Mark..... : N/A

FCC ID ..... : 2A92Z-ECRF200T7

IC..... : 29863-ECRF200T7

Applicant's name ..... : Complete Genomics, Inc.

Address of applicant ..... : 2904 ORCHARD PARKWAY SAN JOSE, CA 95134

Test Firm..... : Shenzhen CTL Testing Technology Co., Ltd.

Address of Test Firm ..... : Floor 1-A, Baisha Technology Park, No.3011, Shahehexi Road,  
Nanshan District, Shenzhen, China 518055

Test specification..... :

Standard ..... : 47 CFR FCC Part 15 Subpart C 15.247 &  
RSS-247 Issue 2, February 2017

TRF Originator ..... : Shenzhen CTL Testing Technology Co., Ltd.

Master TRF..... : Dated 2011-01

Date of receipt of test item ..... : April 26, 2023

Date of sampling..... : April 27, 2023

Date of Test Date..... : April 27, 2023- July 12, 2023

Date of Issue ..... : July 12, 2023

Result ..... : Pass

**Shenzhen CTL Testing Technology Co., Ltd. All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen CTL Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen CTL Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

# TEST REPORT

|                         |                         |               |
|-------------------------|-------------------------|---------------|
| <b>Test Report No.:</b> | <b>CTL2304242041-WF</b> | July 12, 2023 |
|                         |                         | Date of issue |

Equipment under Test : RFID Module

Sample No. : CTL230424204-1-S001(Normal sample)  
CTL230424204-1-S002(Engineer sample)

Model (HVIN) : EC-RF200-T7

Listed Models(HVIN) : N/A

**Applicant** : **Complete Genomics, Inc.**

Address : 2904 ORCHARD PARKWAY SAN JOSE, CA 95134

**Manufacturer** : **Complete Genomics, Inc.**

Address : 2904 ORCHARD PARKWAY SAN JOSE, CA 95134

|                    |               |
|--------------------|---------------|
| <b>Test result</b> | <b>Pass *</b> |
|--------------------|---------------|

\* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

### \*\* Modified History \*\*

[illegible]

| Table of Contents                                      |  | Page |
|--------------------------------------------------------|--|------|
| 1. SUMMARY .....                                       |  | 5    |
| 1.1. TEST STANDARDS.....                               |  | 5    |
| 1.2. Test Description .....                            |  | 5    |
| 1.3. Test Facility.....                                |  | 6    |
| 1.4. Statement of the measurement uncertainty .....    |  | 6    |
| 2. GENERAL INFORMATION .....                           |  | 8    |
| 2.1. Environmental conditions.....                     |  | 8    |
| 2.2. General Description of EUT .....                  |  | 8    |
| 2.3. Special Accessories.....                          |  | 8    |
| 2.4. Description of Test Modes and Test Frequency..... |  | 9    |
| 2.5. Equipments Used during the Test .....             |  | 9    |
| 2.6. Related Submittal(s) / Grant (s) .....            |  | 10   |
| 2.7. Modifications .....                               |  | 10   |
| 3. TEST CONDITIONS AND RESULTS .....                   |  | 11   |
| 3.1. Conducted Emissions Test.....                     |  | 11   |
| 3.2. Radiated Emissions and Band Edge.....             |  | 14   |
| 3.3. Maximum Conducted Output Power .....              |  | 25   |
| 3.4. 20dB Bandwidth .....                              |  | 27   |
| 3.5. Frequency Separation .....                        |  | 29   |
| 3.6. Number of hopping frequency.....                  |  | 31   |
| 3.7. Time Of Occupancy(Dwell Time) .....               |  | 32   |
| 3.8. Spurious RF Conducted Emissions and bandedge..... |  | 34   |
| 3.9. Antenna Requirement.....                          |  | 39   |
| 4. Test Setup Photos of the EUT.....                   |  | 40   |
| 5. Photos of the EUT .....                             |  | 41   |

# 1. SUMMARY

## 1.1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

[RSS-247-Issue 2](#): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

[RSS-Gen Issue 5](#): — General Requirements for Compliance of Radio Apparatus

[ANSI C63.10: 2013](#): American National Standard for Testing Unlicensed Wireless Devices

[558074 D01 15.247 Meas Guidance v05r02](#): Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules

## 1.2. Test Description

| FCC PART 15 Subpart C                                      |                                 |      |
|------------------------------------------------------------|---------------------------------|------|
| FCC Part 15.207<br>RSS-Gen 8.8                             | AC Power Conducted Emission     | PASS |
| FCC Part 15.247(a)(1)(i)<br>RSS 247 5.1 (a)<br>RSS-Gen 4.6 | 20dB Bandwidth & 99% Bandwidth  | PASS |
| FCC Part 15.247(d)<br>RSS 247 5.5                          | Spurious Emission and Band Edge | PASS |
| FCC Part 15.247(b)(2)<br>RSS 247 5.4 (a)                   | Maximum Peak Output Power       | PASS |
| FCC Part 15.109/ 15.205/ 15.209<br>RSS-Gen 8.9             | Radiated Emissions              | PASS |
| FCC Part 15.247(a)(1)<br>RSS 247 5.1 (b)                   | Frequency Separation            | PASS |
| FCC Part 15.247(a)(1)(i)<br>RSS-247 5.1 (c)                | Number of hopping frequency     | PASS |
| FCC Part 15.247(a)(1)(i)<br>RSS-247 5.1 (c)                | Time of Occupancy               | PASS |

Note:

1. The measurement uncertainty is not included in the test result.
2. There are three antenna connectors (ANT1, ANT2 and ANT3) on the PCB board of the RFID module which can be connected up to three external UHF antennas to achieve long reader range. The power level setting is same for all the three antenna connectors. For the test, we have used ANT1 and other two antenna connectors were terminated with 50ohm terminators.
3. Radiated emissions test with highest gain antenna assembly.

### 1.3. Test Facility

#### 1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shaheixi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.10 and CISPR 32/EN 55032 requirements.

#### 1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L7497**

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

##### **A2LA-Lab Cert. No. 4343.01**

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **IC Registration No.: 9618B**

##### **CAB identifier: CN0041**

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B on Jan. 22, 2019.

##### **FCC-Registration No.: 399832**

##### **Designation No.: CN1216**

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832, December 08, 2017.

### 1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

| Test                                    | Measurement Uncertainty | Notes |
|-----------------------------------------|-------------------------|-------|
| Transmitter power conducted             | $\pm 0.57$ dB           | (1)   |
| Transmitter power Radiated              | $\pm 2.20$ dB           | (1)   |
| Conducted spurious emission 9KHz-40 GHz | $\pm 2.20$ dB           | (1)   |
| Occupied Bandwidth                      | $\pm 0.01$ ppm          | (1)   |
| Radiated Emission 9KHz~30MHz            | $\pm 3.40$ dB           | (1)   |

|                                  |                     |     |
|----------------------------------|---------------------|-----|
| Radiated Emission 30~1000MHz     | $\pm 4.10\text{dB}$ | (1) |
| Radiated Emission Above 1GHz     | $\pm 4.32\text{dB}$ | (1) |
| Conducted Disturbance 0.15~30MHz | $\pm 3.20\text{dB}$ | (1) |

(1) 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. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

|                     |         |
|---------------------|---------|
| Normal Temperature: | 25°C    |
| Relative Humidity:  | 55 %    |
| Air Pressure:       | 101 kPa |

### 2.2. General Description of EUT

|                     |                              |
|---------------------|------------------------------|
| Product Name:       | RFID Module                  |
| Model(HVIN):        | EC-RF200-T7                  |
| Power supply:       | DC 24V from external circuit |
| Hardware version:   | V1.0                         |
| Software version:   | V1.0                         |
| <b>UHF RFID</b>     |                              |
| Operation frequency | 902.25-927.75MHz             |
| Modulation Type     | ASK                          |
| Channel number:     | 52                           |
| Channel separation: | 0.5MHz                       |
| Antenna type:       | External Planar RFID antenna |
| Antenna amount:     | 3                            |
| MIMO:               | Not support                  |

Note1: For more details, please refer to the user's manual of the EUT.

Antenna information:

| Type              | Antenna type                 | Frequency Range | Antenna Gain |
|-------------------|------------------------------|-----------------|--------------|
| EC-UHF-ANT-NF0003 | External Planar RFID antenna | 840-960MHz      | -8.02dBi     |
| EC-UHF-ANT-NF0001 | External Planar RFID antenna | 840-960MHz      | -14.55dBi    |

Note: Both type antenna has been tested with the EUT; only worse case of antenna type EC-UHF-ANT-NF0003 is reported in this report.

### 2.3. Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

| Description | Manufacturer | Model    | Technical Parameters                                  | Certificate | Provided by  |
|-------------|--------------|----------|-------------------------------------------------------|-------------|--------------|
| Adapter     | CUIINC       | SMI36-24 | Input: 100-240V~<br>50/60Hz 1A Max<br>Output:24V---3A | CE/FCC      | manufacturer |
| /           | /            | /        | /                                                     | /           | /            |
| /           | /            | /        | /                                                     | /           | /            |
| /           | /            | /        | /                                                     | /           | /            |



## 2.4. Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. There are 52 channels of EUT, and the test carried out at the lowest channel, middle channel and highest channel.

### Operation Frequency :

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|
| 01      | 902.25          | 21      | 912.25          | 41      | 922.25          |
| 02      | 902.75          | 22      | 912.75          | 42      | 922.75          |
| 03      | 903.25          | 23      | 913.25          | 43      | 923.25          |
| 04      | 903.75          | 24      | 913.75          | 44      | 923.75          |
| 05      | 904.25          | 25      | 914.25          | 45      | 924.25          |
| 06      | 904.75          | 26      | 914.75          | 46      | 924.75          |
| 07      | 905.25          | 27      | 915.25          | 47      | 925.25          |
| 08      | 905.75          | 28      | 915.75          | 48      | 925.75          |
| 09      | 906.25          | 29      | 916.25          | 49      | 926.25          |
| 10      | 906.75          | 30      | 916.75          | 50      | 926.75          |
| 11      | 907.25          | 31      | 917.25          | 51      | 927.25          |
| 12      | 907.75          | 32      | 917.75          | 52      | 927.75          |
| 13      | 908.25          | 33      | 918.25          | --      | --              |
| 14      | 908.75          | 34      | 918.75          | --      | --              |
| 15      | 909.25          | 35      | 919.25          | --      | --              |
| 16      | 909.75          | 36      | 919.75          | --      | --              |
| 17      | 910.25          | 37      | 920.25          | --      | --              |
| 18      | 910.75          | 38      | 920.75          | --      | --              |
| 19      | 911.25          | 39      | 921.25          | --      | --              |
| 20      | 911.75          | 40      | 921.75          | --      | --              |

Note: The line display in grey were the channel selected for testing

### Power setting during the test:

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:

| Test Software Version | RF630 V1.0  |             |              |
|-----------------------|-------------|-------------|--------------|
| Channel               | Low channel | Mid channel | High channel |
| Power Level           | default     | default     | default      |

## 2.5. Equipments Used during the Test

| Test Equipment                  | Manufacturer    | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|---------------------------------|-----------------|-----------|------------|------------------|----------------------|
| LISN                            | R&S             | ESH2-Z5   | 860014/010 | 2023/05/04       | 2024/05/03           |
| Double cone logarithmic antenna | Schwarzbeck     | VULB 9168 | 824        | 2023/02/13       | 2026/02/12           |
| Horn Antenna                    | Ocean Microwave | OBH100400 | 26999002   | 2021/12/22       | 2024/12/21           |

|                            |                      |          |                  |            |            |
|----------------------------|----------------------|----------|------------------|------------|------------|
| EMI Test Receiver          | R&S                  | ESCI     | 1166.5950.0<br>3 | 2023/05/04 | 2024/05/03 |
| Spectrum Analyzer          | Agilent              | E4407B   | MY41440676       | 2023/05/05 | 2024/05/04 |
| Spectrum Analyzer          | Agilent              | N9020A   | US46220290       | 2023/05/05 | 2024/05/04 |
| Spectrum Analyzer          | Keysight             | N9020A   | MY53420874       | 2023/05/05 | 2024/05/04 |
| Horn Antenna               | Sunol Sciences Corp. | DRH-118  | A062013          | 2021/12/23 | 2024/12/22 |
| Active Loop Antenna        | Da Ze                | ZN30900A | /                | 2021/05/13 | 2024/05/12 |
| Amplifier                  | Agilent              | 8449B    | 3008A02306       | 2023/05/04 | 2024/05/03 |
| Amplifier                  | Agilent              | 8447D    | 2944A10176       | 2023/05/04 | 2024/05/03 |
| Amplifier                  | Brief&Smart          | LNA-4018 | 2104197          | 2023/05/05 | 2024/05/04 |
| Temperature/Humidity Meter | Ji Yu                | MC501    | /                | 2023/05/09 | 2024/05/08 |
| Power Sensor               | Agilent              | U2021XA  | MY55130004       | 2023/05/05 | 2024/05/04 |
| Power Sensor               | Agilent              | U2021XA  | MY55130006       | 2023/05/05 | 2024/05/04 |
| Power Sensor               | Agilent              | U2021XA  | MY54510008       | 2023/05/05 | 2024/05/04 |
| Power Sensor               | Agilent              | U2021XA  | MY55060003       | 2023/05/05 | 2024/05/04 |
| Spectrum Analyzer          | RS                   | FSP      | 1164.4391.3<br>8 | 2023/05/05 | 2024/05/04 |
| Test Software              |                      |          |                  |            |            |
| Name of Software           |                      |          | Version          |            |            |
| TST-PASS                   |                      |          | V1.1.0           |            |            |
| EZ_EMG(Below 1GHz)         |                      |          | V1.1.4.2         |            |            |
| EZ_EMG(Above 1GHz)         |                      |          | V1.1.4.2         |            |            |

The calibration interval was one year

## 2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with FCC Part 15C 15.247 and Canada RSS-247 issue 2 Rules.

## 2.7. Modifications

No modifications were implemented to meet testing criteria.

### 3. TEST CONDITIONS AND RESULTS

#### 3.1. Conducted Emissions Test

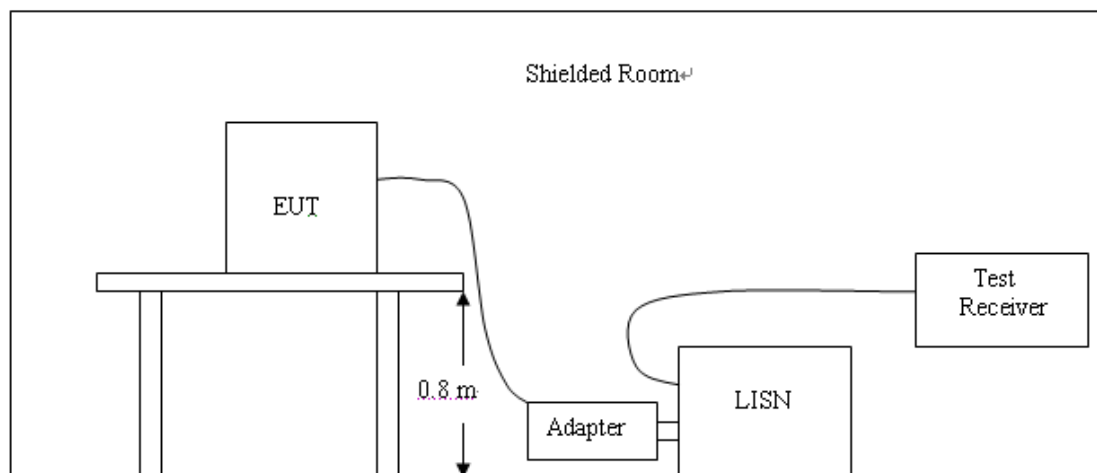
##### LIMIT

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

| Frequency range (MHz) | Limit (dBuV) |           |
|-----------------------|--------------|-----------|
|                       | Quasi-peak   | Average   |
| 0.15-0.5              | 66 to 56*    | 56 to 46* |
| 0.5-5                 | 56           | 46        |
| 5-30                  | 60           | 50        |

\* Decreases with the logarithm of the frequency.

##### TEST CONFIGURATION

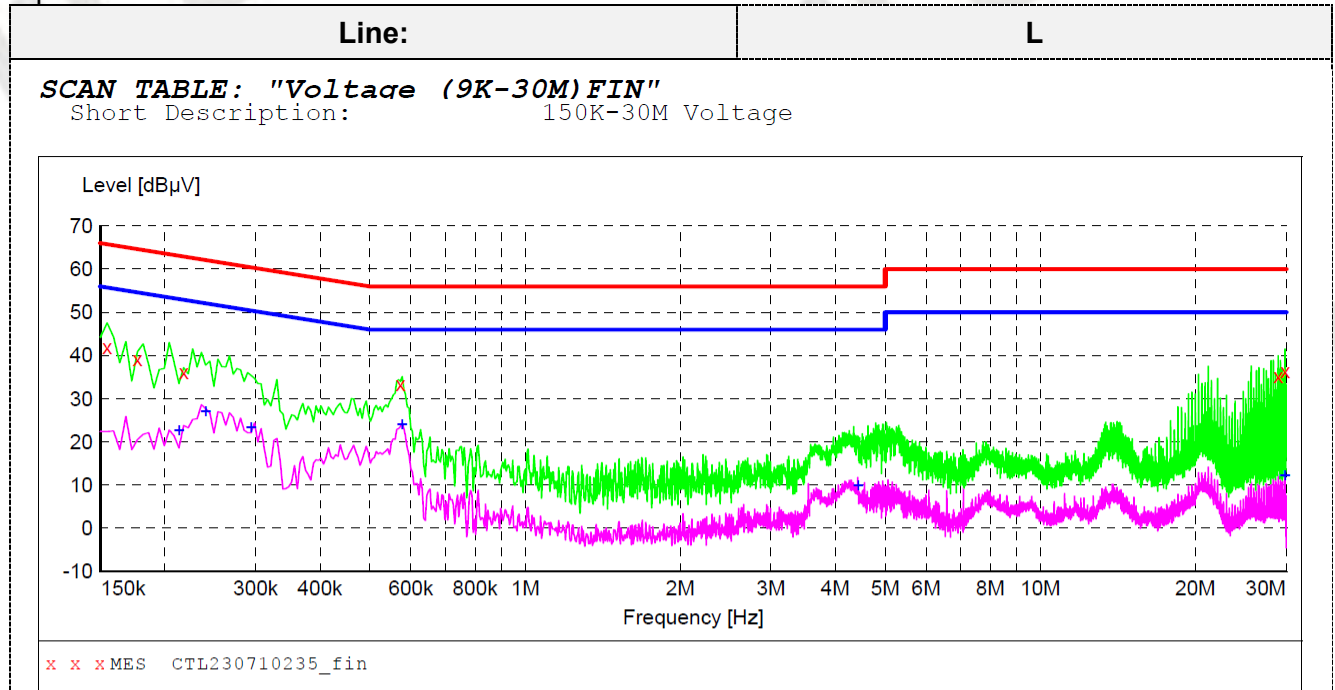


##### TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

**TEST RESULTS**

Remark: All low, middle and high channel have been tested; only the worst result of high channel was reported.

**MEASUREMENT RESULT: "CTL230710235\_fin"**

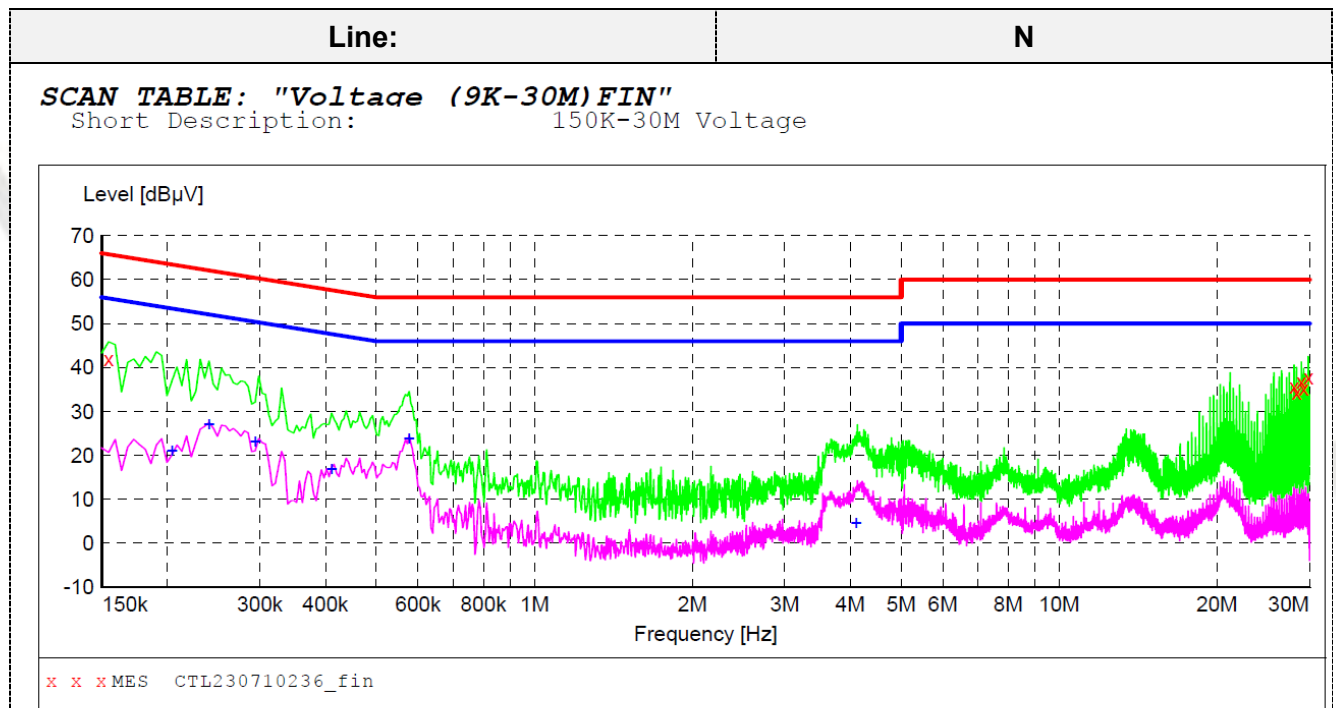
10/07/2023 19:02

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.154500         | 42.00         | 10.0         | 66            | 23.8         | QP       | L1   | GND |
| 0.177000         | 39.10         | 10.0         | 65            | 25.5         | QP       | L1   | GND |
| 0.217500         | 36.00         | 10.0         | 63            | 26.9         | QP       | L1   | GND |
| 0.573000         | 33.40         | 10.0         | 56            | 22.6         | QP       | L1   | GND |
| 28.945500        | 35.10         | 10.5         | 60            | 24.9         | QP       | L1   | GND |
| 29.841000        | 36.30         | 10.5         | 60            | 23.7         | QP       | L1   | GND |

**MEASUREMENT RESULT: "CTL230710235\_fin2"**

10/07/2023 19:02

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.213000         | 22.70         | 10.0         | 53            | 30.4         | AV       | L1   | GND |
| 0.240000         | 27.00         | 10.0         | 52            | 25.1         | AV       | L1   | GND |
| 0.294000         | 23.30         | 10.0         | 50            | 27.1         | AV       | L1   | GND |
| 0.577500         | 24.00         | 10.0         | 46            | 22.0         | AV       | L1   | GND |
| 4.429500         | 10.00         | 10.2         | 46            | 36.0         | AV       | L1   | GND |
| 29.845500        | 12.30         | 10.5         | 50            | 37.7         | AV       | L1   | GND |

**MEASUREMENT RESULT: "CTL230710236\_fin"**

10/07/2023 19:05

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.154500         | 41.90         | 10.0         | 66            | 23.9         | QP       | N    | GND |
| 28.054500        | 35.70         | 10.5         | 60            | 24.3         | QP       | N    | GND |
| 28.351500        | 34.30         | 10.5         | 60            | 25.7         | QP       | N    | GND |
| 28.945500        | 36.70         | 10.5         | 60            | 23.3         | QP       | N    | GND |
| 29.242500        | 35.10         | 10.5         | 60            | 24.9         | QP       | N    | GND |
| 29.841000        | 37.80         | 10.5         | 60            | 22.2         | QP       | N    | GND |

**MEASUREMENT RESULT: "CTL230710236\_fin2"**

10/07/2023 19:05

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.204000         | 21.10         | 10.0         | 53            | 32.3         | AV       | N    | GND |
| 0.240000         | 27.20         | 10.0         | 52            | 24.9         | AV       | N    | GND |
| 0.294000         | 23.10         | 10.0         | 50            | 27.3         | AV       | N    | GND |
| 0.411000         | 16.90         | 10.0         | 48            | 30.7         | AV       | N    | GND |
| 0.577500         | 23.90         | 10.0         | 46            | 22.1         | AV       | N    | GND |
| 4.105500         | 4.70          | 10.2         | 46            | 41.3         | AV       | N    | GND |

Remark: Level(dBuV)=Reading(dBuV) + Transd.(dB)

Margin=Limit(dBuV)- Level(dBuV)

### 3.2. Radiated Emissions and Band Edge

#### Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

For intentional device, according to RSS-Gen section 8.9, the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

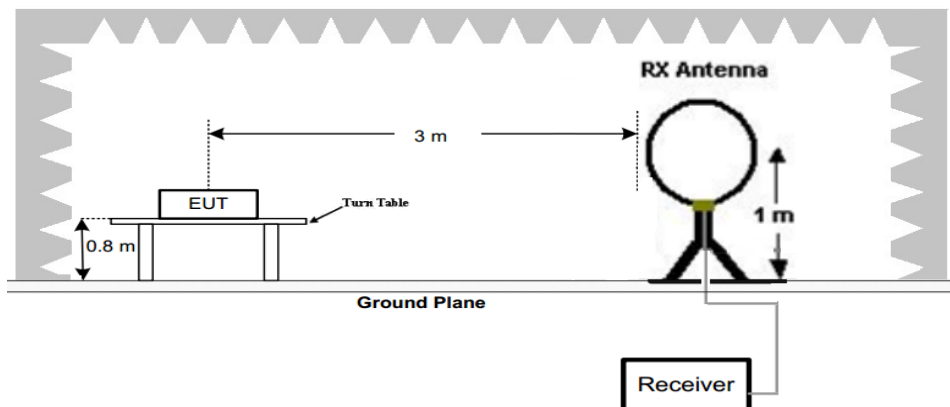
In addition, radiated emissions which fall in the restricted bands, as defined in RSS-Gen section 8.10, must also comply with the radiated emission limits specified in RSS-Gen section 8.9

Radiated emission limits

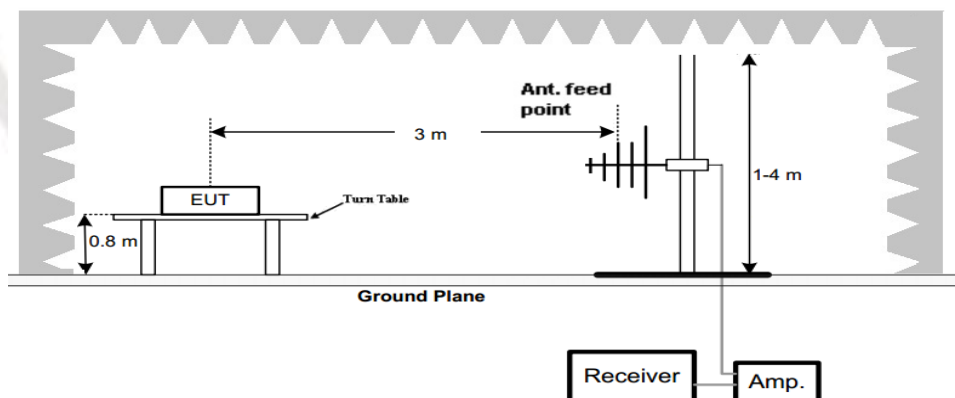
| Frequency (MHz) | Distance (Meters) | Radiated (dB $\mu$ V/m)                    | Radiated ( $\mu$ V/m) |
|-----------------|-------------------|--------------------------------------------|-----------------------|
| 0.009-0.49      | 3                 | $20\log(2400/F(\text{KHz}))+40\log(300/3)$ | $2400/F(\text{KHz})$  |
| 0.49-1.705      | 3                 | $20\log(24000/F(\text{KHz}))+40\log(30/3)$ | $24000/F(\text{KHz})$ |
| 1.705-30        | 3                 | $20\log(30)+40\log(30/3)$                  | 30                    |
| 30-88           | 3                 | 40.0                                       | 100                   |
| 88-216          | 3                 | 43.5                                       | 150                   |
| 216-960         | 3                 | 46.0                                       | 200                   |
| Above 960       | 3                 | 54.0                                       | 500                   |

#### TEST CONFIGURATION

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

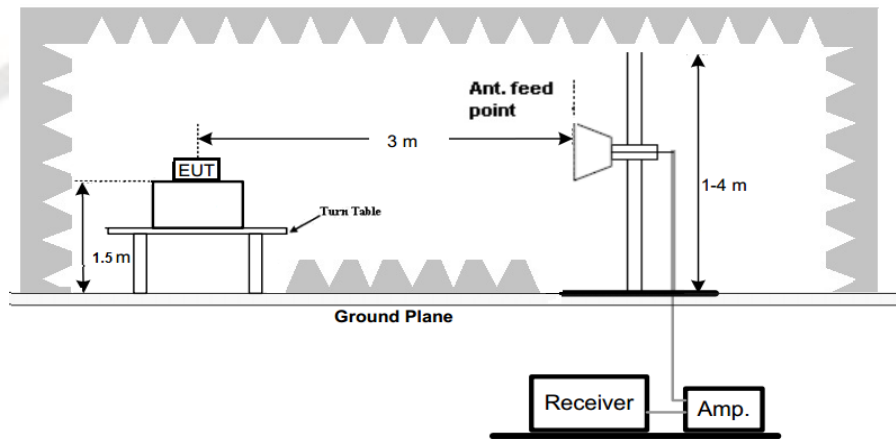


(B) Radiated Emission Test Set-Up, Frequency below 1000MHz





## (C) Radiated Emission Test Set-Up, Frequency above 1000MHz

**Test Procedure**

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type   | Test Distance |
|----------------------|---------------------|---------------|
| 9KHz-30MHz           | Active Loop Antenna | 3             |
| 30MHz-1GHz           | Bilog Antenna       | 3             |
| 1GHz-18GHz           | Horn Antenna        | 3             |
| 18GHz-25GHz          | Horn Antennna       | 1             |

- Setting test receiver/spectrum as following table states:

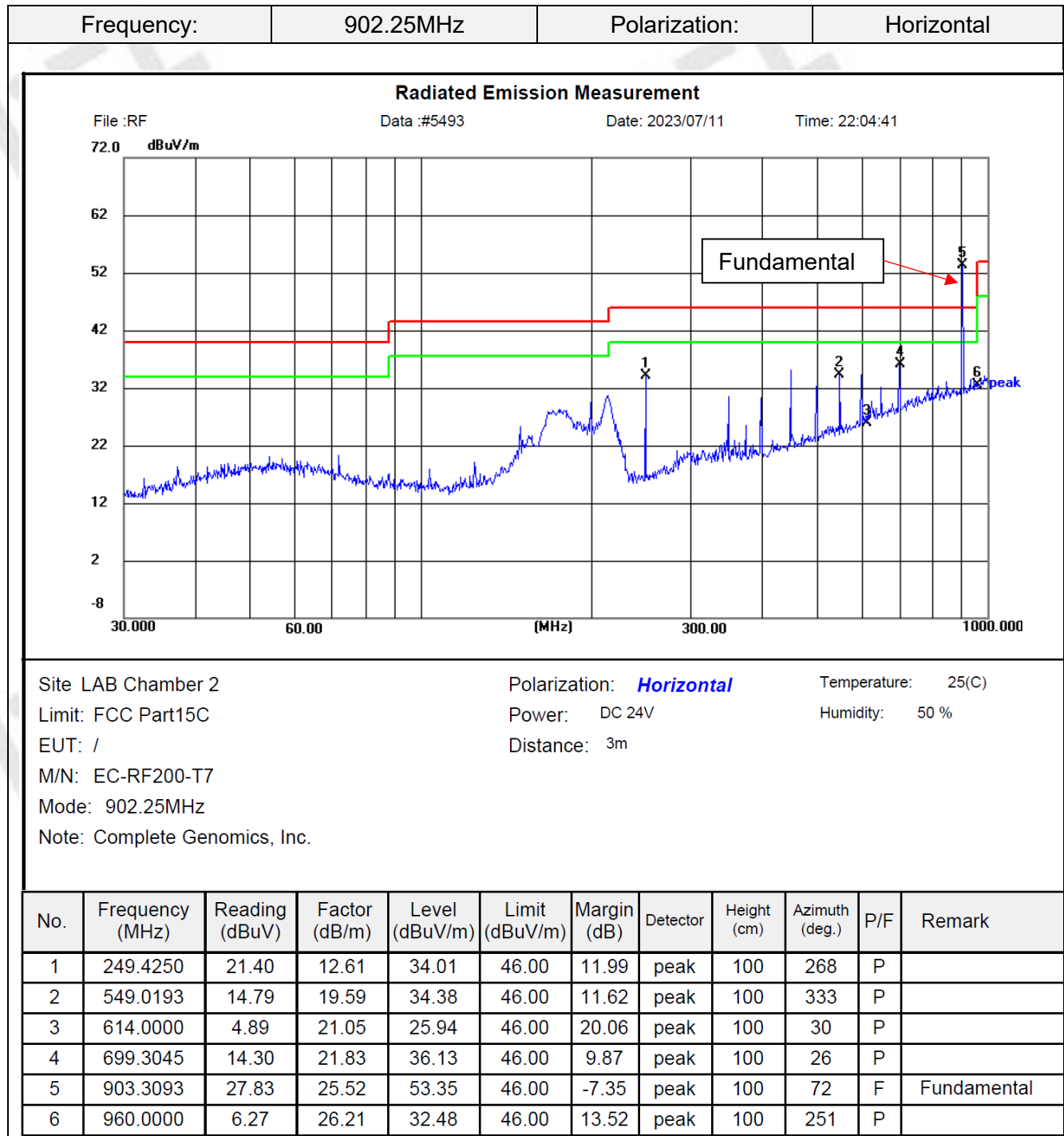
| Test Frequency range | Test Receiver/Spectrum Setting                                                                      | Detector |
|----------------------|-----------------------------------------------------------------------------------------------------|----------|
| 9KHz-150KHz          | RBW=200Hz/VBW=3KHz, Sweep time=Auto                                                                 | QP       |
| 150KHz-30MHz         | RBW=9KHz/VBW=100KHz, Sweep time=Auto                                                                | QP       |
| 30MHz-1GHz           | RBW=120KHz/VBW=1000KHz, Sweep time=Auto                                                             | QP       |
| 1GHz-40GHz           | Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto<br>Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto | Peak     |

**TEST RESULTS**

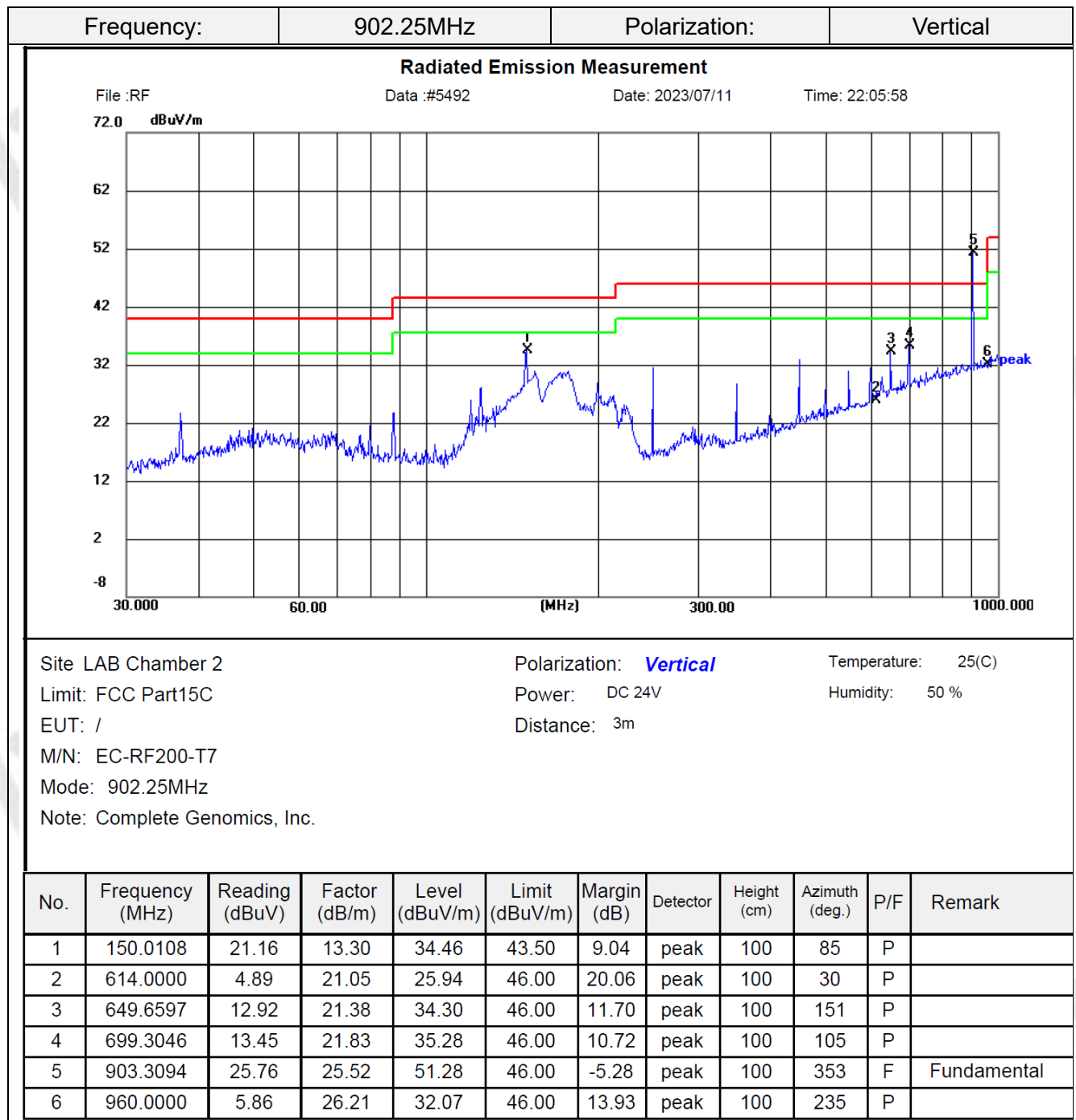
Remark: Radiated emission test from 9 KHz to 10GHz harmonic of fundamental was verified, and The emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.



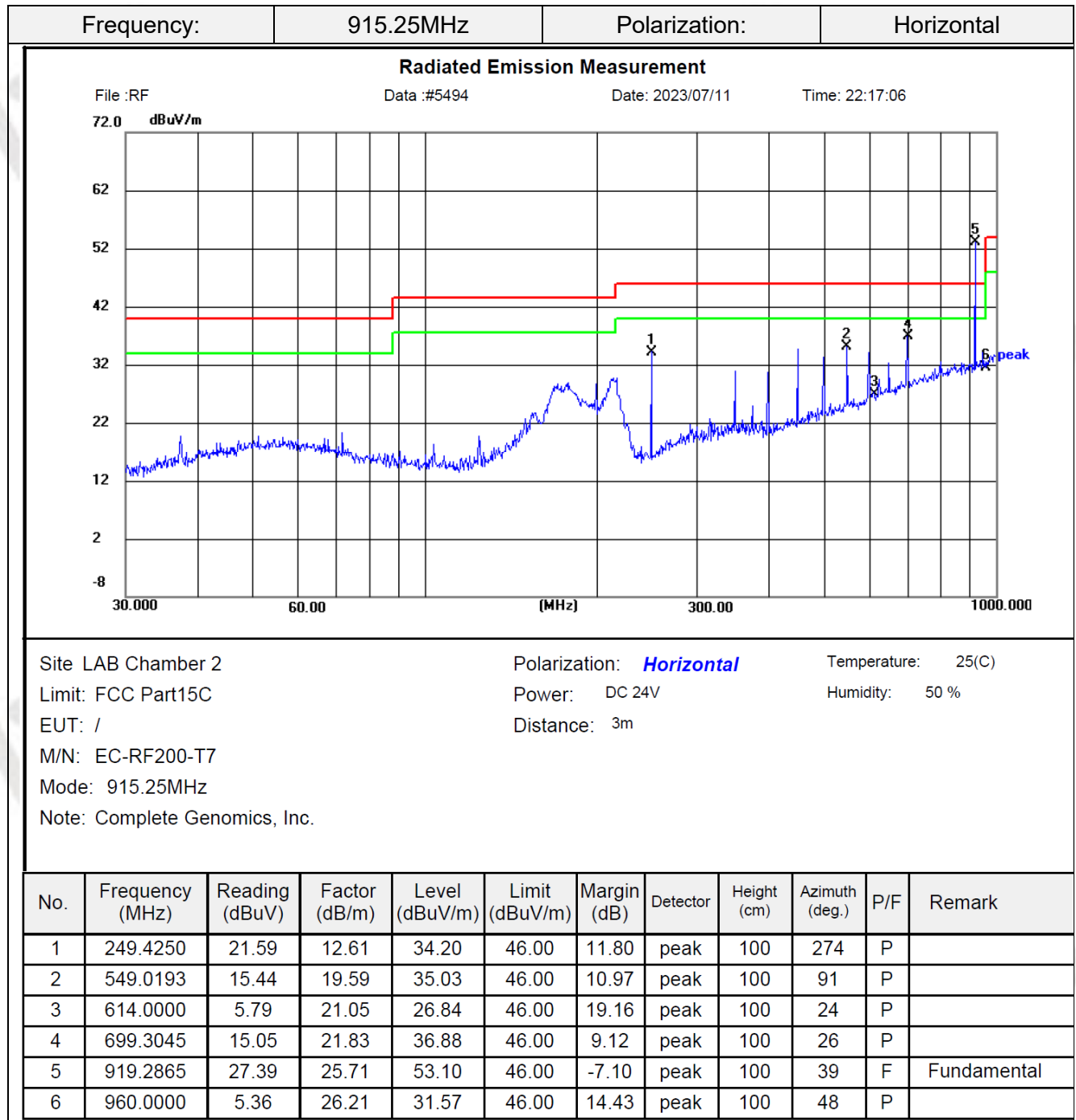
## For 30MHz-1GHz



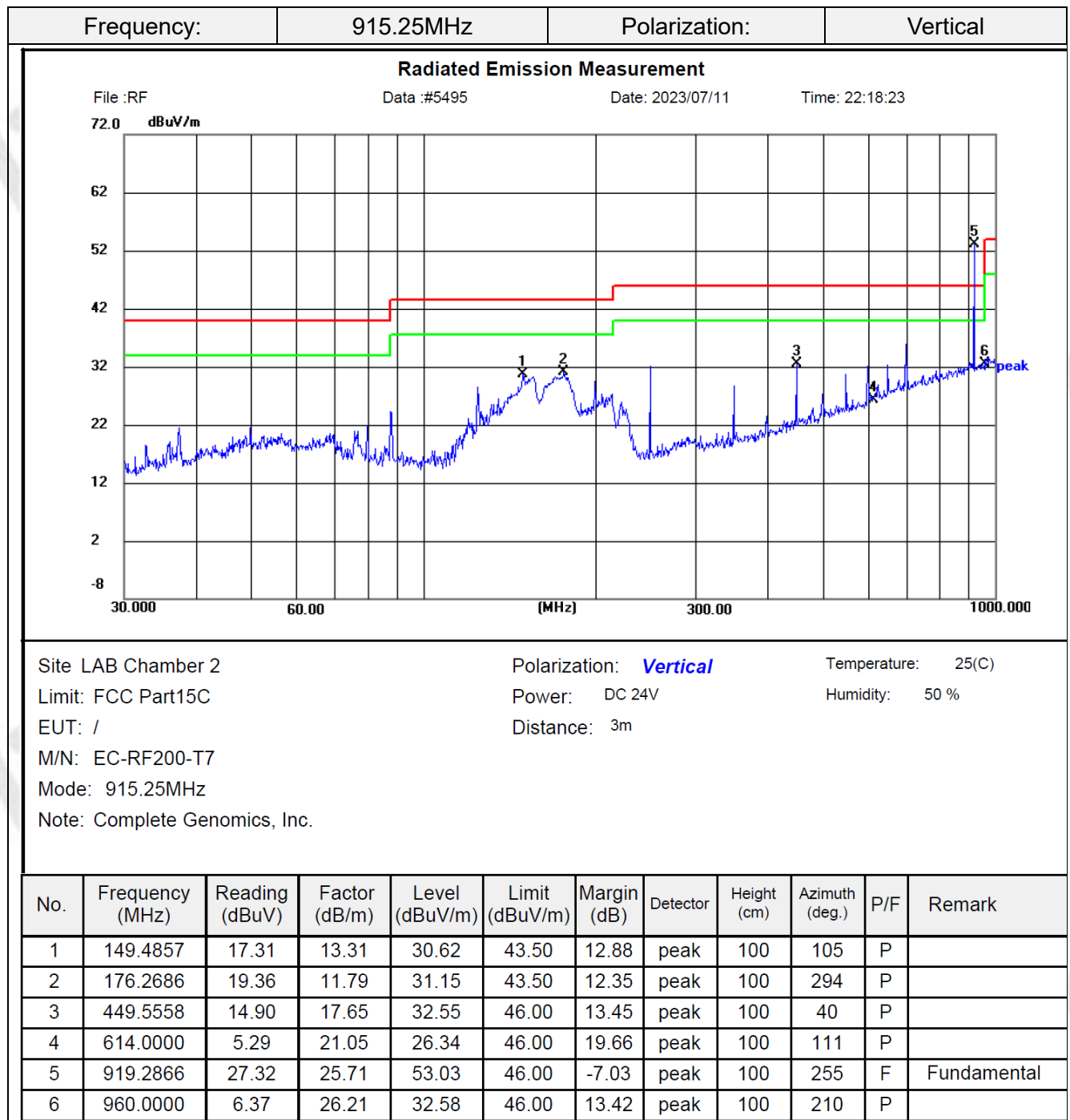
Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
 Margin= Limit(dBuV/m)- Level(dBuV/m)



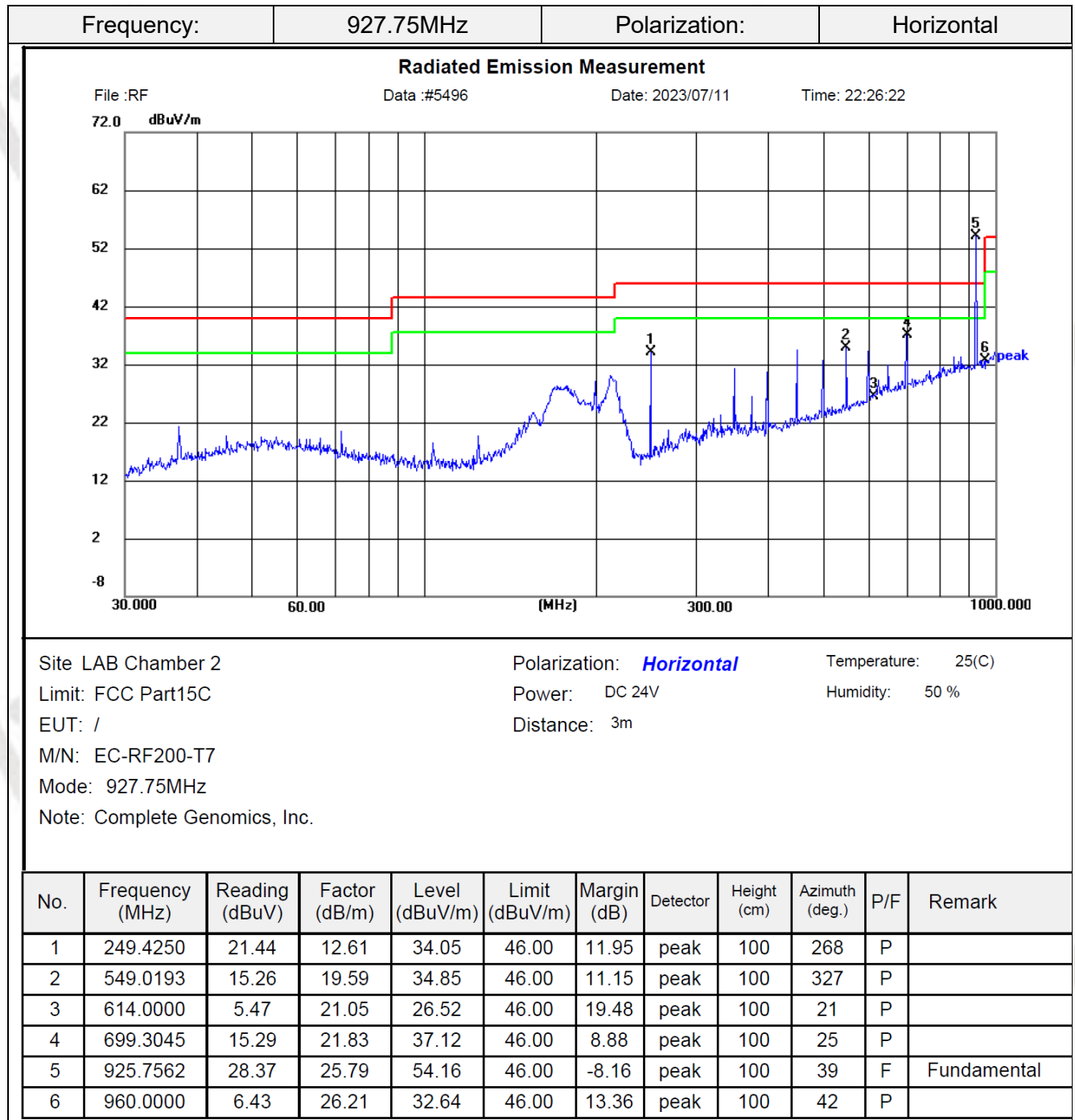
Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
Margin= Limit(dBuV/m)- Level(dBuV/m)



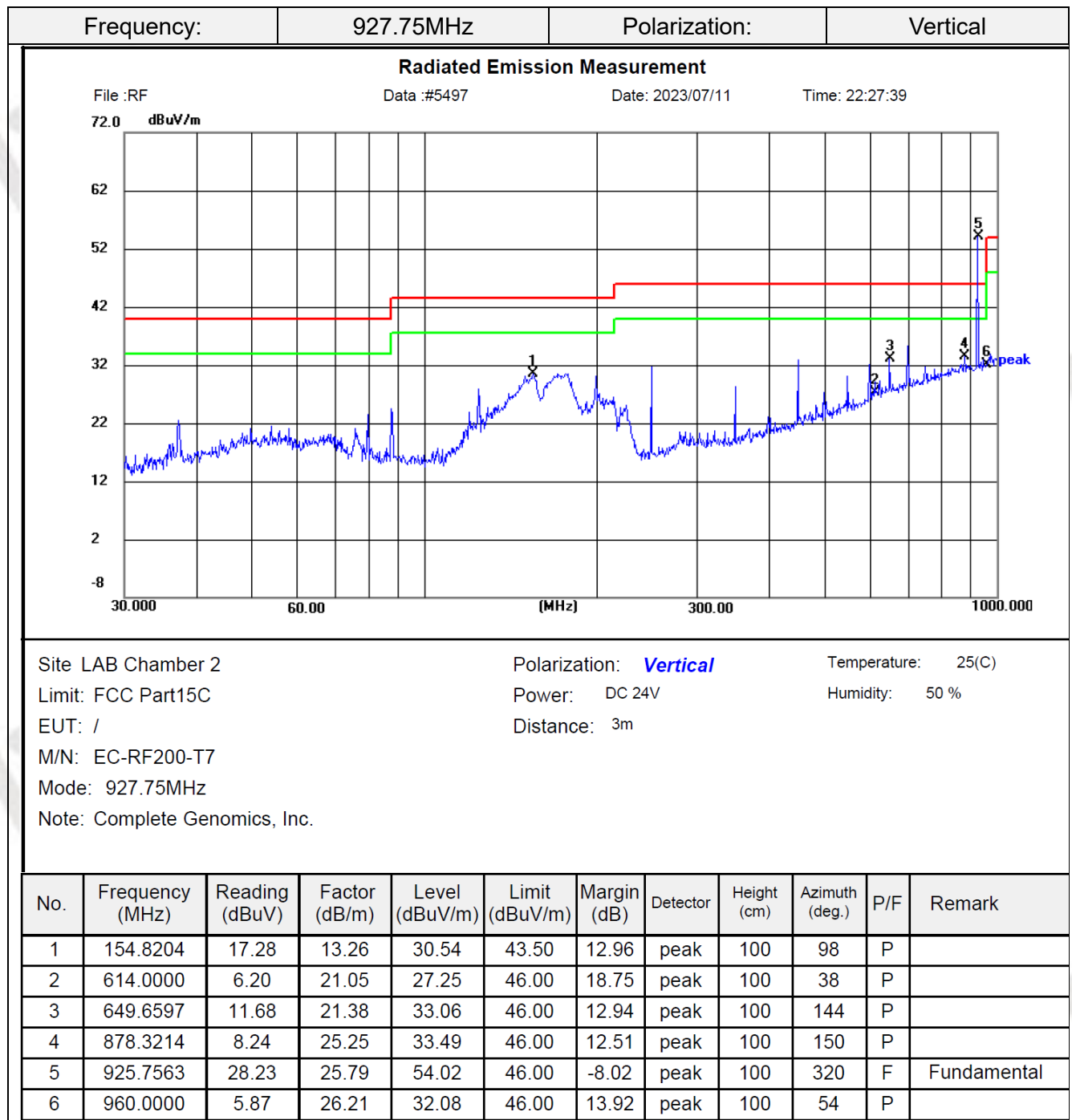
Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
 Margin= Limit(dBuV/m)- Level(dBuV/m)



Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
 Margin= Limit(dBuV/m)- Level(dBuV/m)



Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
 Margin= Limit(dBuV/m)- Level(dBuV/m)



Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)  
 Margin= Limit(dBuV/m)- Level(dBuV/m)

**For 1GHz to 10GHz**

| Frequency(MHz): |                 |                         |    | 902.25         |             | Polarity:        |                       |                   | HORIZONTAL         |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1804.50         | 43.58                   | PK | 74             | 30.42       | 66.44            | 27.16                 | 4.01              | 54.03              | -22.86                   |
| 1               | 1804.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2706.75         | 56.87                   | PK | 74             | 17.13       | 77.20            | 29.33                 | 4.94              | 54.60              | -20.33                   |
| 2               | 2706.75         | 48.57                   | AV | 54             | 5.43        | 68.90            | 29.33                 | 4.94              | 54.60              | -20.33                   |
| 3               | 3609.00         | 54.30                   | PK | 74             | 19.70       | 71.12            | 32.08                 | 5.95              | 54.85              | -16.82                   |
| 3               | 3609.00         | 46.87                   | AV | 54             | 7.13        | 63.69            | 32.08                 | 5.95              | 54.85              | -16.82                   |
| 4               | 4511.25         | 45.21                   | PK | 74             | 28.79       | 59.36            | 32.88                 | 6.73              | 53.76              | -14.15                   |
| 4               | 4511.25         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

| Frequency(MHz): |                 |                         |    | 902.25         |             | Polarity:        |                       |                   | VERTICAL           |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1804.50         | 45.66                   | PK | 74             | 28.34       | 68.52            | 27.16                 | 4.01              | 54.03              | -22.86                   |
| 1               | 1804.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2706.75         | 57.37                   | PK | 74             | 16.63       | 77.70            | 29.33                 | 4.94              | 54.60              | -20.33                   |
| 2               | 2706.75         | 49.13                   | AV | 54             | 4.87        | 69.46            | 29.33                 | 4.94              | 54.60              | -20.33                   |
| 3               | 3609.00         | 55.26                   | PK | 74             | 18.74       | 72.08            | 32.08                 | 5.95              | 54.85              | -16.82                   |
| 3               | 3609.00         | 46.91                   | AV | 54             | 7.09        | 63.73            | 32.08                 | 5.95              | 54.85              | -16.82                   |
| 4               | 4511.25         | 47.27                   | PK | 74             | 26.73       | 61.42            | 32.88                 | 6.73              | 53.76              | -14.15                   |
| 4               | 4511.25         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

**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
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.



| Frequency(MHz): |                 |                         |    | 915.25         |             | Polarity:        |                       |                   | HORIZONTAL         |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1830.50         | 45.39                   | PK | 74             | 28.61       | 68.13            | 27.31                 | 4.04              | 54.08              | -22.74                   |
| 1               | 1830.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2745.75         | 55.30                   | PK | 74             | 18.70       | 75.45            | 29.47                 | 4.98              | 54.61              | -20.15                   |
| 2               | 2745.75         | 48.43                   | AV | 54             | 5.57        | 68.58            | 29.47                 | 4.98              | 54.61              | -20.15                   |
| 3               | 3661.00         | 52.01                   | PK | 74             | 21.99       | 68.46            | 32.40                 | 6.01              | 54.87              | -16.45                   |
| 3               | 3661.00         | 46.54                   | AV | 54             | 7.46        | 62.99            | 32.40                 | 6.01              | 54.87              | -16.45                   |
| 4               | 4576.25         | 45.85                   | PK | 74             | 28.15       | 59.83            | 32.97                 | 6.77              | 53.72              | -13.98                   |
| 4               | 4576.25         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

| Frequency(MHz): |                 |                         |    | 915.25         |             | Polarity:        |                       |                   | VERTICAL           |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1830.50         | 45.90                   | PK | 74             | 28.10       | 68.64            | 27.31                 | 4.04              | 54.08              | -22.74                   |
| 1               | 1830.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2745.75         | 56.42                   | PK | 74             | 17.58       | 76.57            | 29.47                 | 4.98              | 54.61              | -20.15                   |
| 2               | 2745.75         | 48.51                   | AV | 54             | 5.49        | 68.66            | 29.47                 | 4.98              | 54.61              | -20.15                   |
| 3               | 3661.00         | 54.07                   | PK | 74             | 19.93       | 70.52            | 32.40                 | 6.01              | 54.87              | -16.45                   |
| 3               | 3661.00         | 46.56                   | AV | 54             | 7.44        | 63.01            | 32.40                 | 6.01              | 54.87              | -16.45                   |
| 4               | 4576.25         | 46.57                   | PK | 74             | 27.43       | 60.55            | 32.97                 | 6.77              | 53.72              | -13.98                   |
| 4               | 4576.25         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

## 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
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

| Frequency(MHz): |                 |                         |    | 927.75         |             | Polarity:        |                       |                   | HORIZONTAL         |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1855.50         | 43.92                   | PK | 74             | 30.08       | 66.54            | 27.45                 | 4.06              | 54.13              | -22.62                   |
| 1               | 1855.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2783.25         | 58.01                   | PK | 74             | 15.99       | 78.00            | 29.61                 | 5.02              | 54.62              | -19.99                   |
| 2               | 2783.25         | 48.38                   | AV | 54             | 5.62        | 68.37            | 29.61                 | 5.02              | 54.62              | -19.99                   |
| 3               | 3711.00         | 54.85                   | PK | 74             | 19.15       | 70.95            | 32.71                 | 6.07              | 54.88              | -16.10                   |
| 3               | 3711.00         | 46.43                   | AV | 54             | 7.57        | 62.53            | 32.71                 | 6.07              | 54.88              | -16.10                   |
| 4               | 4638.75         | 47.66                   | PK | 74             | 26.34       | 61.43            | 33.10                 | 6.81              | 53.68              | -13.77                   |
| 4               | 4638.75         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

| Frequency(MHz): |                 |                         |    | 927.75         |             | Polarity:        |                       |                   | VERTICAL           |                          |
|-----------------|-----------------|-------------------------|----|----------------|-------------|------------------|-----------------------|-------------------|--------------------|--------------------------|
| No.             | Frequency (MHz) | Emission Level (dBuV/m) |    | Limit (dBuV/m) | Margin (dB) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-amplifier (dB) | Correction Factor (dB/m) |
| 1               | 1855.50         | 45.27                   | PK | 74             | 28.73       | 67.89            | 27.45                 | 4.06              | 54.13              | -22.62                   |
| 1               | 1855.50         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |
| 2               | 2783.25         | 60.35                   | PK | 74             | 13.65       | 80.34            | 29.61                 | 5.02              | 54.62              | -19.99                   |
| 2               | 2783.25         | 48.55                   | AV | 54             | 5.45        | 68.54            | 29.61                 | 5.02              | 54.62              | -19.99                   |
| 3               | 3711.00         | 56.71                   | PK | 74             | 17.29       | 72.81            | 32.71                 | 6.07              | 54.88              | -16.10                   |
| 3               | 3711.00         | 46.57                   | AV | 54             | 7.43        | 62.67            | 32.71                 | 6.07              | 54.88              | -16.10                   |
| 4               | 4638.75         | 47.76                   | PK | 74             | 26.24       | 61.53            | 33.10                 | 6.81              | 53.68              | -13.77                   |
| 4               | 4638.75         | --                      | AV | 54             | --          | --               | --                    | --                | --                 | --                       |

## 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
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

### 3.3. Maximum Conducted Output Power

#### Limit

The Maximum Peak Output Power limit is 30 dBm.

#### Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power Meter.

#### Test Configuration



#### Test Results

| Channel Frequency (MHz) | Peak Output Power (dBm) | Peak Output Power Limit (dBm) | Result |
|-------------------------|-------------------------|-------------------------------|--------|
| 902.25                  | 15.245                  | 30                            | PASS   |
| 915.25                  | 15.505                  | 30                            | PASS   |
| 927.75                  | 15.764                  | 30                            | PASS   |

## Test Graphs



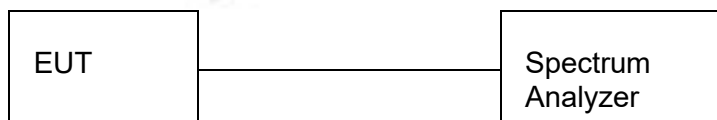
### 3.4. 20dB Bandwidth

#### Test Procedure

According to ANSI C63.10: 2013. Use the following spectrum analyzer settings: Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel RBW  $\geq$  1% of the 20dB bandwidth, VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace = max hold The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize.

Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation..

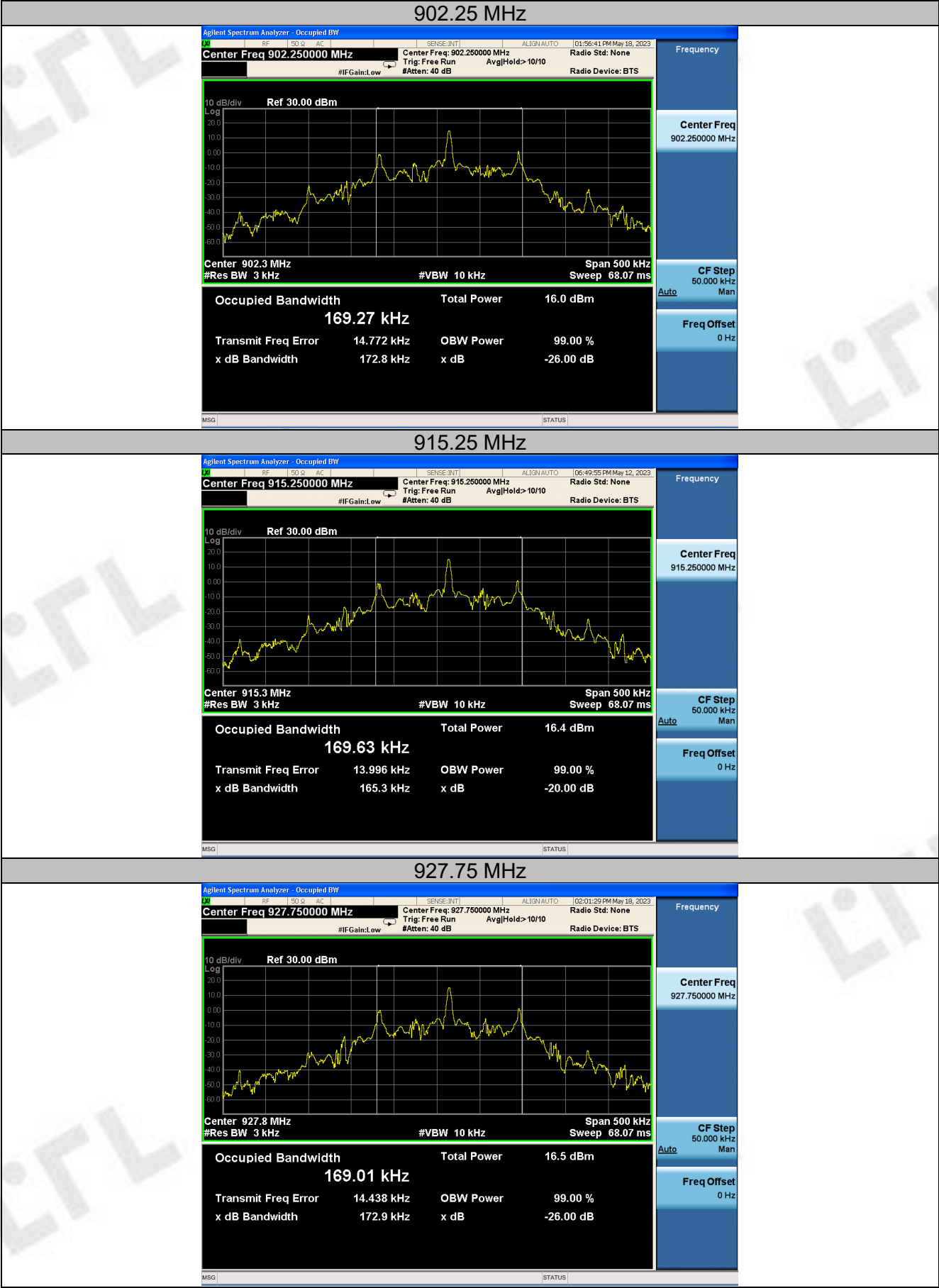
#### Test Configuration



#### Test Results

| Channel Frequency (MHz) | 20dB Bandwidth (KHz) | 99% Bandwidth (KHz) | Limit (KHz) | Result |
|-------------------------|----------------------|---------------------|-------------|--------|
| 902.25                  | 172.8                | 169.27              | /           | PASS   |
| 915.25                  | 165.3                | 169.63              | /           | PASS   |
| 927.75                  | 172.9                | 169.01              | /           | PASS   |

Test Graphs



### 3.5. Frequency Separation

#### Limit

Per 15.247 (a)(1) At least 25 KHz or 20 dB bandwidth of the hopping Channel, whichever is greater.

#### Test Procedure

According to ANSI C63.10: 2013.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW)  $\geq$  1% of the span

Video (or Average) Bandwidth VBW  $\geq$  RBW

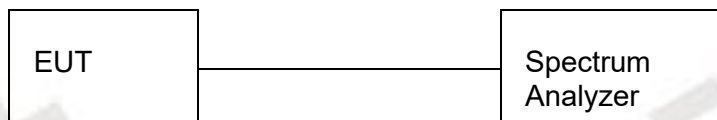
Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

#### Test Configuration

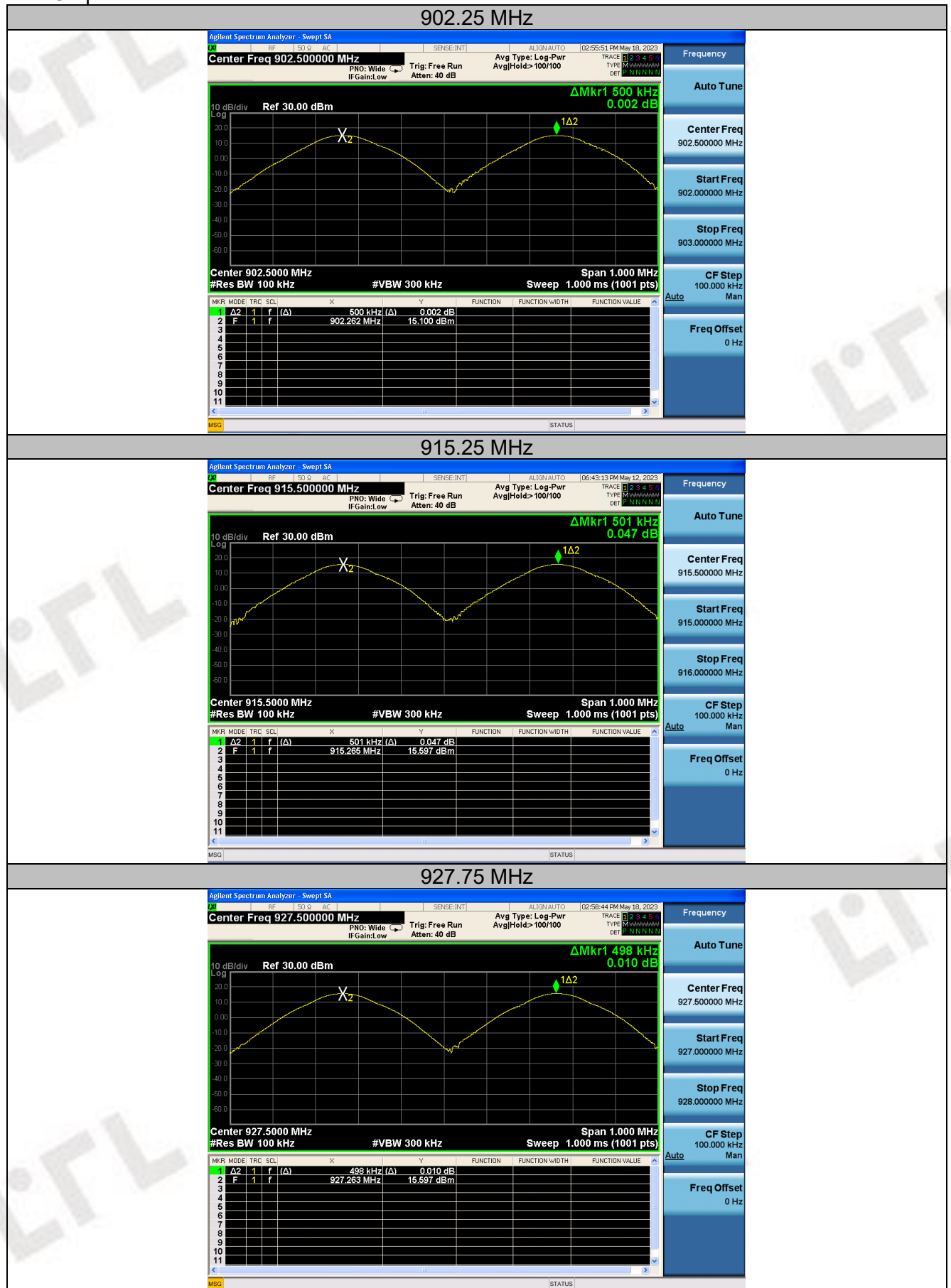


#### Test Results

| Channel           | Channel Frequency (MHz) | Channel Separation (MHz) | Limit (MHz)                | Result |
|-------------------|-------------------------|--------------------------|----------------------------|--------|
| Low Channel       | 902.25                  | 0.500                    | 0.025MHz or 20dB bandwidth | Pass   |
| Adjacency Channel | 902.75                  |                          |                            |        |
| Middle Channel    | 915.25                  | 0.501                    | 0.025MHz or 20dB bandwidth | Pass   |
| Adjacency Channel | 915.75                  |                          |                            |        |
| High Channel      | 927.75                  | 0.498                    | 0.025MHz or 20dB bandwidth | Pass   |
| Adjacency Channel | 927.25                  |                          |                            |        |



## Test Graphs



### 3.6. Number of hopping frequency

#### Limit

if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

#### Test Procedure

According to ANSI C63.10: 2013.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW  $\geq$  1% of the span

VBW  $\geq$  RBW

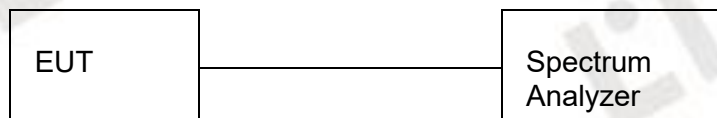
Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. It may prove necessary to bread the span up to sections, in order to clearly show all of the hopping frequencies.

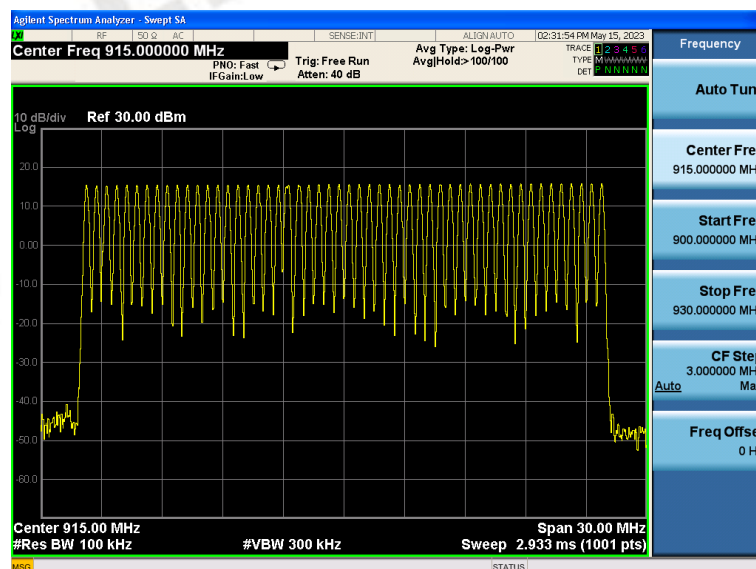
#### Test Configuration



#### Test Results

| Hopping Channel Frequency Range (MHz) | Number of Hopping Channel | Limit     |
|---------------------------------------|---------------------------|-----------|
| 902-928                               | 52                        | $\geq 50$ |

#### Test Graphs



### 3.7. Time Of Occupancy(Dwell Time)

#### Limit

if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

#### Test Procedure

According to ANSI C63.10: 2013.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = zero span, centered on a hopping channel

RBW = 100KHz

VBW  $\geq$  RBW

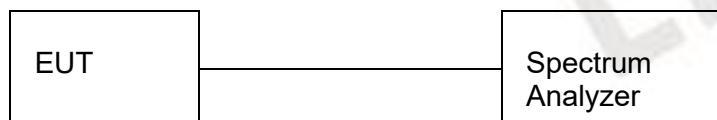
Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak

Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

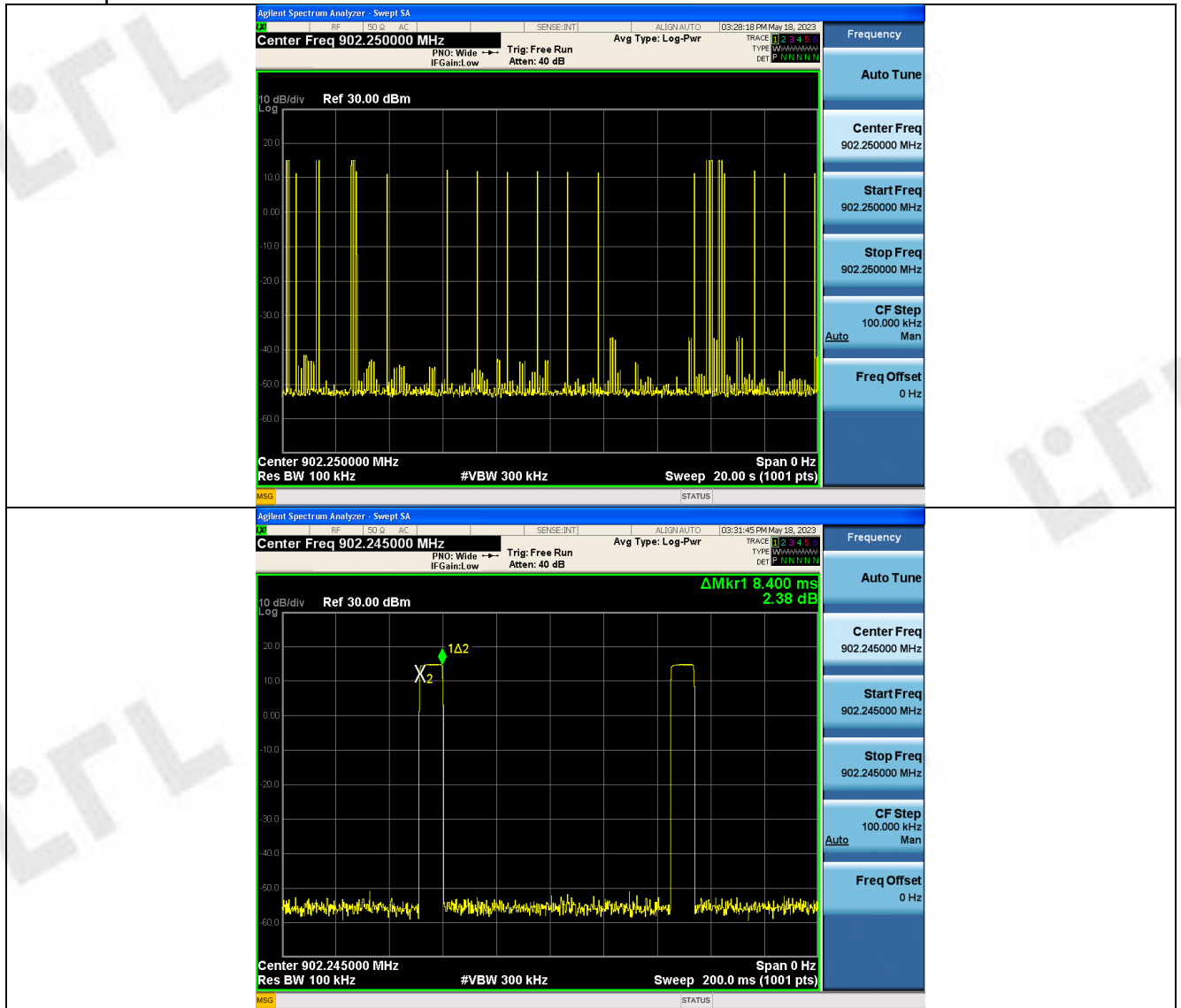
#### Test Configuration



#### Test Results

| Frequency (MHz) | No. of burst | Pulse Width (ms) | Dwell Time (ms) | Limit (ms) | Result |
|-----------------|--------------|------------------|-----------------|------------|--------|
| 902.25          | 25           | 8.40             | 210             | 400        | Pass   |

## Test Graphs



### 3.8. Spurious RF Conducted Emissions and bandedge

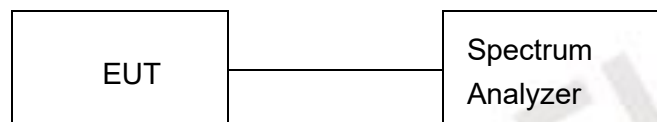
#### Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

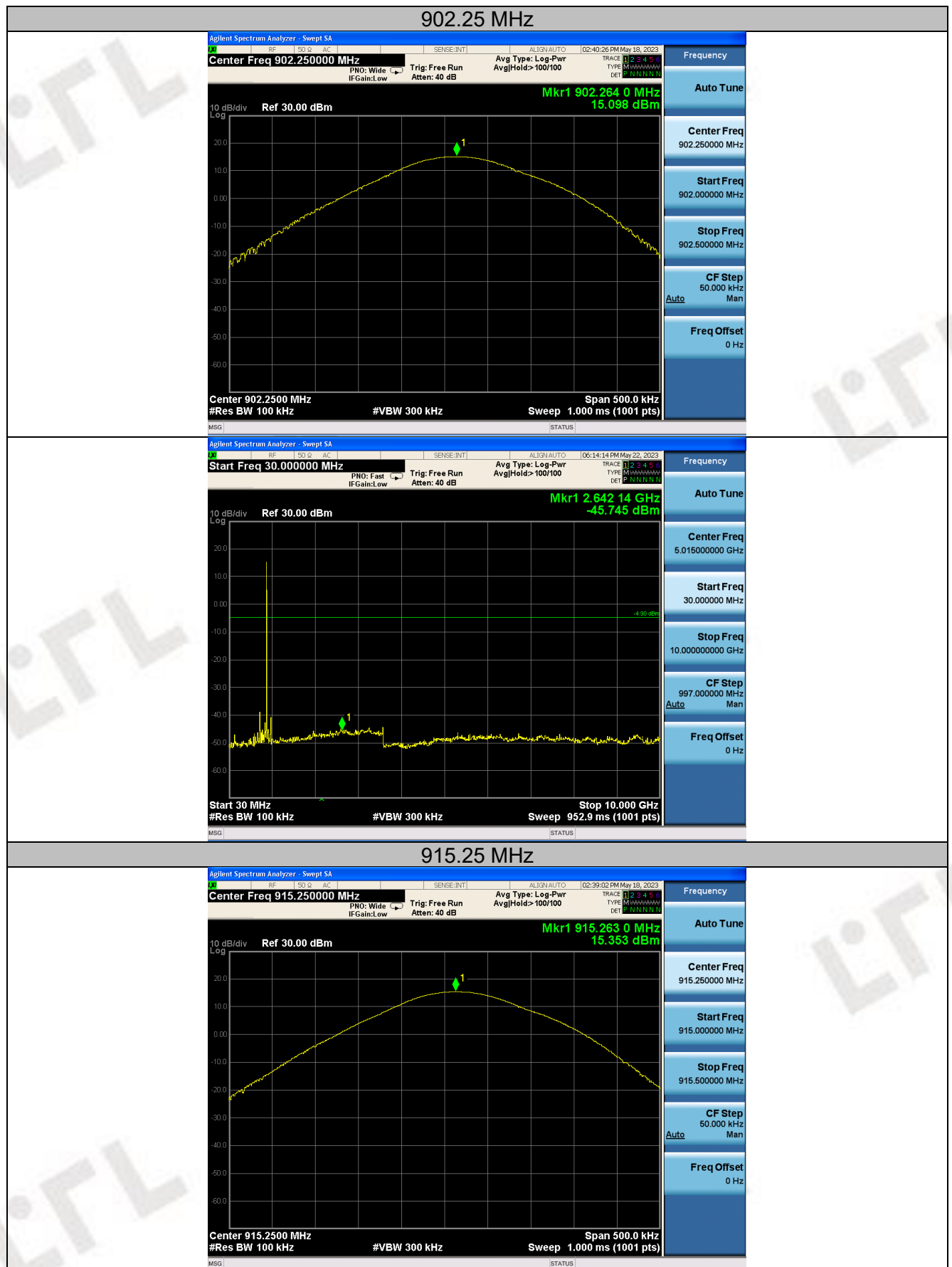
#### Test Procedure

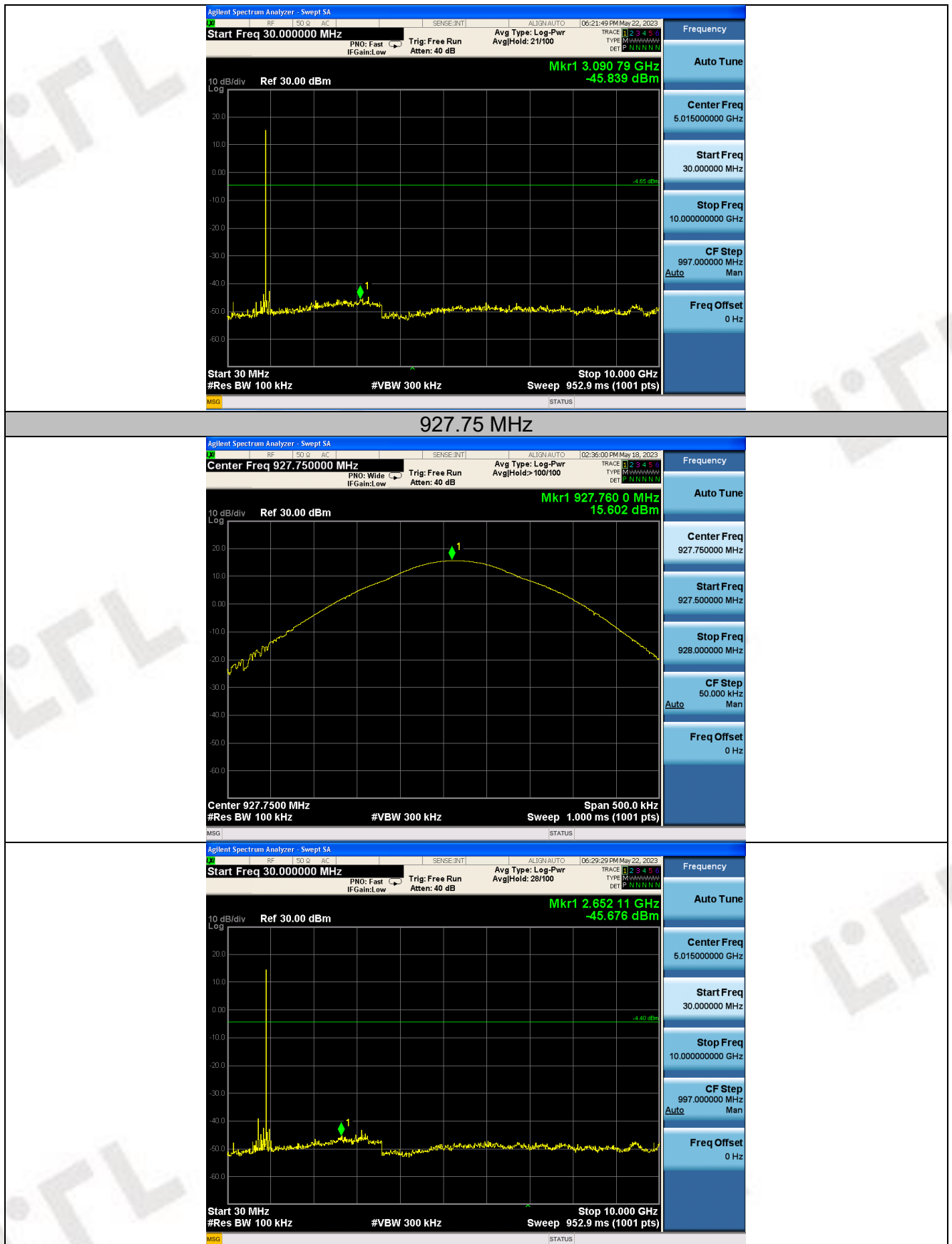
Connect the transmitter output to spectrum analyzer using a low loss RF cable and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge and out-of-band emissions.

#### Test Configuration



#### Test Results

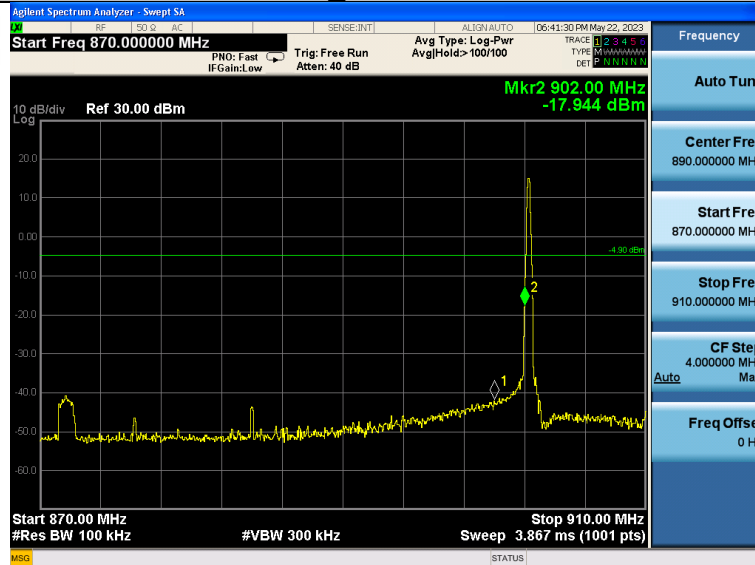




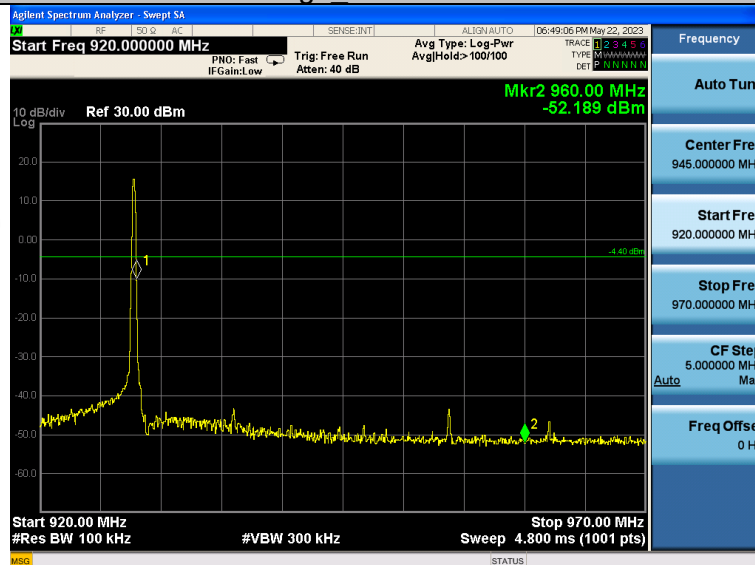


## Band edge measurements

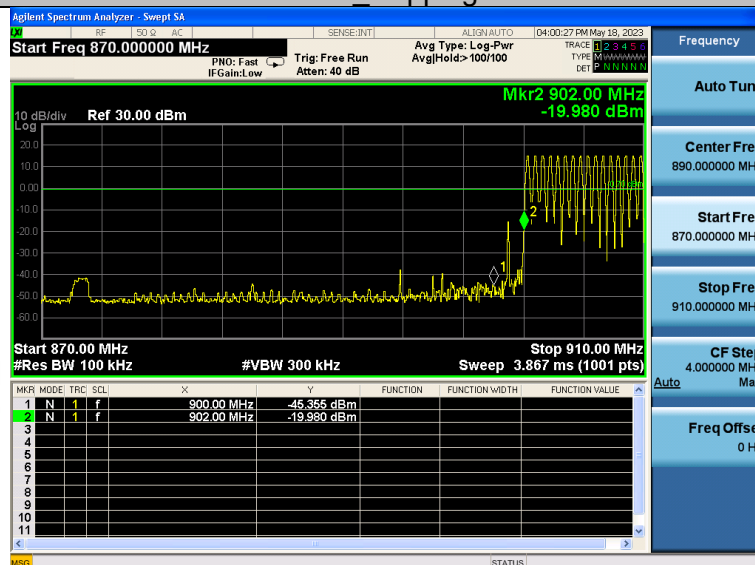
## Low\_902.25 MHz



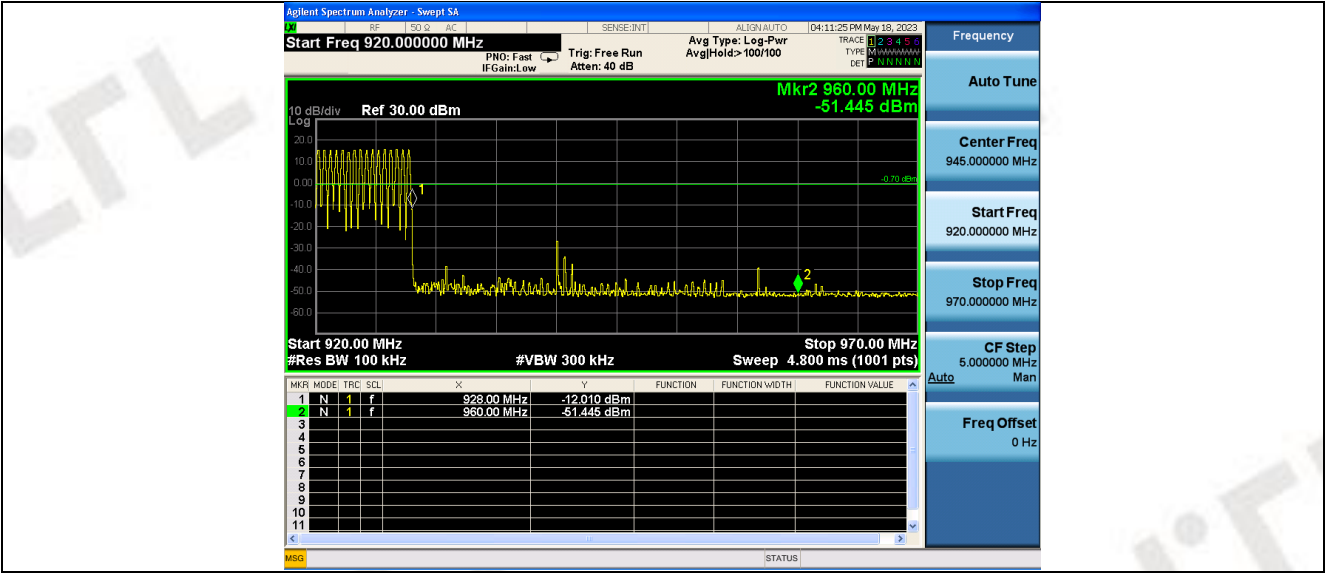
## High\_927.75 MHz



## Low\_Hopping



## High\_Hopping



### 3.9. Antenna Requirement

#### Standard Applicable

**For intentional device, according to FCC 47 CFR Section 15.203:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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

**FCC CFR Title 47 Part 15 Subpart C Section 15.247(b)(4):**

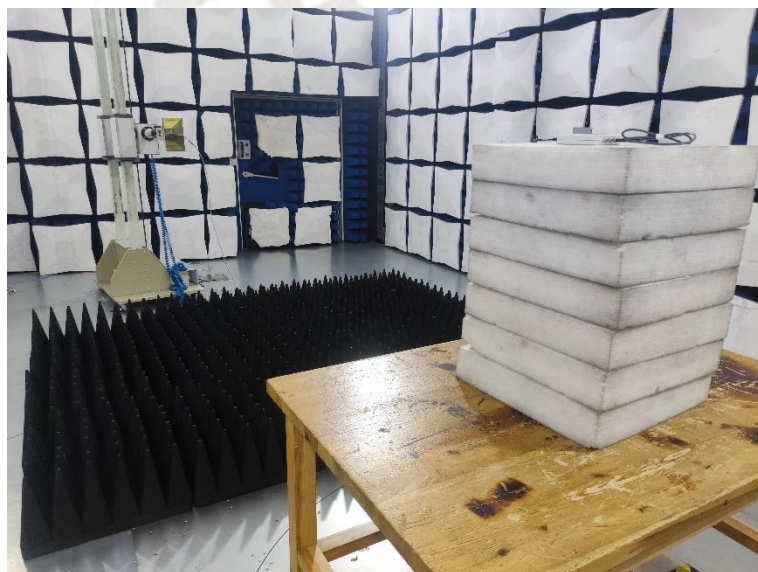
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Test Result:

Antenna information:

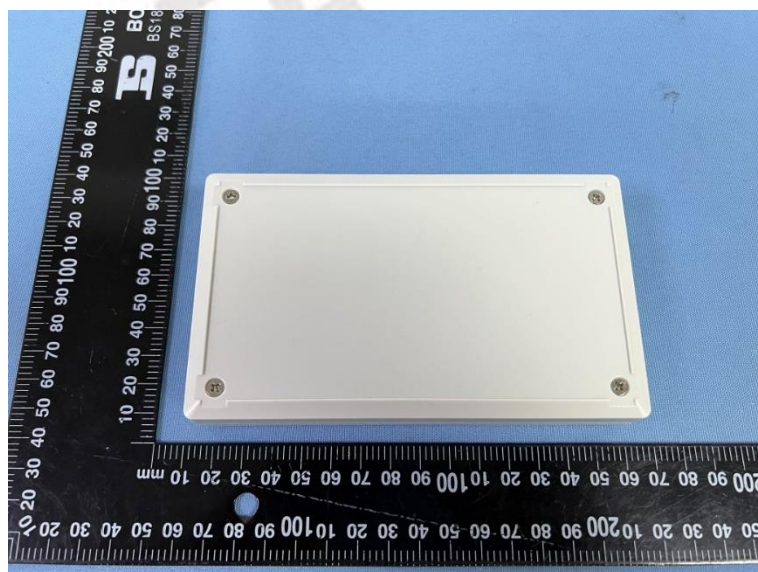
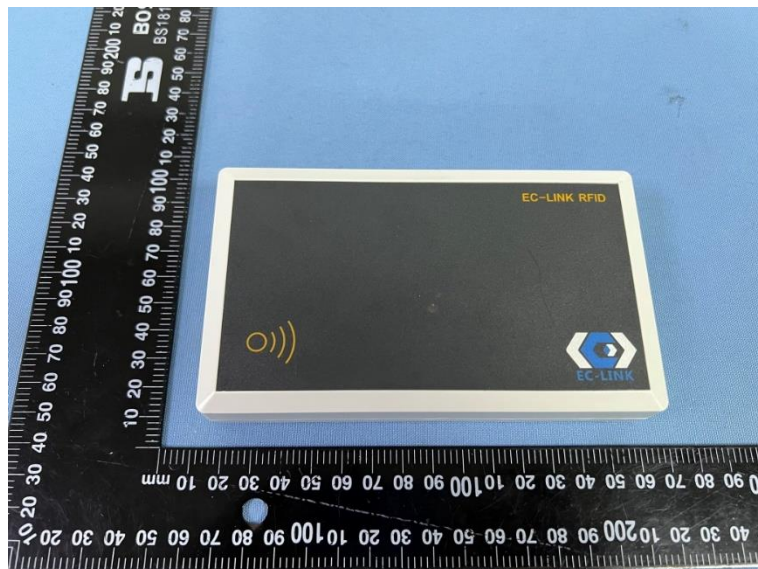
| Type              | Antenna type                 | Frequency Range | Antenna Gain |
|-------------------|------------------------------|-----------------|--------------|
| EC-UHF-ANT-NF0003 | External Planar RFID antenna | 840-960MHz      | -8.02dBi     |
| EC-UHF-ANT-NF0001 | External Planar RFID antenna | 840-960MHz      | -14.55dBi    |

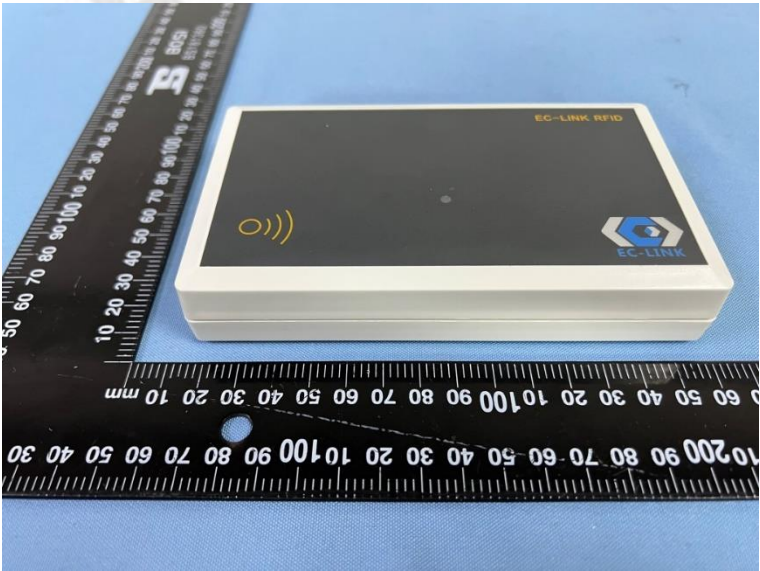
#### 4. Test Setup Photos of the EUT



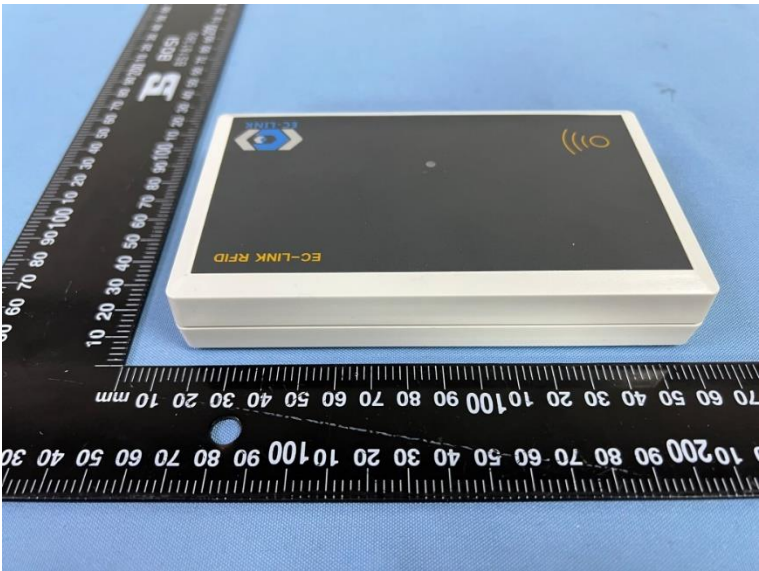


## 5. Photos of the EUT



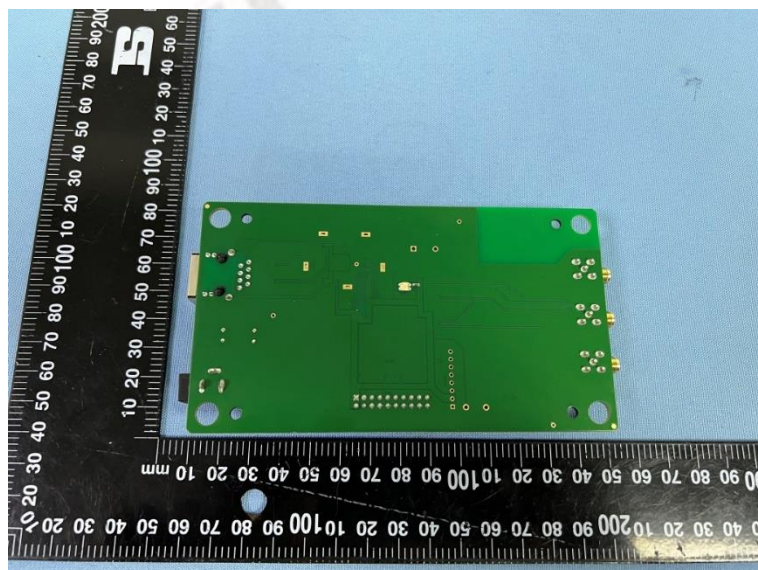
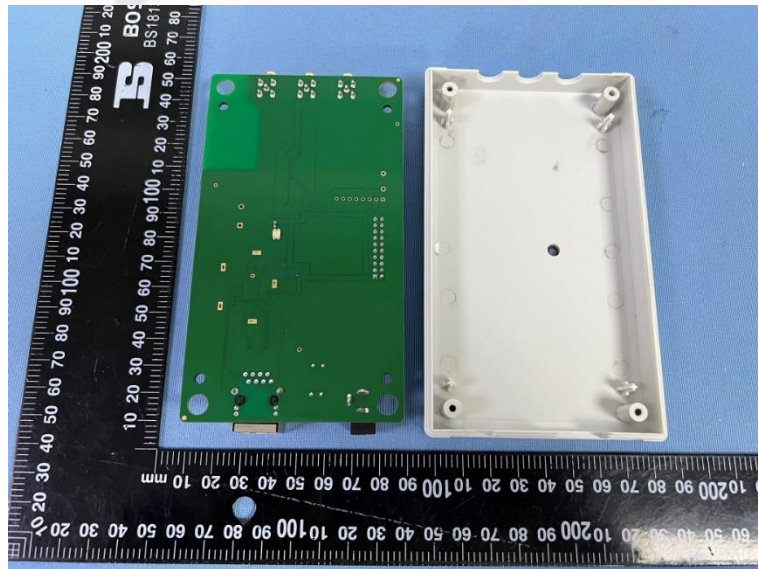
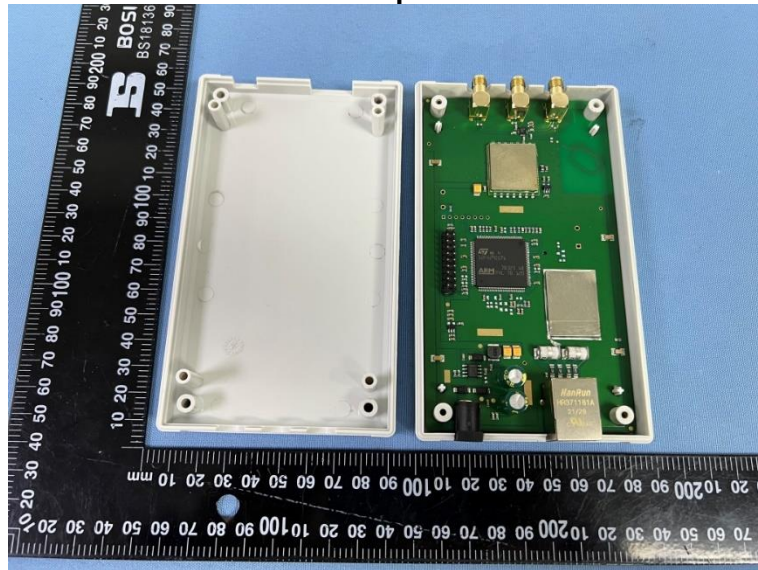


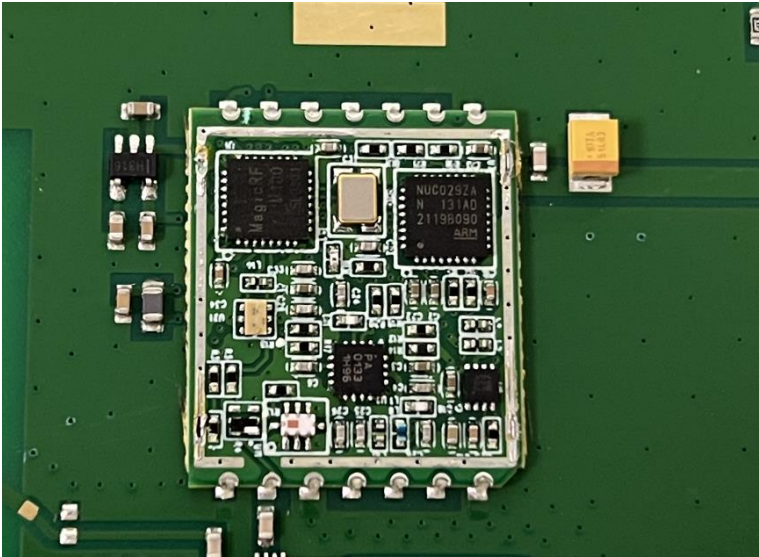
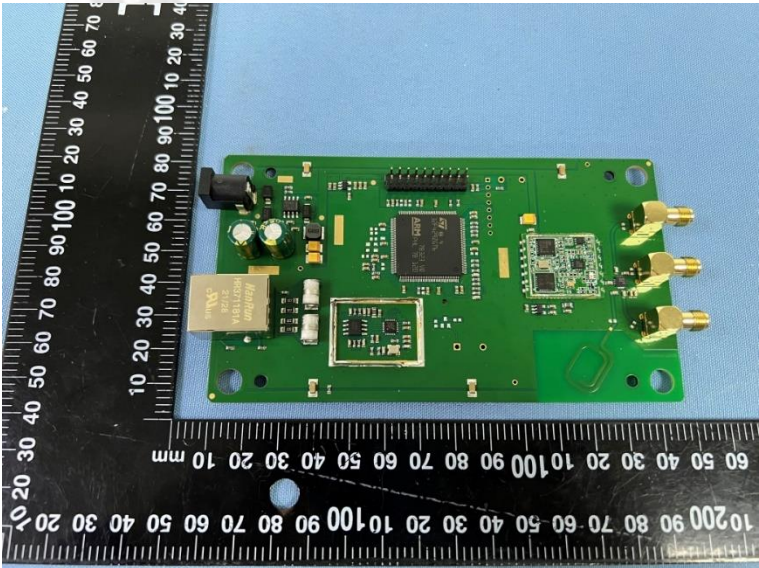
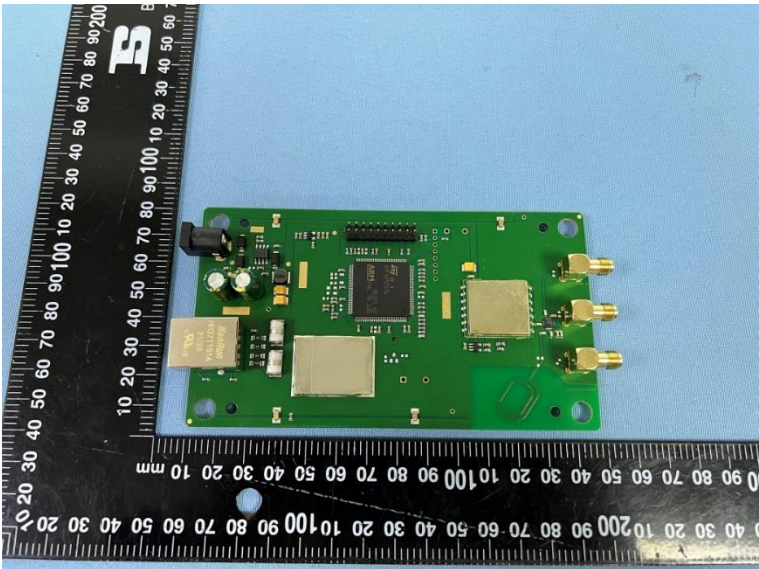




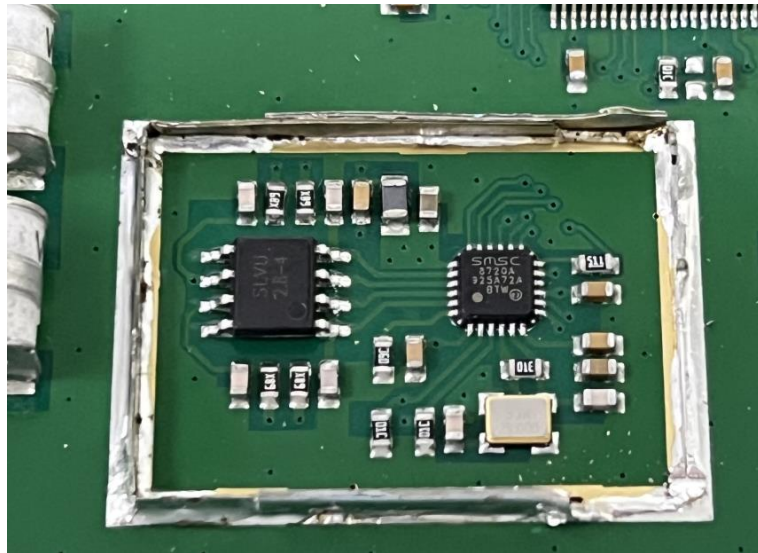


## Internal photos









\*\*\*\*\* End of Report \*\*\*\*\*