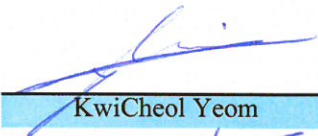
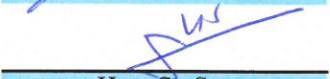


# TEST REPORT

**Report number:** DRTTEC2104-0015**Issue Date:** 2021-04-23

|                      |   |                                                                                                           |
|----------------------|---|-----------------------------------------------------------------------------------------------------------|
| Applicant            | : | POINTMOBILE CO., LTD.<br>9F Kabul Great Valley, 32, Digital-ro 9-gil,<br>Geumcheon-gu, Seoul, Korea 08512 |
| Equipment under test | : | Bluetooth Scanner                                                                                         |
| Model Name           | : | PM5                                                                                                       |
| Date of Test         | : | 2021.04.06 ~ 2021.04.07                                                                                   |
| Test Place           | : | DT&C Co., Ltd.<br>42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si,<br>Gyeonggi-do, Korea 449-935          |
| Test Results         | : | PASS                                                                                                      |

The results in this reports are applicable only to the samples tested.  
This report shall not be re-produced except in full without the written approval of  
DT&C Co., Ltd.

**Tested Engineer;**  
KwiCheol Yeom**Approval Person;**  
HyunSu Son

# **1. Summary of Test**

## 1. Purpose of test

Ordinance on Technical Standards Conformity Certification of Specified Radio Equipment  
2.4GHz Band wide band low power data communication System

## 2. Standards

Certification Ordinance Article 2 Clause 1 Item19

### 1) Test Methods

Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

### 2) Deviation from standards

None

## 3. List of applied test to the EUT

| Article 88<br>Appendix 43 | Classification of EUT                                           | Condition | Result |
|---------------------------|-----------------------------------------------------------------|-----------|--------|
| 1                         | Voltage fluctuation                                             | Conducted | PASS   |
| 3                         | Frequency Tolerance                                             | Conducted | PASS   |
| 4                         | Occupied Bandwidth                                              | Conducted | PASS   |
| 4                         | Spread Bandwidth                                                | Conducted | N/A    |
| 5                         | Unwanted (Spurious) Emission<br>Strength                        | Conducted | PASS   |
| 6                         | RF Output Power Tolerance                                       | Conducted | PASS   |
| 7                         | Secondary Emitted Radio Wave<br>Strength                        | Conducted | PASS   |
| 8                         | Carrier Sensing Function (1)                                    | Conducted | N/A    |
| 9                         | Carrier Sensing Function (2)                                    | Conducted | N/A    |
| 10                        | Absolute Gain of Transmission<br>Antenna                        | Conducted | N/A    |
| 11                        | Angle Width of Principal Radiation<br>from Transmission Antenna | Conducted | N/A    |
| 12                        | Interference Prevention Function                                | Conducted | PASS   |
| 13                        | Hopping frequency dwell time                                    | Conducted | N/A    |

### 1) Test set up

Table-Top

### 2) Modification to the EUT by laboratory

None

## **2. Test Information**

1. Applicant

POINTMOBILE CO., LTD.

9F Kabul Great Valley, 32, Digital-ro 9-gil, Geumcheon-gu, Seoul, Korea 08512

2. Equipment under test

Bluetooth Scanner

3. Model number

PM5

4. Serial number

Identical Prototype

5. Size

(W) 29.9 x (D) 16.25 x (H) 62.6 mm

6. Terminal limitation

-20°C to 50°C

7. RF Specification Frequency range

2402-2480MHz

8. Number of RF Channels

40 Channels

9. Modulation method

Method of GFSK

(Frequency equal to the transmission rate of the modulation signal: 1MHz)

10. Data rate

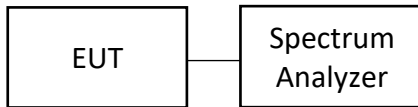
1Mbps(GFSK)

11. Variation of the family model(s)

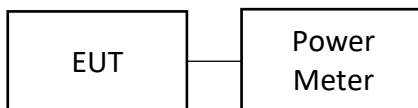
HHRS01

### **3. Configuration of equipment**

1. Frequency tolerance, Spread bandwidth, Occupied Bandwidth, Unwanted(Spurious) emission strength, Secondary emitted radio wave strength



2. RF output power tolerance



#### **4. List of Measuring Instruments**

[illegible]

Note1: "X" は使用した測定機器です。  
"X" used equipment.

Note2: 較正期限は、較正を行った日の翌月から起算して1年以内です。  
The validity of measurement equipment is one year from the first day of the following month of the calibration date.

Note3: 較正方法 ...  
Cal.Method ...

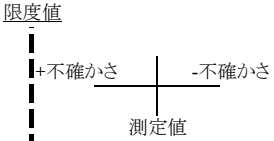
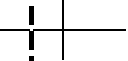
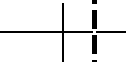
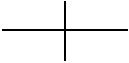
- イ): 国立研究開発法人情報通信研究機構（NICT）（以下「機構」という。）又は第百二条の十八第一項の指定較正機関（TELEC, インターテックジャパン、キーサイト）が行う較正
- ア): Calibration conducted by the National Institute of Information and Communications Technology～NICT～ or a designated calibration agency under Article 102-18 paragraph (1)～ Telecom Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc～.
- ロ): 計量法（平成四年法律第五十一号）第百三十五条 又は第百四十四条 の規定に基づく校正（JCSS校正）
- バ): Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)～Japan Calibration Service System～
- ハ): 外国において行う較正であつて、機構又は第百二条の十八第一項の指定較正機関（TELEC, インターテックジャパン、キーサイト）が行う較正に相当するもの
- ク): Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)～ Telecom Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc～.

ニ): イからハまでのいずれかに掲げる較正等を受けたものを用いて行う較正等

ド): Calibration conducted by using other equipment that listed above from a) to c)

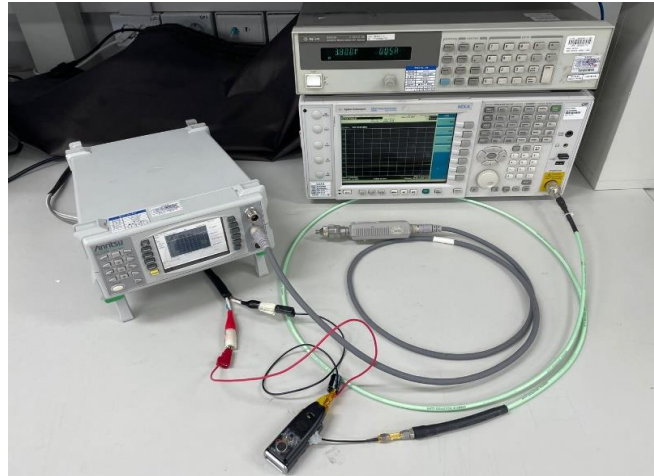
## 5. Uncertainty

| Parameter                    | Uncertainty |
|------------------------------|-------------|
| Total RF power conducted     | 0.71 dB     |
| Spurious emissions conducted | 1.0 dB      |
| Temperature                  | 0.30 °C     |
| Humidity                     | 4.0 %       |

| 判定  | 測定データにおける不確かさの判断とその範囲                                                                                                                                         |  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 適合  | 例 A<br> <p>測定結果と不確かさは与えられた限度値内に入っています。<br/>これを『適合』と呼びます。</p>                 |  |
|     | 例 B<br> <p>完全には、限度値内でも限度値外でもありません。<br/>この場合の適合性については、確実な結論を出すことは出来ません。</p> |  |
| 不適合 | 例 C<br> <p>完全には、限度値内でも限度値外でもありません。<br/>この場合の適合性については、確実な結論を出すことは出来ません。</p> |  |
|     | 例 D<br> <p>測定結果も不確かさも与えられた限度値内に入っていません。<br/>これは『不適合』と呼びます。</p>             |  |

## **6. Configuration Photographs**

### **Conducted Measurement Photo**



## 7. Laboratory description

### 1. Location

Name: DT&C Co., Ltd.

Address: 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935

Phone: +81-031-321-2664

Fax: +81-031-321-2855

### 2. Accreditation and Registration

#### 1) VLAC

Accreditation No.: N/A

#### 2) NVLAP

LAB CODE: N/A

#### 3) BSMI

Laboratory Code: TL652

#### 4) Industry Canada

| Site number | Facility       | Expiration date |
|-------------|----------------|-----------------|
| 5740A       | DT&C Co., Ltd. | 2022-06-28      |
| -           | -              | -               |

#### 5) VCCI Council

| Registration number | Expiration date |
|---------------------|-----------------|
| C-1427              | 2022-05-27      |
| G-10754             | 2022-12-18      |
| G-20051             | 2021-06-17      |
| R-3385              | 2022-05-27      |
| R-4496              | 2021-04-22      |
| R-14076             | 2022-11-24      |
| -                   | -               |

#### 6) KOLAS

| Registration number | Expiration date |
|---------------------|-----------------|
| KT393               | 2024-06-21      |

### 3. Test Site

#### 1) Conducted test

Conducted Test-room

## 8. Test Results

### LE 1M

|                          |             |                         |    |
|--------------------------|-------------|-------------------------|----|
| Environment of Test Room | Test Date   | 2021.04.06 ~ 2021.04.07 |    |
|                          | Temperature | 20 ~ 23                 | °C |
|                          | Humidity    | 46 ~ 49                 | %  |

|                          |              |            |
|--------------------------|--------------|------------|
| Peak Antenna Gain        | 1.694        | dBi        |
| Declaration Output Power | 5.578        | mW         |
| Declaration Output Power | 7.465        | dBm        |
| <b>E.I.R.P.</b>          | <b>9.159</b> | <b>dBm</b> |
| Input Power Voltage      | 3.800        | VDC        |

|                                          |          |                |      |
|------------------------------------------|----------|----------------|------|
| Tested Circuit Insertion Loss            |          | 0.000          | dB   |
| Frequency equal to the Transmission rate |          | 1.000          | MHz  |
| Transmission Time                        | ON TIME  | 0.393          | ms   |
|                                          | OFF TIME | 0.234          | ms   |
|                                          | Ratio    | 62.679%        | %    |
| Packet Type (Mode)                       |          | Not Applicable | mode |
| Transmit Speed                           |          | Not Applicable | MHz  |

Note: The insertion loss was corrected during the test.

|                                                                |                                                                                                                                                                                      |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Category ;                                                | 2.4GHz Band Wideband Low-Power Data Communication System Bluetooth_GFSK                                                                                                              |
| The reason why the tests are performed only at rated voltage : | When the input voltage to receiver RF circuit varies below $\pm 1\%$ as the input voltage from the external power supply to the receiver varies $\pm 10\%$ (excluding power supply). |

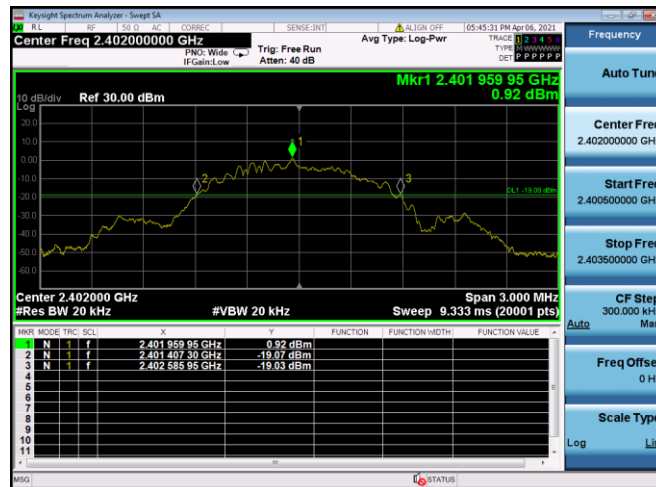
|                                  |                     |          |           |           |             |                                 |      |
|----------------------------------|---------------------|----------|-----------|-----------|-------------|---------------------------------|------|
| Measurement Frequency            | MHz                 | 2402     | 2440      | 2480      | Result      | Limit                           | Note |
| Channel Number                   | Ch.                 | 0        | 19        | 39        | ---         | ---                             |      |
| Reading Frequency                | MHz                 | 2401.997 | 2440.000  | 2480.005  | ---         | ---                             |      |
| Frequency Tolerance              | ppm                 | -1.405   | 0.184     | 1.845     | <b>PASS</b> | $\pm 50 \times 10^{-6}$ (50ppm) |      |
| Occupied Bandwidth               | MHz                 | 1.089    | 1.089     | 1.084     | <b>PASS</b> | 26MHz or below                  |      |
| RF Output Power                  | mW                  | 4.054    | 4.045     | 3.854     | <b>PASS</b> | 10mW                            |      |
| RF Output Power Tolerance        | %                   | -27.323  | -27.490   | -30.913   | <b>PASS</b> | +20 to -80%                     |      |
| Tx Spurious Emission Strength    | 30 to 2387MHz       | uW       | 0.003     | 0.002     | <b>PASS</b> | 2.5uW or below                  |      |
|                                  |                     | MHz      | 2378.043  | 2137.158  | 2344.103    | -----                           |      |
|                                  | 2387 to 2400MHz     | uW       | 4.725     | 0.003     | <b>PASS</b> | 25uW or below                   |      |
|                                  |                     | MHz      | 2399.987  | 2391.940  | 2398.817    | -----                           |      |
|                                  | 2483.5 to 2496.5MHz | uW       | 0.003     | 0.004     | <b>PASS</b> | 25uW or below                   |      |
|                                  |                     | MHz      | 2487.348  | 2488.375  | 2483.721    | -----                           |      |
| Rx Spurious Emission Strength    | 10 to 1000MHz       | uW       | 0.009     | 0.007     | <b>PASS</b> | 4nW or below                    |      |
|                                  |                     | MHz      | 756.658   | 878.577   | 491.091     | -----                           |      |
|                                  | 1000 to 5000MHz     | nW       | 0.142     | 0.116     | <b>PASS</b> | 20nW or below                   |      |
|                                  |                     | MHz      | 3154.000  | 3323.200  | 3211.600    | -----                           |      |
|                                  | 5000 to 12500MHz    | nW       | 0.172     | 0.148     | <b>PASS</b> | 20nW or below                   |      |
|                                  |                     | MHz      | 12013.437 | 12395.000 | 12082.812   | -----                           |      |
| Interference Prevention Function | -----               | Good     | Good      | Good      | <b>PASS</b> |                                 |      |

## 9. Trece Data

### 9.1 Frequency Tolerance

LE 1M

Ch.0: 2402 MHz



Ch.19: 2440 MHz



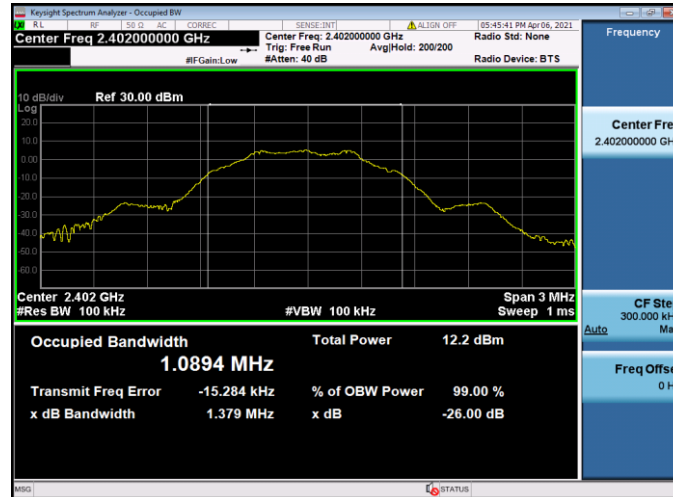
Ch.39: 2480 MHz



## 9.2 Occupied and Spread Bandwidth

Ch.0: 2402 MHz

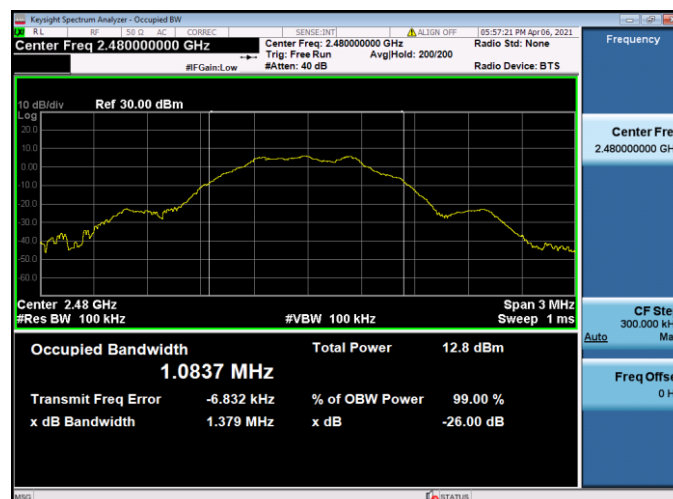
Occupied Bandwidth



Ch.19: 2440 MHz



Ch.39: 2480 MHz

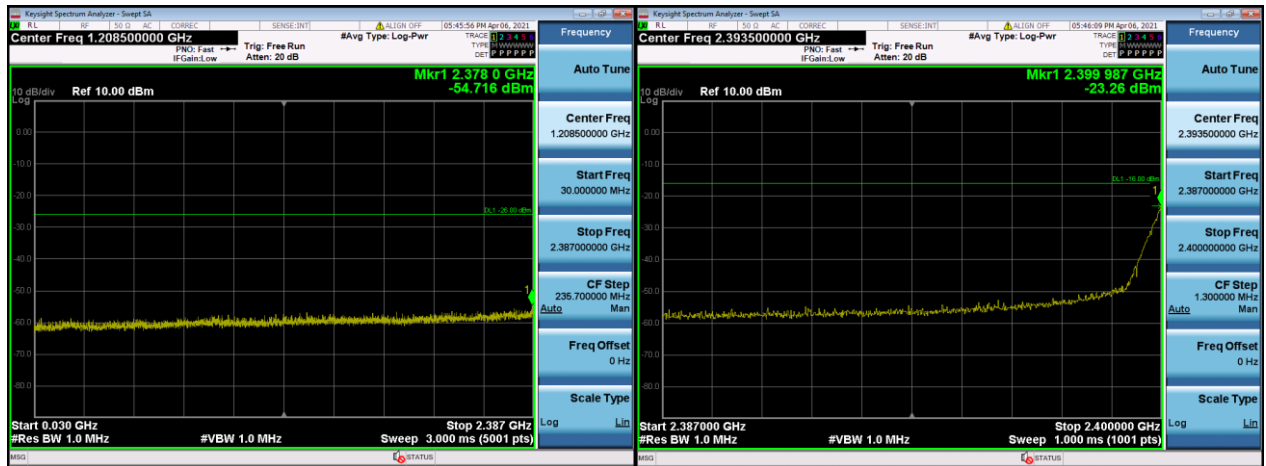


### 9.3 Tx Spurious Emission Strength

Ch.0: 2402 MHz

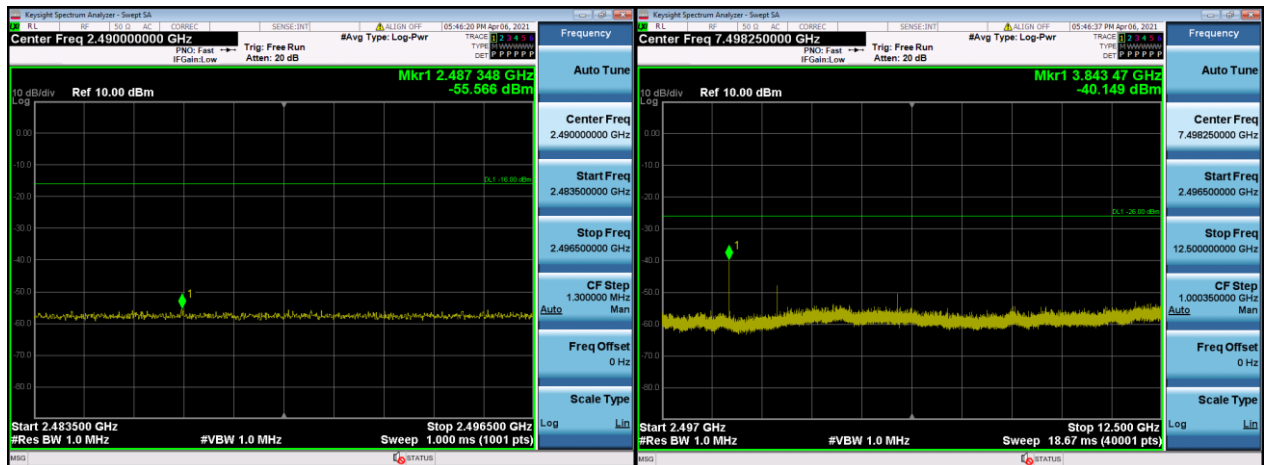
30 to 2387MHz

2387 to 2400MHz



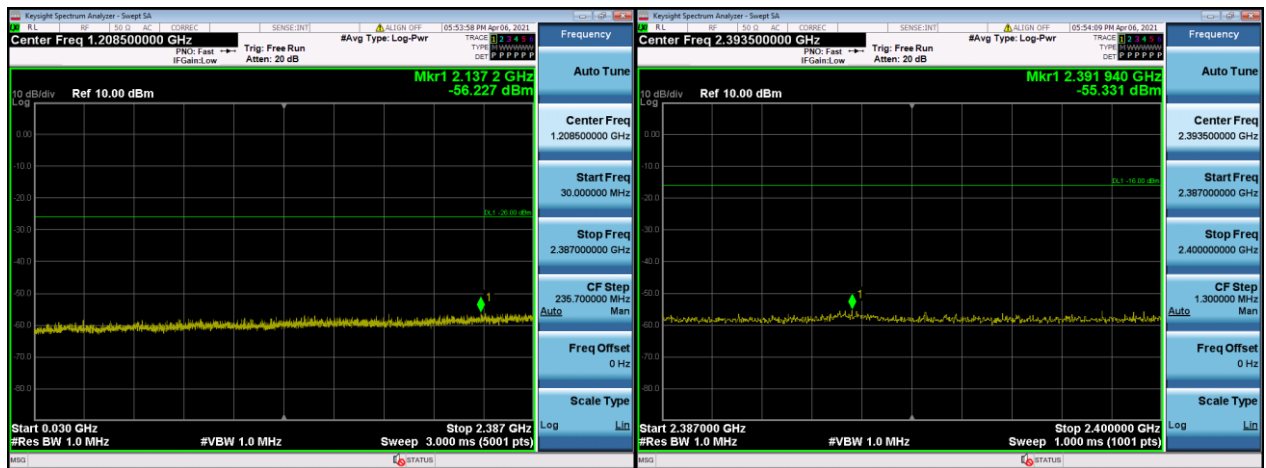
2483.5 to 2496.5MHz

2496.5 to 12500MHz



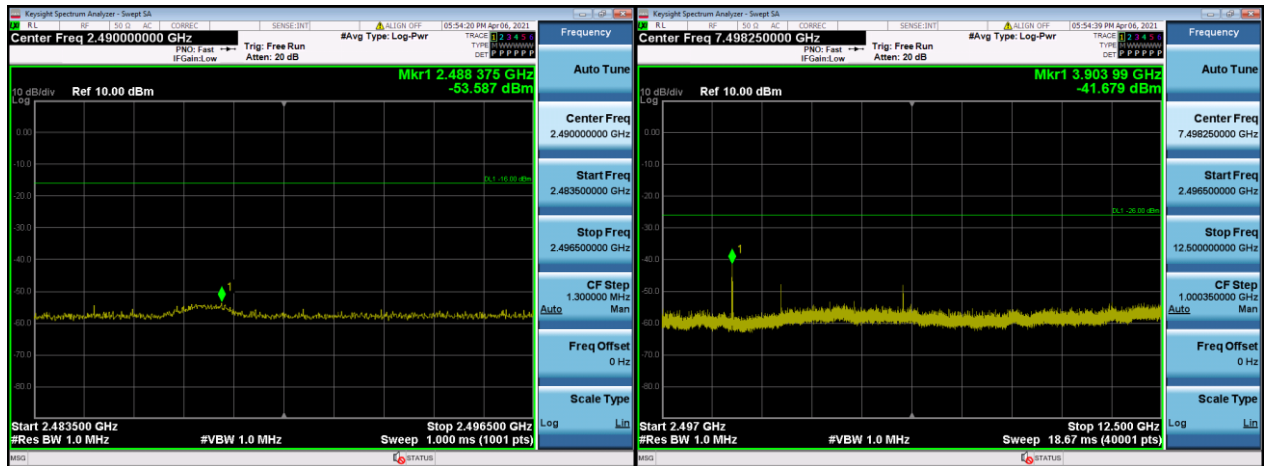
Ch.19: 2440 MHz  
30 to 2387MHz

2387 to 2400MHz



2483.5 to 2496.5MHz

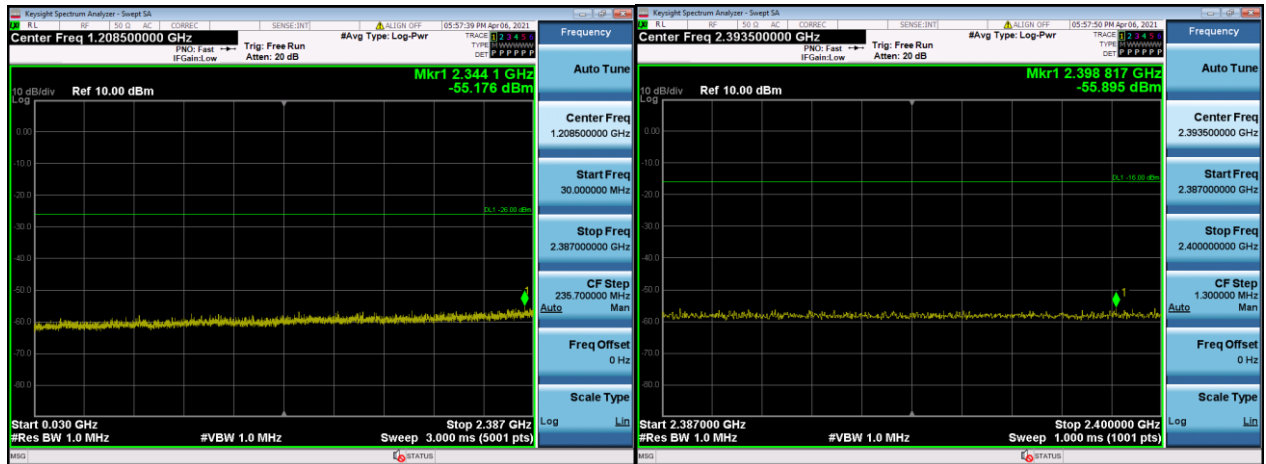
2496.5 to 12500MHz



Ch.39: 2480 MHz

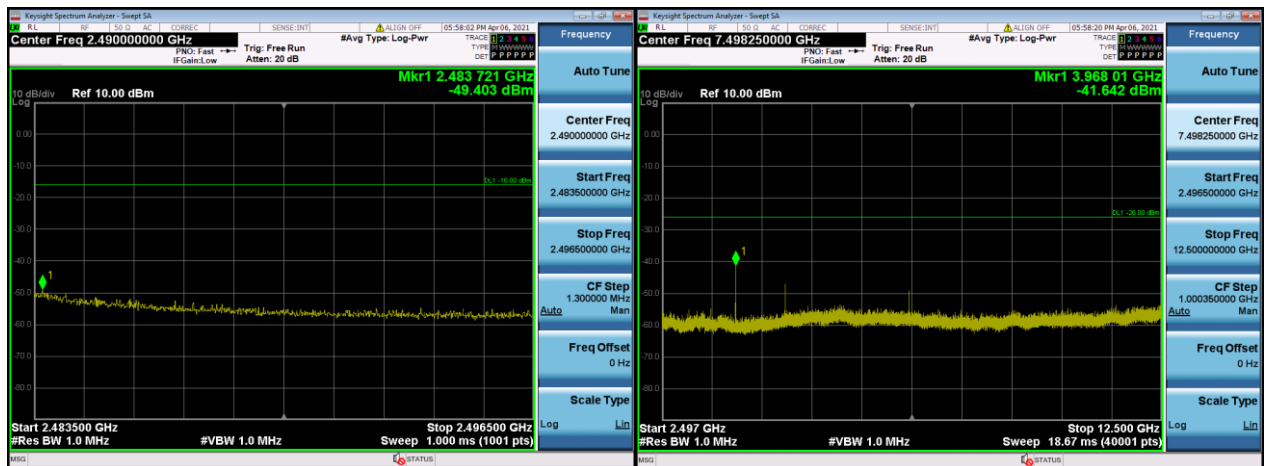
30 to 2387MHz

2387 to 2400MHz



2483.5 to 2496.5MHz

2496.5 to 12500MHz



### 9.4 RF Output Power

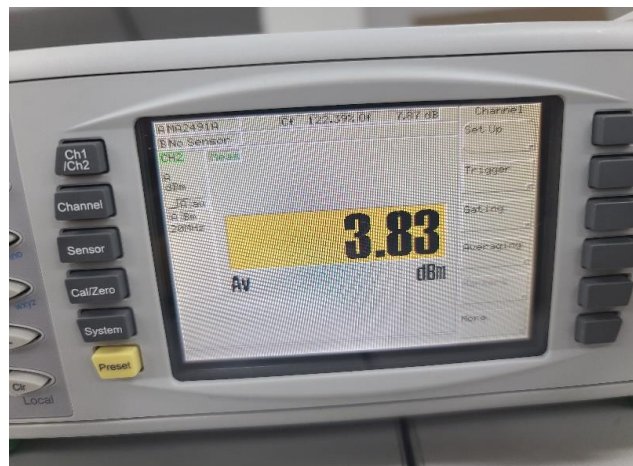
Ch.0: 2402 MHz



Ch.19: 2440 MHz



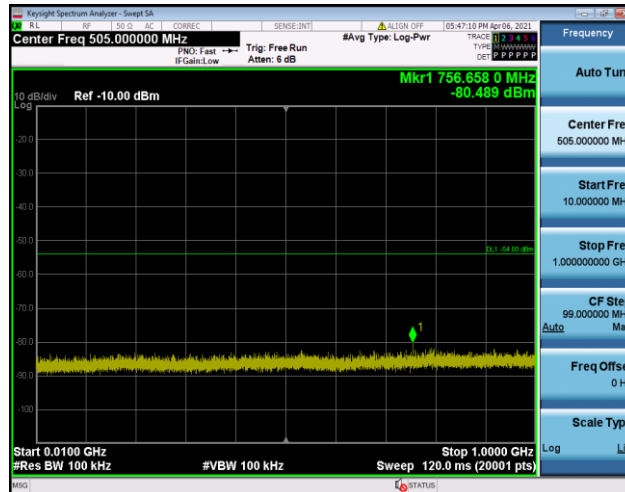
Ch.39: 2480 MHz



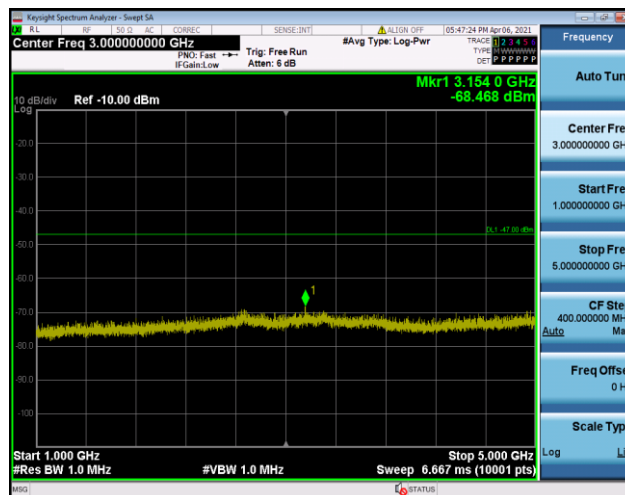
## 9.5 Rx Spurious Emission Strength

Ch.0: 2402 MHz

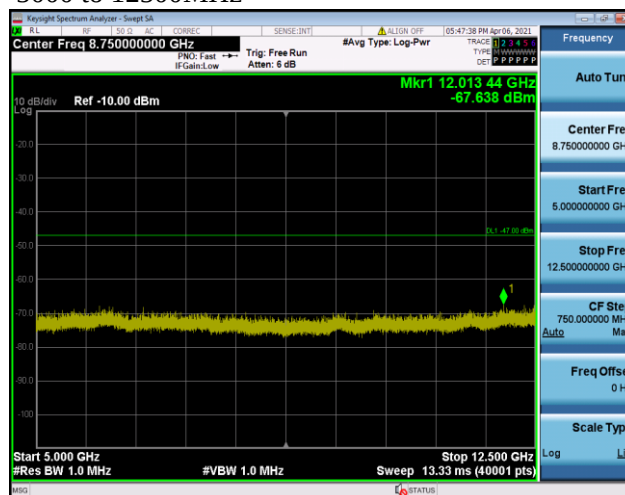
10 to 1000MHz



1000 to 5000MHz

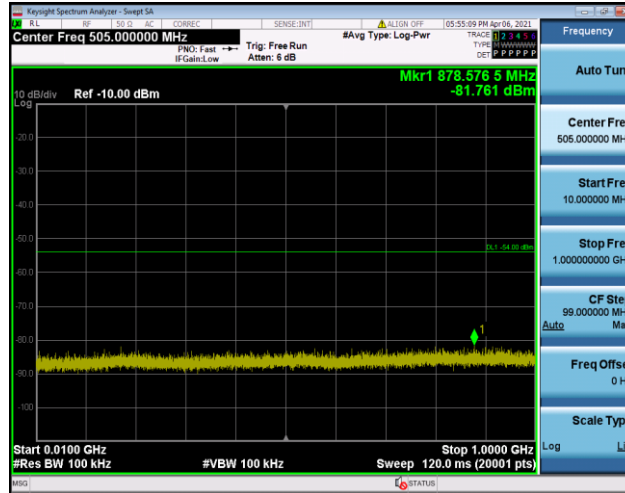


5000 to 12500MHz

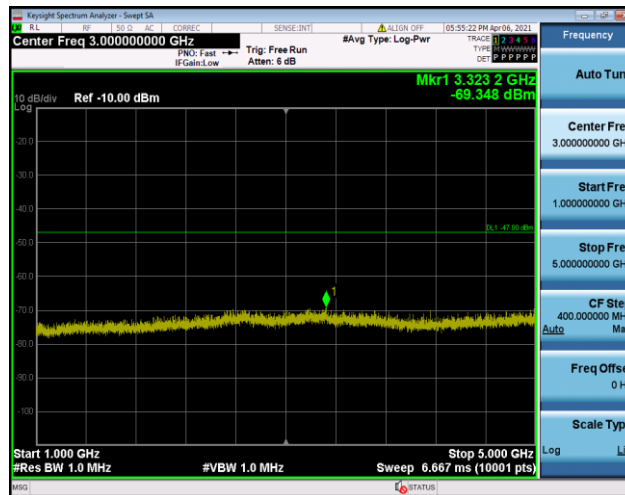


Ch.19: 2440 MHz

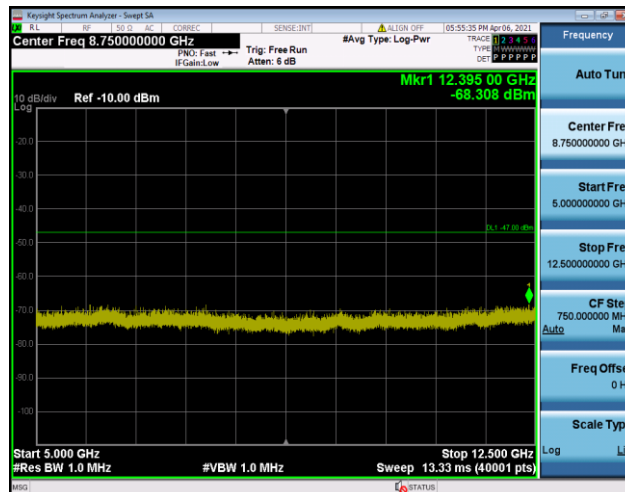
## 10 to 1000MHz



## 1000 to 5000MHz

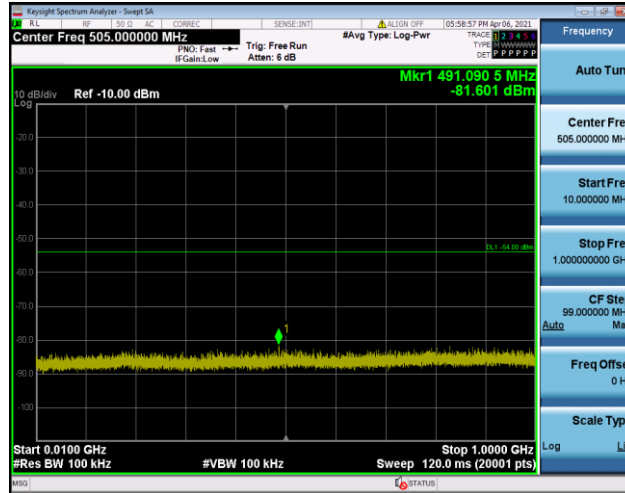


## 5000 to 12500MHz

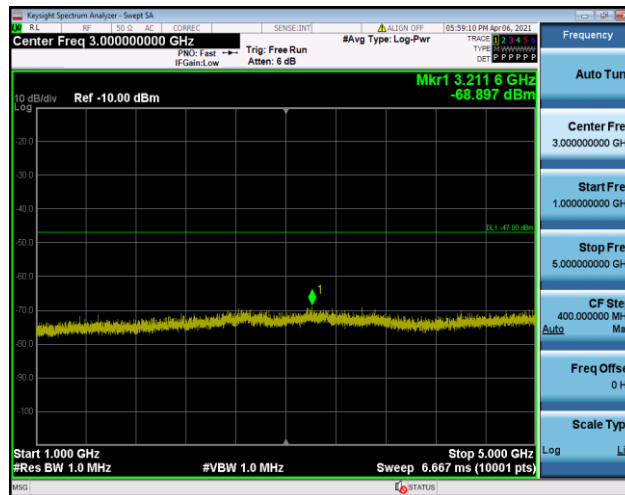


Ch.39: 2480 MHz

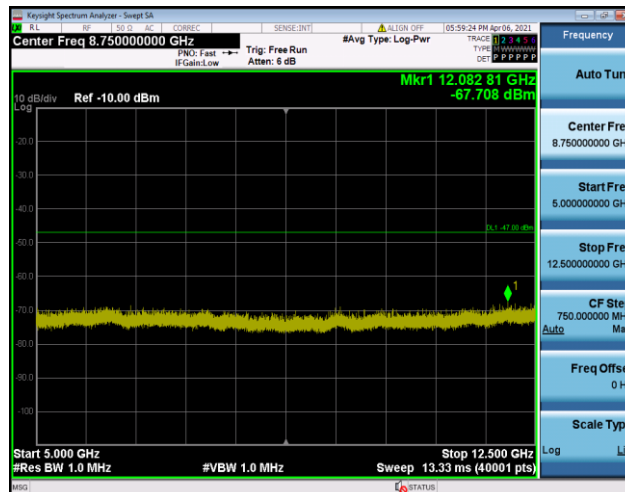
## 10 to 1000MHz



## 1000 to 5000MHz



## 5000 to 12500MHz



## 9.6 Dwell Time

ON/OFF

