

# TEST REPORT

**Report number** : 7191189243-09

**Issue date** : 03/09/2018

**Applicant** : Panasonic AVC Networks Singapore

**Equipment under test (EUT)** : Bluetooth Module.

**Model name** : RSNE041B1

**Date of test** : 13/08/2018


**Test place** : TÜV SÜD PSB Pte. Ltd.  
No.1 Science Park Drive  
Singapore 118221

**Test results** : PASS


*The results in this report are applicable only to the equipment tested.*

*This report shall not be re-produced except in full without the written approval of TÜV SÜD PSB Pte. Ltd.*

**Tested by;**

  
Chang Wai Kit

**Approved by;**

  
Lim Cher Hwee

# 1. 試験の概要

## 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 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 Strength	Conducted	PASS
6	RF Output Power Tolerance	Conducted	PASS
7	Secondary Emitted Radio Wave Strength	Conducted	PASS
8	Carrier Sensing Function (1)	Conducted	N/A
9	Carrier Sensing Function (2)	Conducted	N/A
10	Absolute Gain of Transmission Antenna	Conducted	N/A
11	Angle Width of Principal Radiation 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. 試驗情報

### *Test Information*

1. Applicant  
Panasonic AVC Networks Singapore  
202, Bedok South Avenue 1,  
Singapore 469332  
Phone: +65-6222-7222 / Fax: +65-6299-1212

2. Equipment under test  
Bluetooth Module

3. Model number  
RSNE041B1

4. Serial number  
Nil.

5. Size  
(W) 29 x (D) 15 x (H) 1.2 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  
GFSK, Gaussian Frequency Shift Keying

10. Data rate

1Mbps

11. Variation of the family model(s)  
None

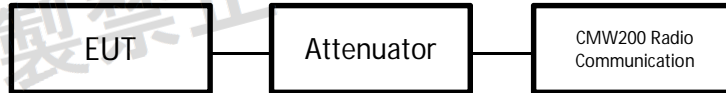
### 3. 機器構成

#### *Configuration of equipment*

1. Frequency tolerance, Occupied band width,  
Unwanted(Spurious) emission strength, Secondary emitted radio wave strength



2. RF output power tolerance



#### 4. 試驗結果

Test results

S/N: Nil

Environment of test room	Date of test	2018/8/12
	Temperature	23.8 °C
	Humidity	60.5 %

Peak Antenna Gain	1.63	dBi
Declaration Output Power	6	mW
Declaration Output Power	7.7815	dBm
E.I.R.P.	9.4115	dBm
Input Power Voltage	3.3	VDC

Tested Circuit Insertion Loss		0.9	dB
Frequency equal to the Transmission rate		Not Applicable	MHz
Transmission Time	ON TIME (1sec or less)	Not Applicable	ms
	OFF TIME (0.1sec or more)	Not Applicable	ms
	Ratio	Not Applicable	-
Packet Type (Mode)		Not Applicable	mode
Transmit Speed		Not Applicable	MHz

Test category :	2.4GHz Band Low-Power Data Communication System (GFSK/0-39ch)
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	---	---	
Frequency Measurements		MHz	2401.979159	2439.977855	2479.976908	---	---	
Frequency Tolerance		ppm	-8.67652	-9.07582	-9.31129	PASS	±50×10 <sup>-6</sup> (50ppm)	
Occupied Bandwidth		MHz	1.772	1.768	1.751	PASS	26MHz or below	
RF Output Power		mW	2.951209	3.801894	5.495409	PASS	10mW or below	
RF Output Power Tolerance		%	-50.813180	-36.635101	-8.409854		+20 to -80%	
Unwanted (Spurious) Emission Strength	30 to 2387MHz	uW/MHz	0.000714	0.000891	0.000951	PASS	2.5uW/MHz or below	
		MHz	2376.350	478.900	2323.690	----		
	2387 to 2400MHz	uW/MHz	0.545758	0.000359	0.000187	PASS	25uW/MHz or below	
		MHz	2399.989	2387.732	2399.941	----		
	2483.5 to 2496.5MHz	uW/MHz	0.000513	0.000982	0.014894	PASS	25uW/MHz or below	
		MHz	2495.327	2491.866	2483.502	----		
	2496.5 to 12500MHz	uW/MHz	0.024491	0.014655	0.006998	PASS	2.5uW/MHz or below	
		MHz	2558.800	2595.400	2635.700	----		
Secondary Emitted Radio Wave Strength	30 to 1000MHz	nW	0.000857	0.000703	0.000698	PASS	4nW or below	
		MHz	378.750	221.730	225.400	----		
	1000 to 10000MHz	nW	0.068707	0.063680	0.030061	PASS	20nW or below	
		MHz	9602.200	9753.900	9913.200	----		
	10000 to 12500MHz	nW	0.021478	0.012764	0.014028	PASS	20nW or below	
		MHz	12373.900	12244.500	12434.400	----		
Interference Prevention Function			Good			PASS		

## 5. 試験機器リスト

[illegible]

Note1: 測定機器の較正は、1年間有効です。  
The calibration of measurement equipment is valid for one year period.

Note2: "X" は使用した測定機器です。  
"X" used equipment.

Note3: 較正方法 ...  
Cal.Method ...

例：独立行政法人情報通信研究機構（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が行う較正

a) : Calibration conducted by the National Institute of Information and Communications Technology(NICT)(hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)

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

b) : Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)

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が行う較正に相当するもの

c) 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)

二)：別表第三の下欄に掲げる測定器その他の設備であつて、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

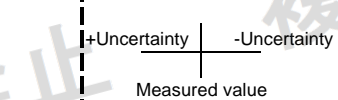

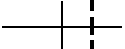

d): Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)



## 6. 測定の不確かさ

About uncertainty of measured value

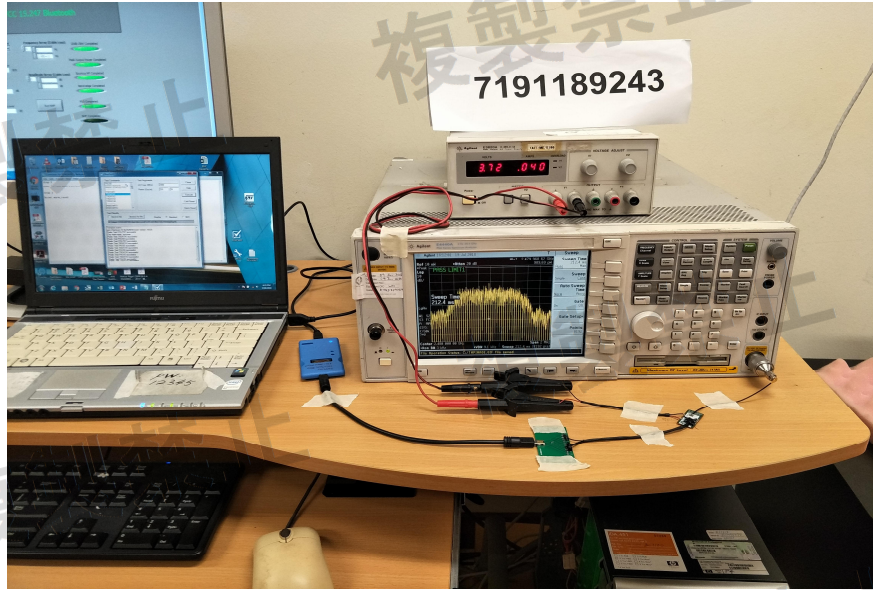
Parameter	Uncertainty
Total Frequency	$\pm 74\text{Hz}$
Total RF power conducted	$\pm 1.0\text{dB}$
Spurious emissions conducted	$\pm 1.0\text{dB}$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 1\%$

Judge	Measured value and standard limit value	
PASS	<b>Case1</b>  <p>Standard limit value</p> <p>+Uncertainty      -Uncertainty</p> <p>Measured value</p> <p>Even if it takes uncertainty into consideration, a standard limit value is fulfilled.</p>	
	<b>Case2</b>  <p>Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.</p>	
FAIL	<b>Case3</b>  <p>Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.</p>	
	<b>Case4</b>  <p>Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.</p>	

## 7. 測定写真

Photographs

### Conducted Measurement Photo





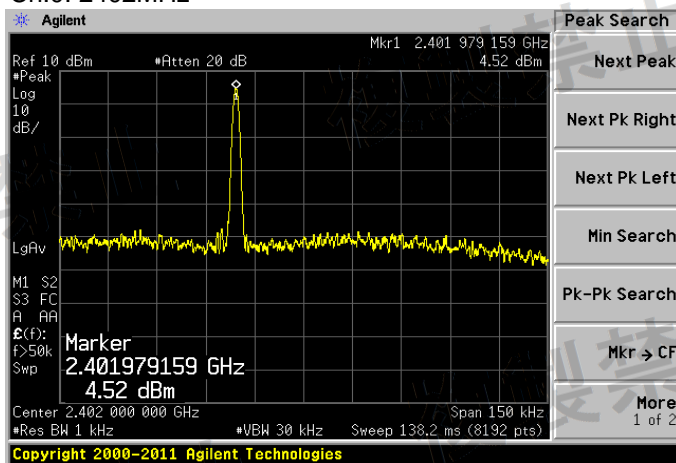
## 8. 測定チャート

Test chart

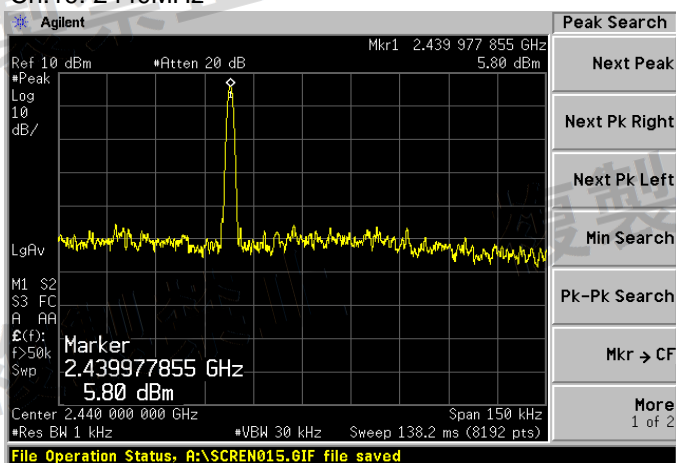
### 8.1 周波数の偏差

Frequency tolerance

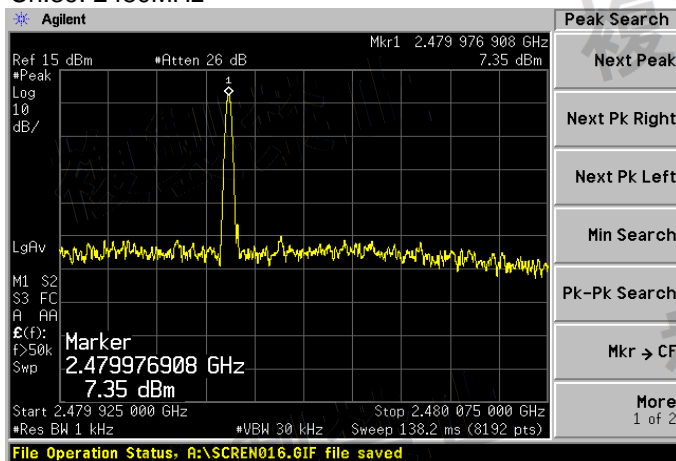
Ch.0: 2402MHz



Ch.19: 2440MHz

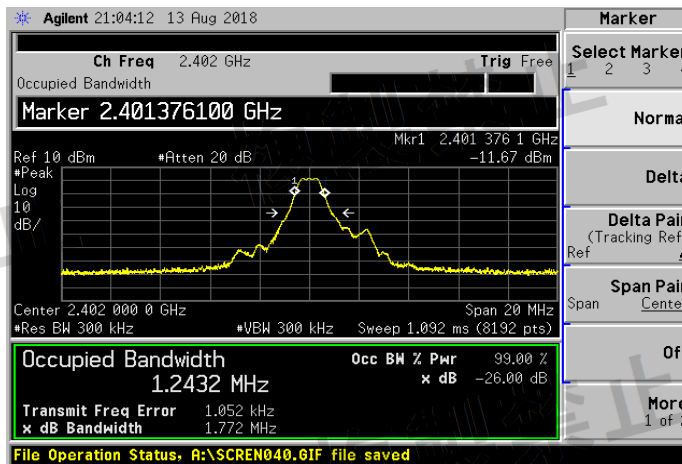


Ch.39: 2480MHz

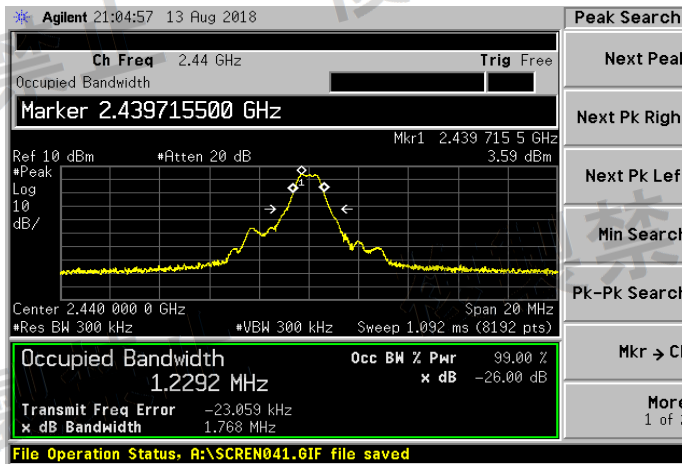


## 8.2 占有周波数帯幅及び拡散帯域幅 Occupied bandwidth / Spread bandwidth

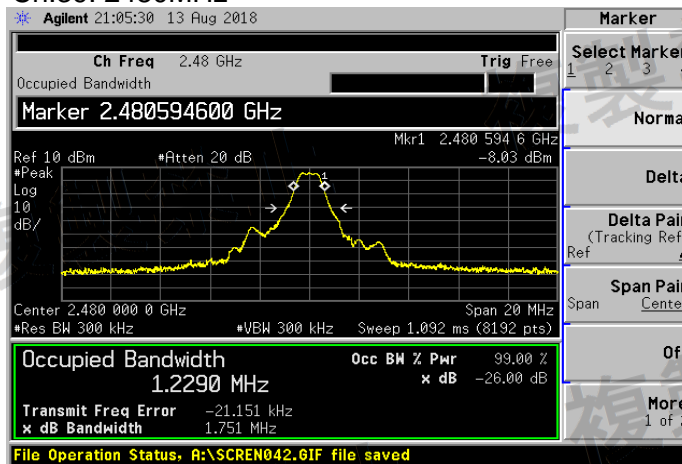
Ch.0: 2402MHz



Ch.19: 2440MHz



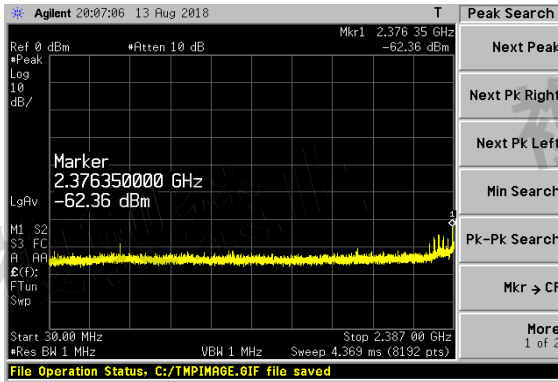
Ch.39: 2480MHz



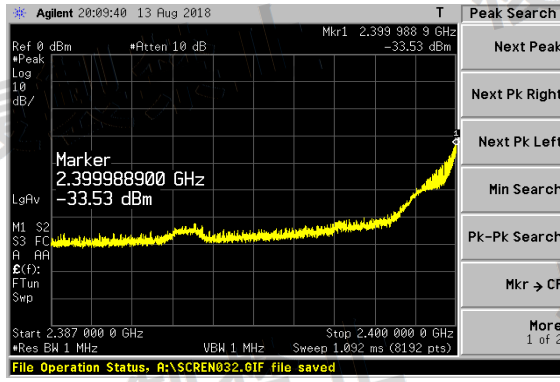
### 8.3 スプリアス発射又は不要発射の限度 Unwanted(Spurious) emission strength

Ch.0: 2402MHz

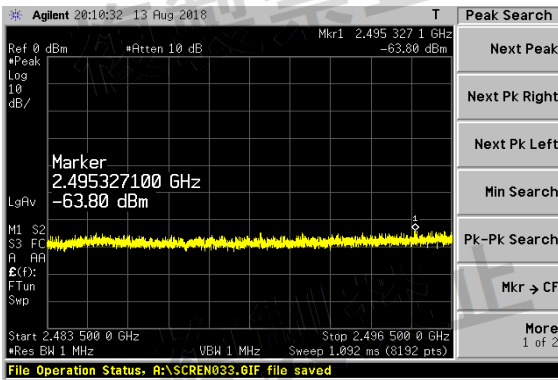
30-2387MHz



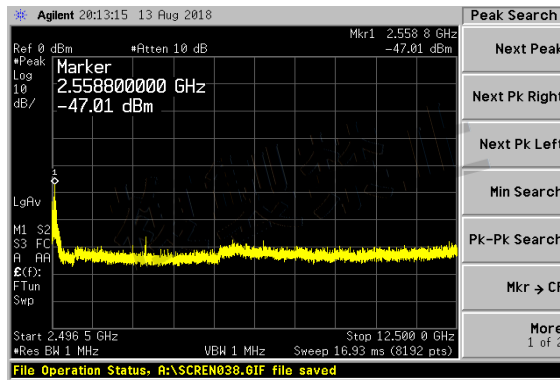
2387-2400MHz



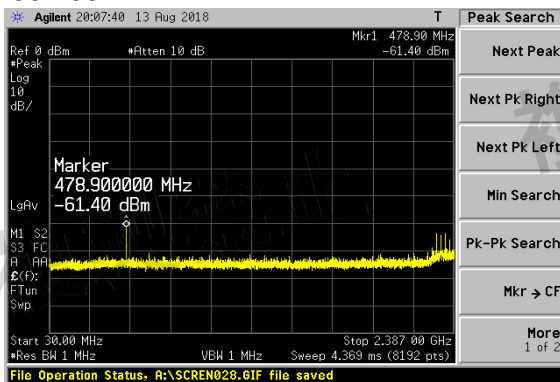
2483.5-2496.5MHz



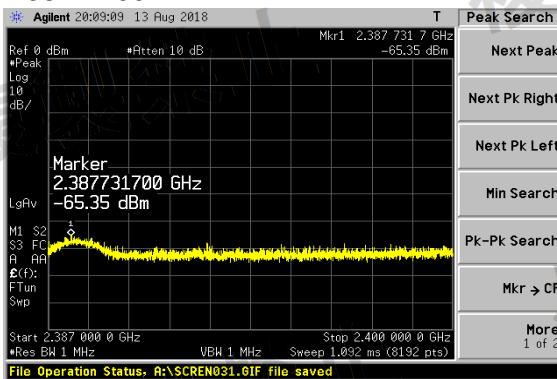
2496.5-12500MHz



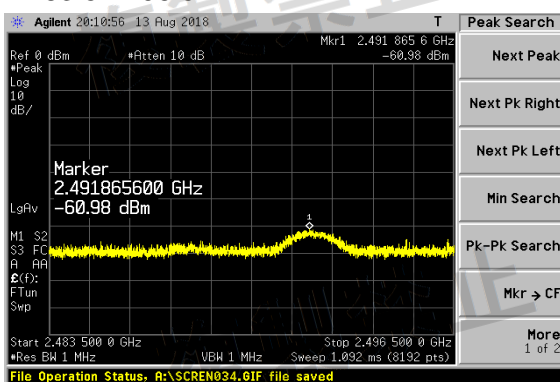
Ch.19: 2440MHz  
30-2387MHz



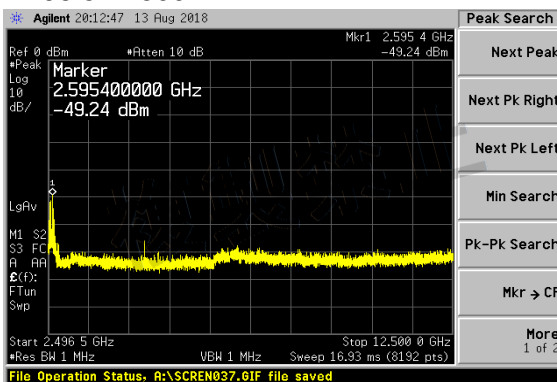
2387-2400MHz



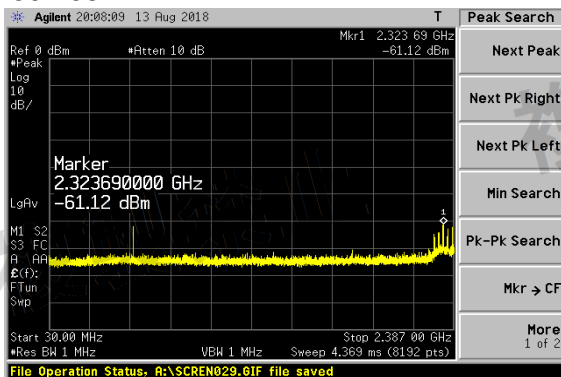
2483.5-2496.5MHz



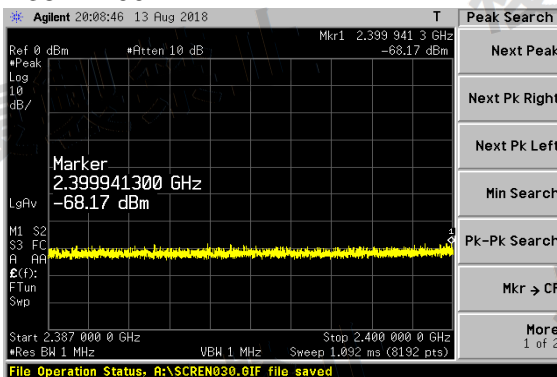
2496.5-12500MHz



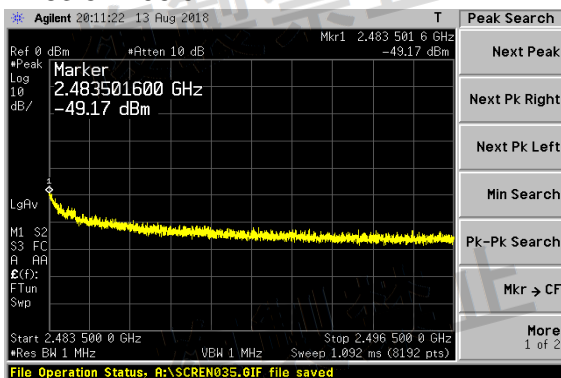
Ch.39: 2480MHz  
30-2387MHz



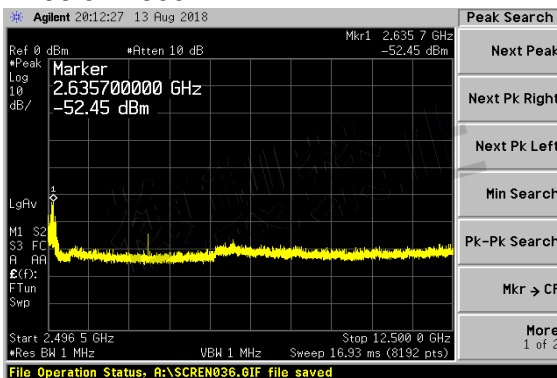
2387-2400MHz



2483.5-2496.5MHz

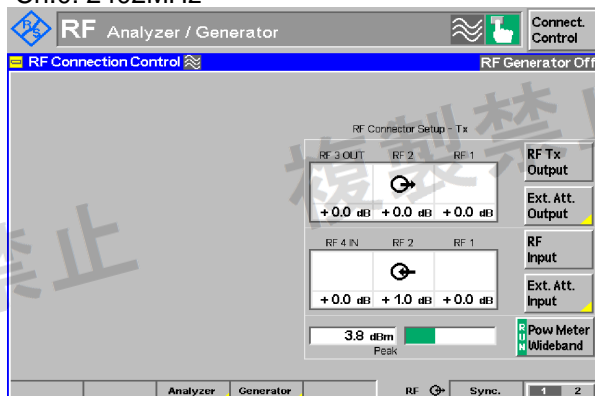


2496.5-12500MHz

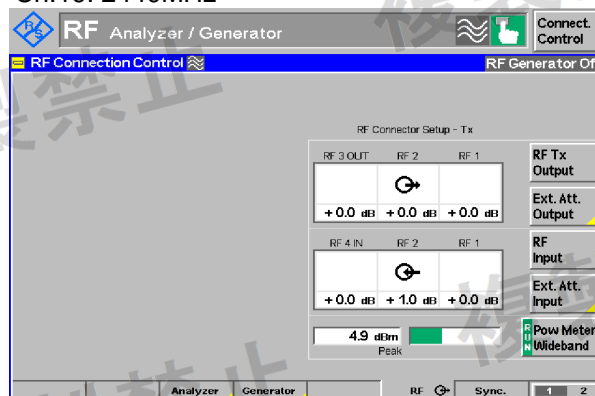


#### 8.4 空中線電力の偏差 RF output power tolerance

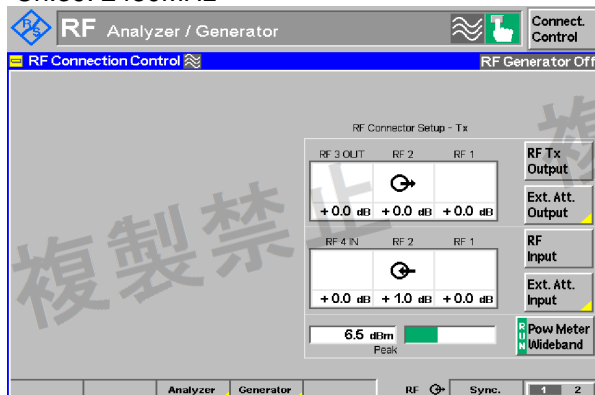
Ch.0: 2402MHz



Ch.19: 2440MHz

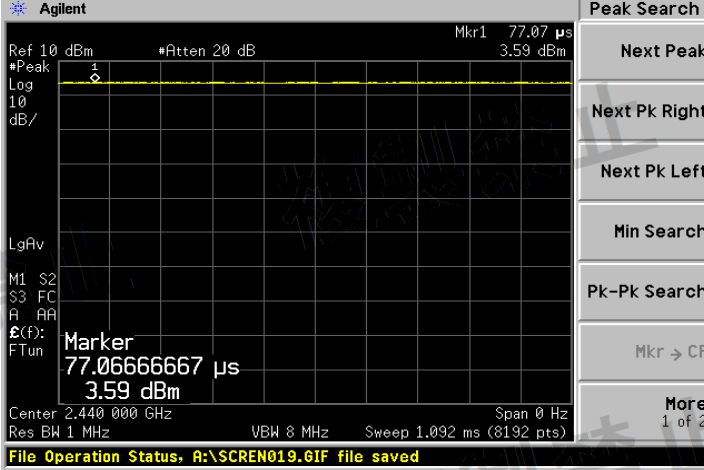


Ch.39: 2480MHz



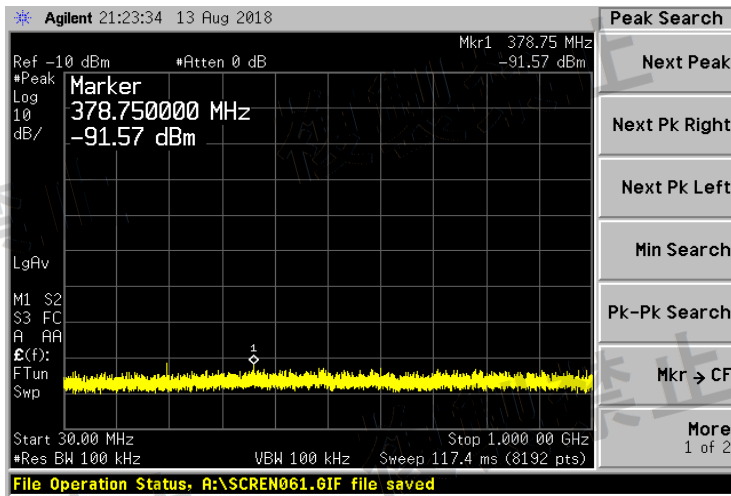


ON/OFF time

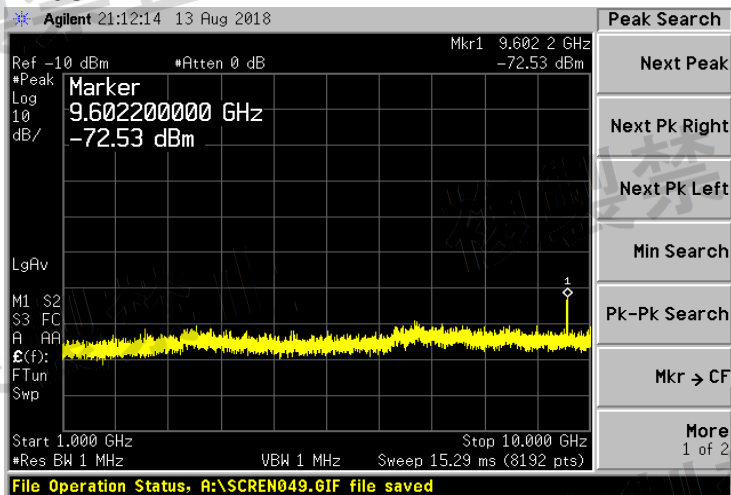


8.5 副次的に発する電波等の限度  
Secondary emitted radio wave strength

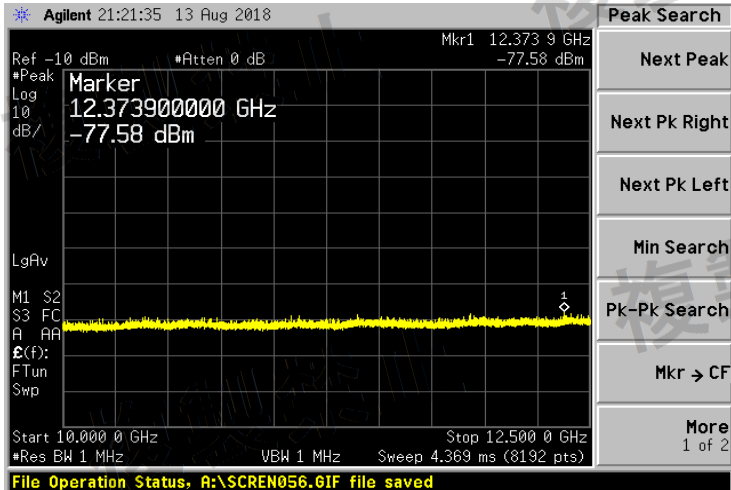
Ch.0: 2402MHz  
30MHz-1GHz



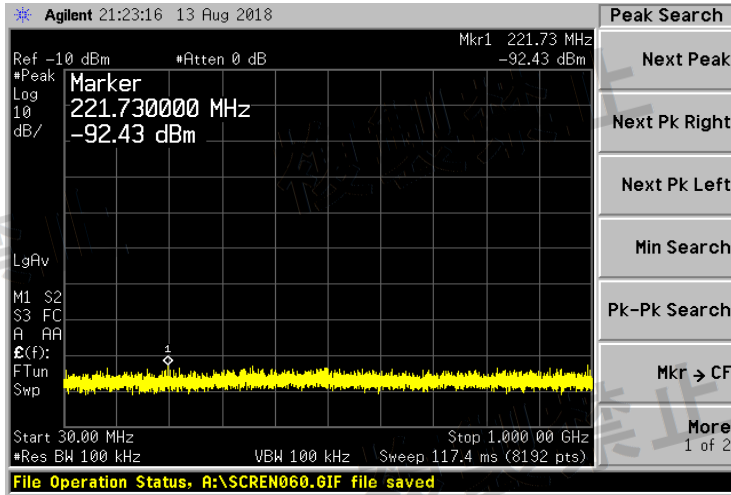
1-10GHz



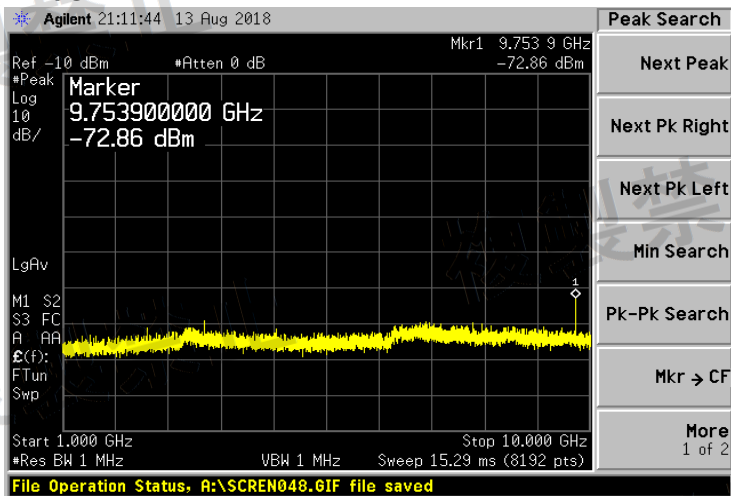
10-12.5GHz



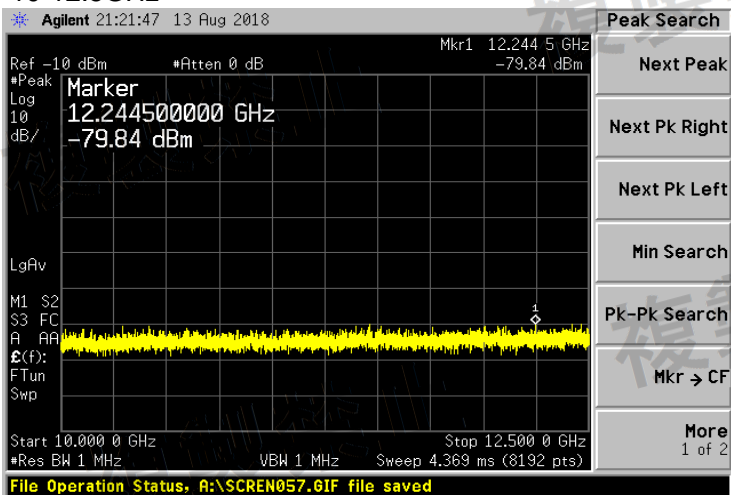
Ch.19: 2440MHz  
30MHz-1GHz



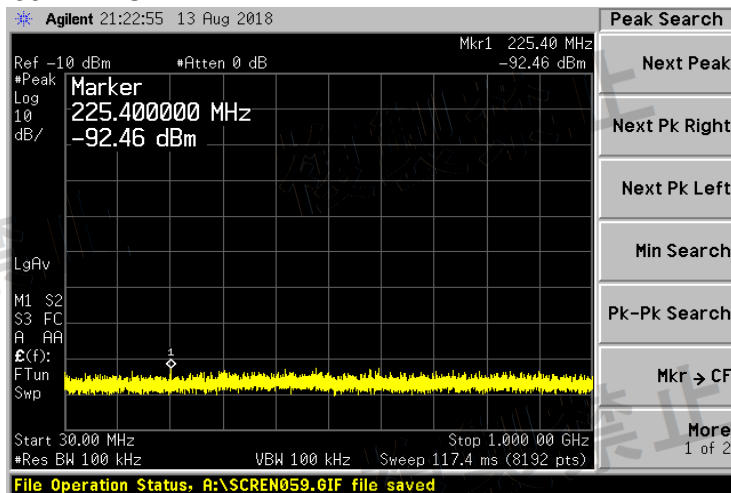
1-10GHz



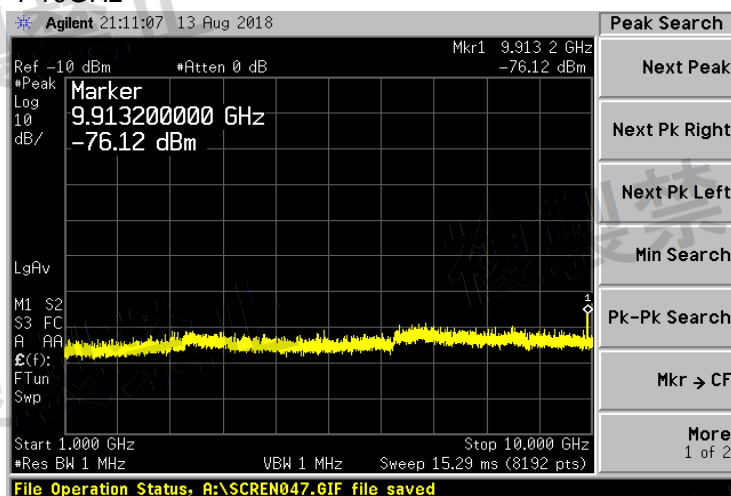
10-12.5GHz



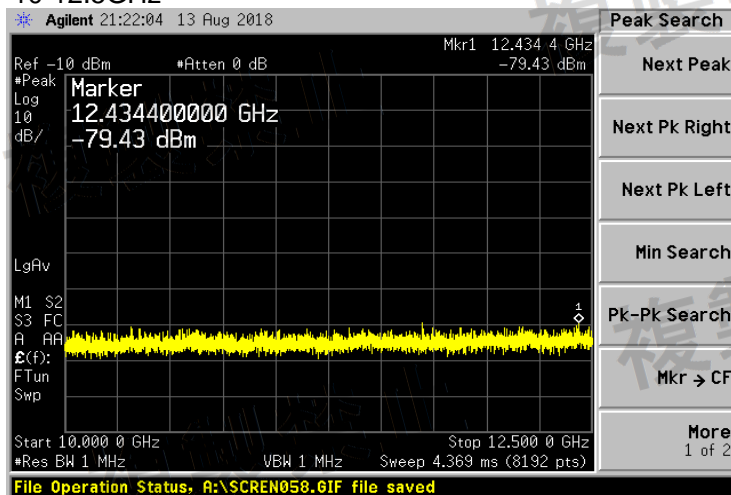
Ch.39: 2480MHz  
30MHz-1GHz



1-10GHz



10-12.5GHz



## 9. 試験所の説明

### **Laboratory description**

#### 1. Location

Name: TÜV SÜD PSB Pte. Ltd.

Address: No.1 Science Park Drive, Singapore 118221

Phone: +65-6778-7777

Fax: +65-6779-7088

#### 2. Accreditation and Registration

##### 1) FCC

Test Firm Registration Number: 994109

Designation Number: SG0002

##### 2) SABS

LAB CODE: SABS/A-LAB/0029/2018

##### 3) BSMI

Laboratory Code: SL2-IS-E-6001R [CNS-13803 (ISM Equipment)]

Laboratory Code: SL2-IN-E-6001R [CNS-13438 (IT Equipment)]

Laboratory Code: SL2-R1/R2-E-6001R [CNS-13439 (Broadcast Receivers)]

Laboratory Code: SL2-A1-E-6001R [CNS-13783-1 (Household Appliances)]

Laboratory Code: SL2-L1-E-6001R [CNS-14115 (Lighting Equipment)]

##### 4) Industry Canada

Site number	Facility	Expiration date
2923I-1	3m & 10m Semi-anechoic chamber	16/01/2020

##### 5) VCCI Council

Registration number	Expiration date
R-1335	19/02/2020
C-2306	14/12/2020
T-1471	08/10/2020