

TEST REPORT

Report number: DRTTEC1906-0038

Issue Date: 2019-06-28

Applicant	: Partron Co., Ltd. 27, Samsung 1-ro 3-gil, Hwaseong-si, Gyeonggi-do, Korea
Equipment under test	: Wi-Fi Module
Model Name	: W8188RHPF
Date of Test	: 2019-06-03 ~ 2019-06-18
Test Place	: DT&C Co., Ltd. 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935
Test Results	: PASS (Refer to attachment)

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.

Test Engineer;

Inhee Bae

Approval Person;

Geunki 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 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	PASS
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

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2) Modification to the EUT by laboratory

None

2. Test Information

1. Applicant

Partron Co., Ltd.
27, Samsung 1-ro 3-gil,
Hwaseong-si, Gyeonggi-do, Korea

2. Equipment under test

Wi-Fi Module

3. Model number

W8188RHPF

4. Serial number

Identical prototype

5. Size

(W) 12.9 x (D) 12.2 x (H) 2 mm

6. Terminal limitation

-20°C to 55°C

7. RF Specification Frequency range

2422 - 2462 MHz

8. Number of RF Channels

9 Channels

9. Modulation method & Data rate

Direct Sequence Spread Spectrum
(1Mbps: DBPSK, 2Mbps: DQPSK, 5.5/11Mbps: CCK)
Frequency equal to the transmission rate of the modulation signal
1MHz(case of 1/2Mbps) 1.375MHz(case of 5.5/11Mbps)
Orthogonal Frequency Division Multiplexing
(6/9Mbps: OFDM-BPSK, 12/18Mbps: QPSK, 24/36Mbps: 16QAM, 48/54Mbps: 64QAM
The number of sub carrier: 52(A pilot is in sub carrier of these)
HT20: Orthogonal Frequency Division Multiplexing
(Up to 72.2Mbps)
HT40: Orthogonal Frequency Division Multiplexing
(Up to 150Mbps)

10. Variation of the family model(s)

None

3. Configuration of equipment

1. Frequency tolerance, RF output power tolerance, Spread bandwidth,
Unwanted(Spurious) emission strength, Secondary emitted radio wave strength



4. Test Result

Environment of Test Room	Test Date	2019-06-03 ~ 2019-06-18
	Temperature	25 ~ 26 °C
	Humidity	48 ~ 51 %

Peak Antenna Gain	1.99	dBi
Declaration Output Power	1.4	mW/MHz
Declaration Output Power	1.4613	dBm/MHz
E.I.R.P.	3.4513	dBm/MHz
Input Power Voltage	3.30	VDC

Tested Circuit Insertion Loss		0	dB
Frequency equal to the Transmission rate		-	MHz
Transmission Time	ON TIME	0.1276	ms
	OFF TIME	0.1714	ms
	Ratio	43%	%
Packet Type (Mode)		Not Applicable	mode
Transmit Speed		Not Applicable	MHz

Test Category; Radio Equipment of Specified Low-Power Radio Station for IEEE802.802.11 n (HT 40)

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	2422	2442	2462	Result	Limit	Note
Channel Number		Ch.	3	7	13	---	---	
Reading Frequency		MHz	2421.989823	2441.988589	2461.988716	---	---	
Frequency Tolerance		ppm	-4.20	-4.67	-4.58	PASS	$\pm 50 \times 10^{-6}$ (50ppm)	
Occupied Bandwidth		MHz	36.296	36.244	36.211	PASS	38MHz or below	
RF Output Power		mW/MHz	0.856684	0.945846	1.185279	PASS	10mW/MHz or below	
RF Output Power Tolerance		%	-38.81	-32.44	-15.34	PASS	+20 to -80%	
Tx Spurious Emission Strength	30 to 2387MHz	uW/MHz	0.111173	0.079433	0.024155	PASS	2.5uW/MHz or below	
		MHz	2387.0	2387.0	32.4	----		
	2387 to 2400MHz	uW/MHz	1.999862	0.177011	0.044566	PASS	25uW/MHz or below	
		MHz	2399.350	2398.557	2399.597	----		
	2483.5 to 2496.5MHz	uW/MHz	0.117490	0.963829	8.356030	PASS	25uW/MHz or below	
		MHz	2485.580	2485.606	2483.500	----		
	2496.5 to 12500MHz	uW/MHz	0.045814	0.337287	1.049542	PASS	2.5uW/MHz or below	
		MHz	2507	2497	2497	----		
Rx Spurious Emission Strength	10 to 1000MHz	nW	0.009616	0.011324	0.011614	PASS	4nW or below	
		MHz	971.29	745.57	777.25	----		
	1000 to 5000MHz	nW	0.204644	0.211349	0.214783	PASS	20nW or below	
		MHz	3180	3148	3004	----		
	5000 to 12500MHz	nW	0.665273	0.972747	1.114295	PASS	20nW or below	
		MHz	9687.5	9770.0	9845.0	----		
Carrier Sensing Function		----	Good	Good	Good	PASS	100mV/m	
Interference Prevention Function		----	Good	Good	Good	PASS		

5. 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校正機関（TELEC、インターテックジャパン、キーサイト）が行う校正
- 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）
- イ) 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 外国において行う校正であつて、機構又は第百二条の十八第一項の指定校正機関（TELEC、インターテックジャパン、キーサイト）が行う校正に相当するもの
- イ) 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～.
- コ イからハまでのいずれかに掲げる校正等を受けたものを用いて行う校正等
- イ) Calibration conducted by using other equipment that listed above from a) to c)

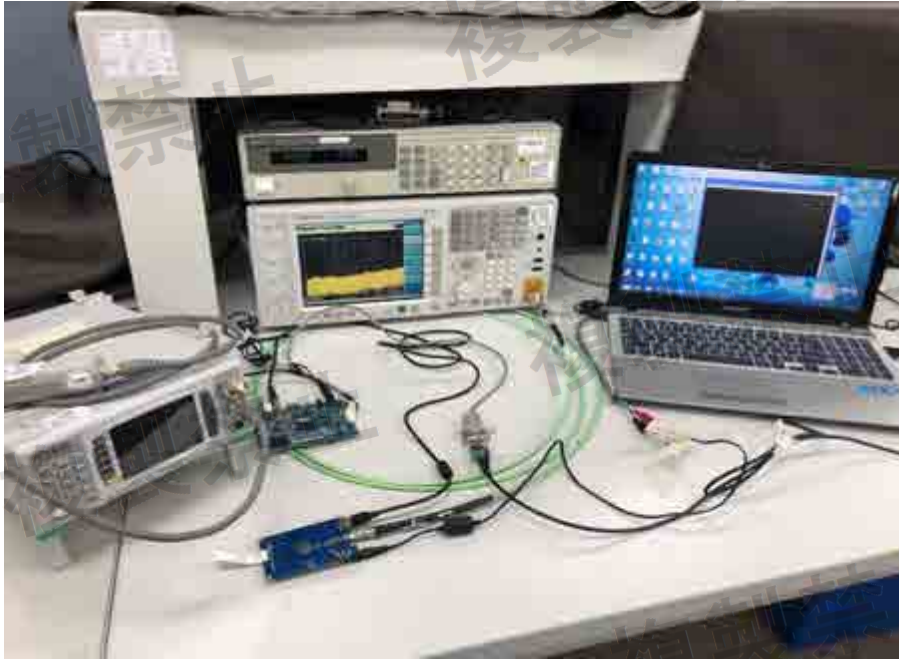
6. Uncertainty

Parameter	Uncertainty
Total RF power conducted	0.9 dB
Spurious emissions conducted	0.9 dB
Temperature	0.4 °C
Humidity	2.0 %

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 <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。 これを『適合』と呼びます。</p>	
	例 B <p>完全には、限度値内でも限度値外でもありません。 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 <p>完全には、限度値内でも限度値外でもありません。 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 <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。 これは『不適合』と呼びます。</p>	

7. Configuration Photographs

Conducted Measurement Photo(1)



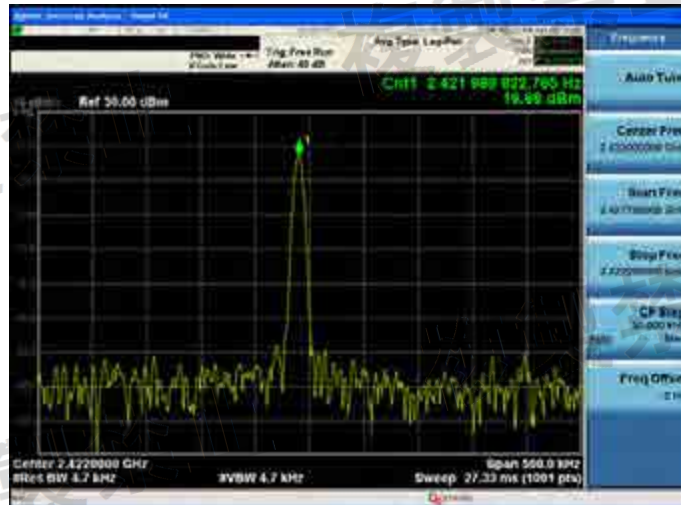
Conducted Measurement Photo(2)



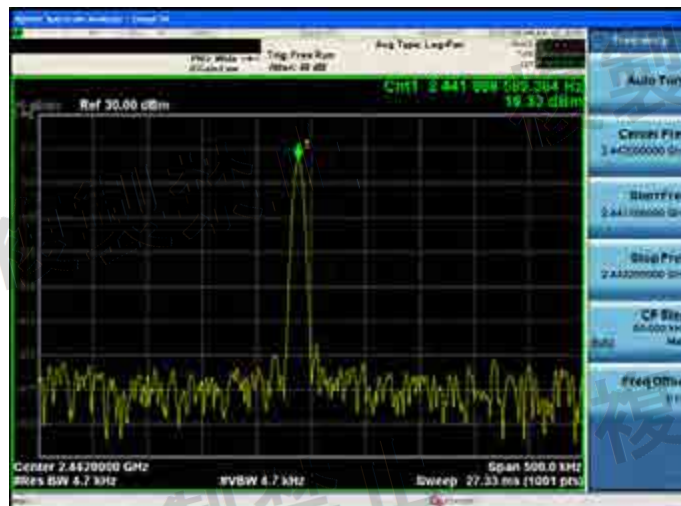
8. Trace Data

8.1 Frequency Tolerance

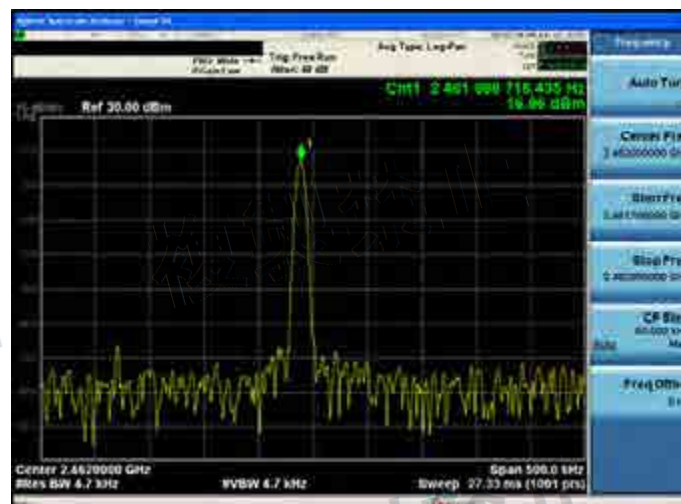
Ch.1: 2422MHz



Ch.7: 2442MHz



Ch.13: 2462MHz

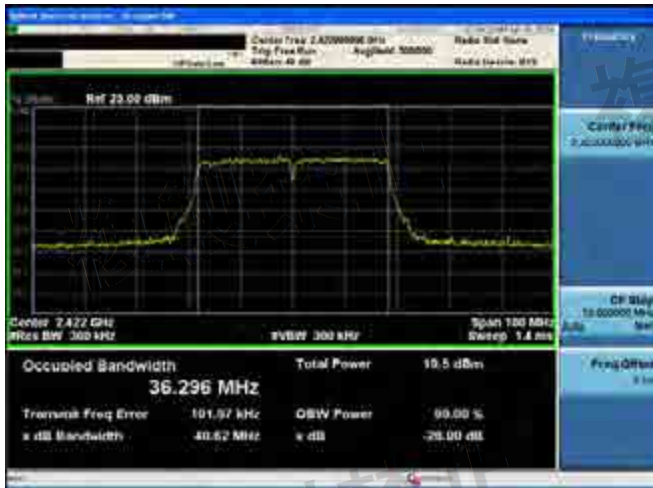


8.2 Occupied and Spread Bandwidth

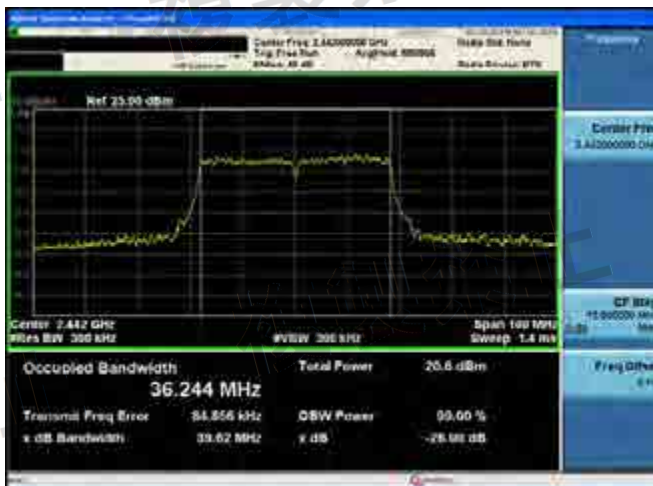
Ch.3: 2422MHz

Occupied Bandwidth

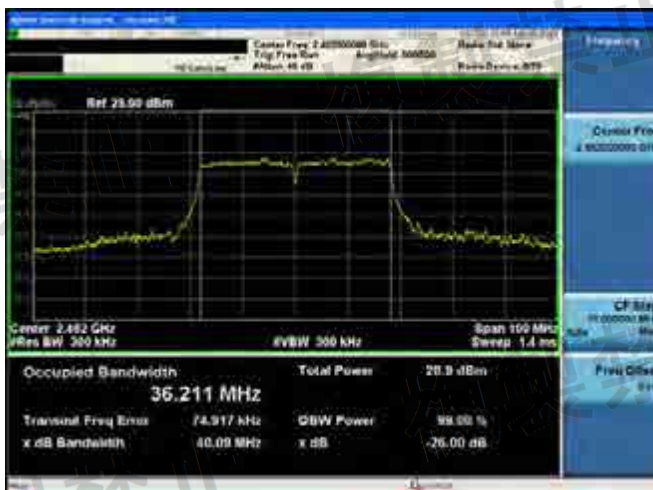
Spread Bandwidth



Ch.7: 2442MHz



Ch.11: 2462MHz



8.3 Tx Spurious Emission Strength

Ch.3: 2422MHz

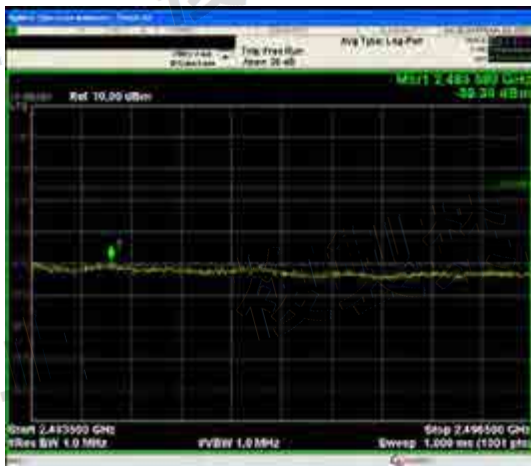
30-2387MHz



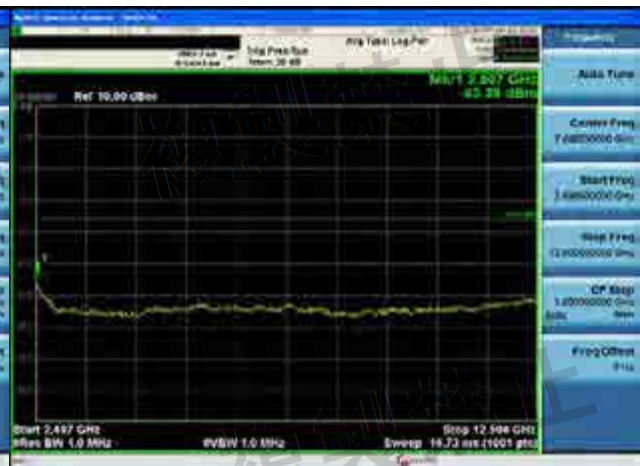
2387-2400MHz



2483.5-2496.5MHz



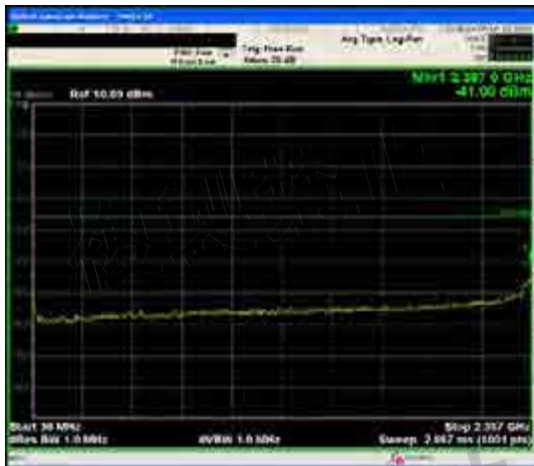
2496.5-12500MHz



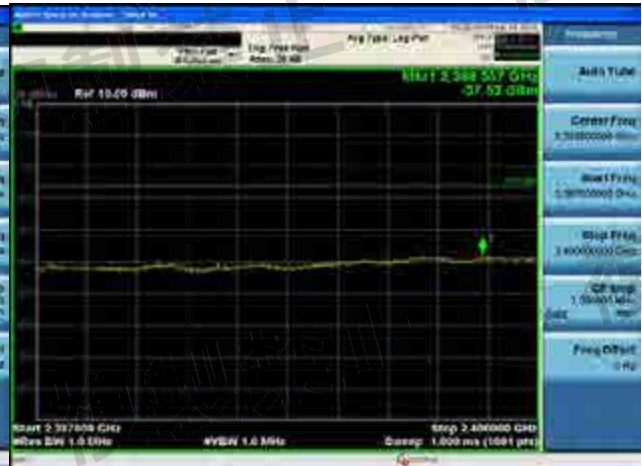
5.3 Tx Spurious Emission Strength(2)

Ch.7: 2442MHz

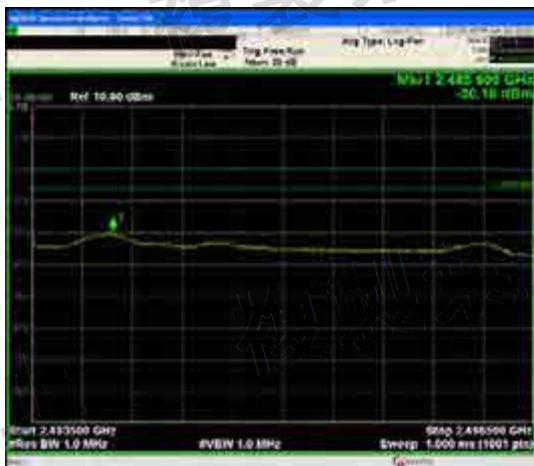
30-2387MHz



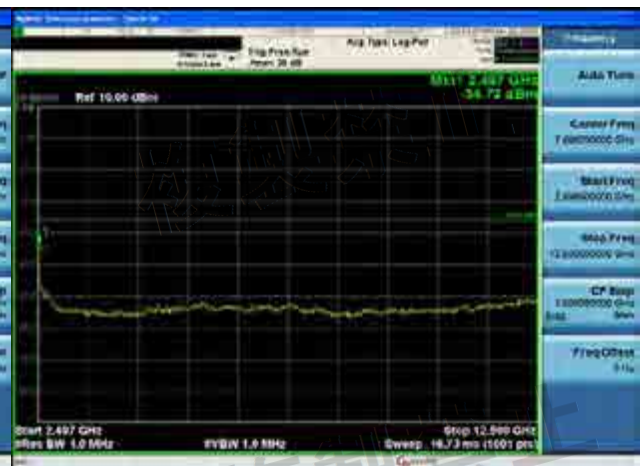
2387-2400MHz



2483.5-2496.5MHz



2496.5-12500MHz

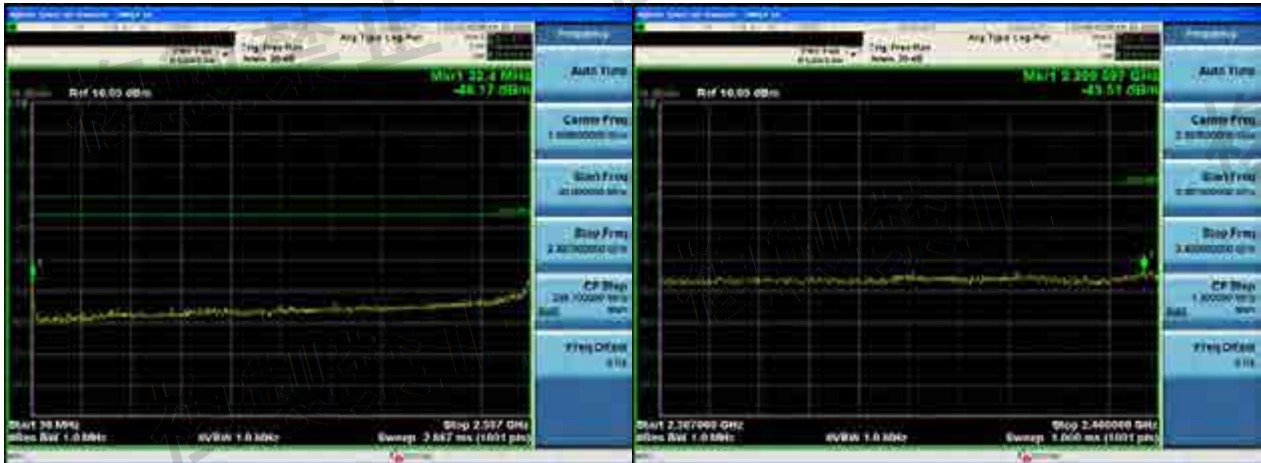


5.3 Tx Spurious Emission Strength(3)

Ch.11: 2462MHz

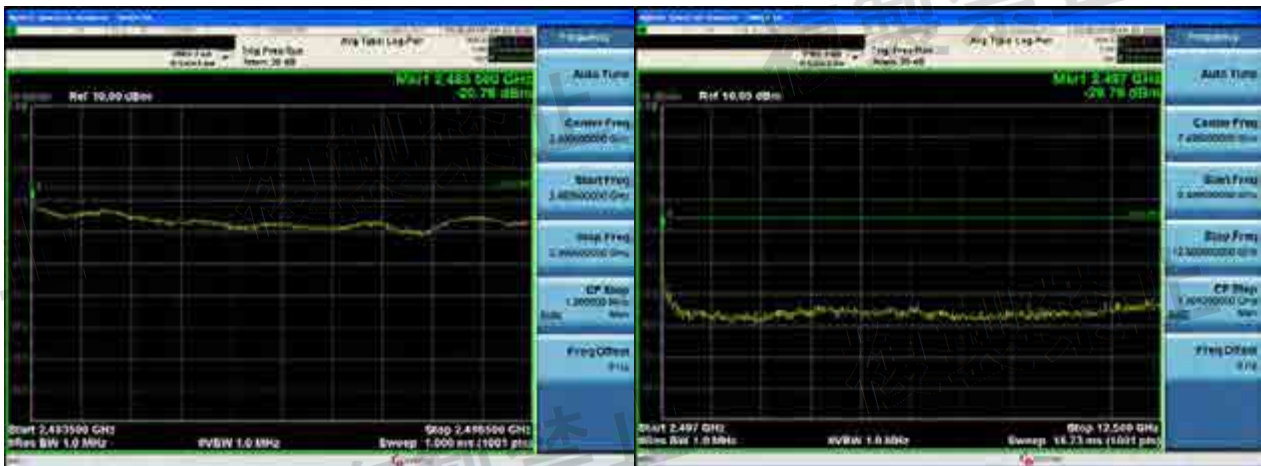
30-2387MHz

2387-2400MHz



2483.5-2496.5MHz

2496.5-12500MHz



8.4 RF Output Power

Ch.3: 2422MHz



Ch.7: 2442MHz



Ch.11: 2462MHz



5.4 空中線電力の偏差 RF output power tolerance

ON/OFF time 1



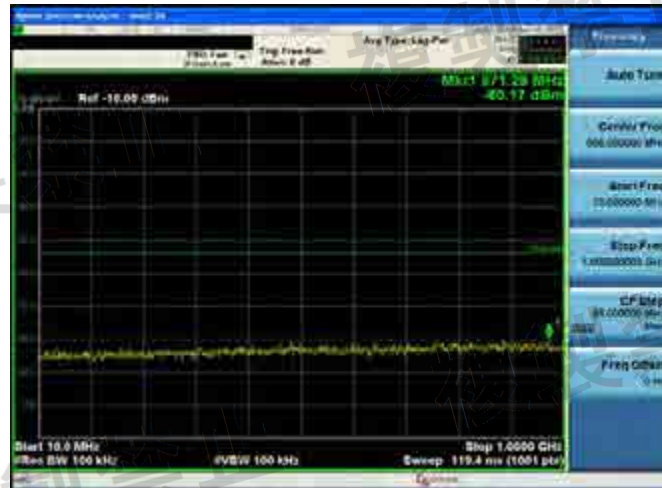
ON/OFF time 2



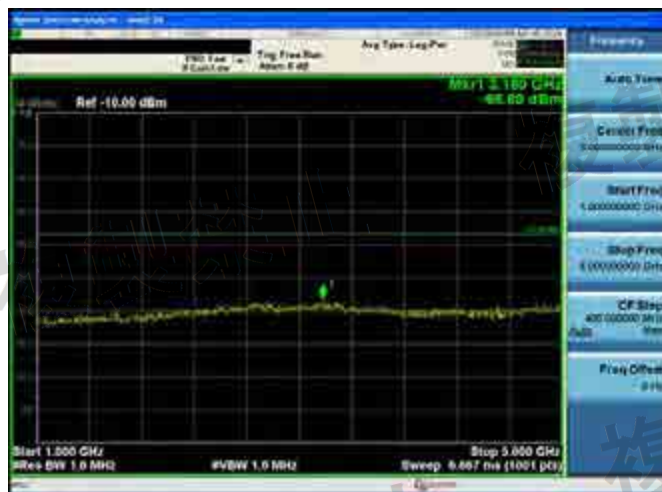
8.5 Rx Spurious Emission Strength

Ch.3: 2422MHz

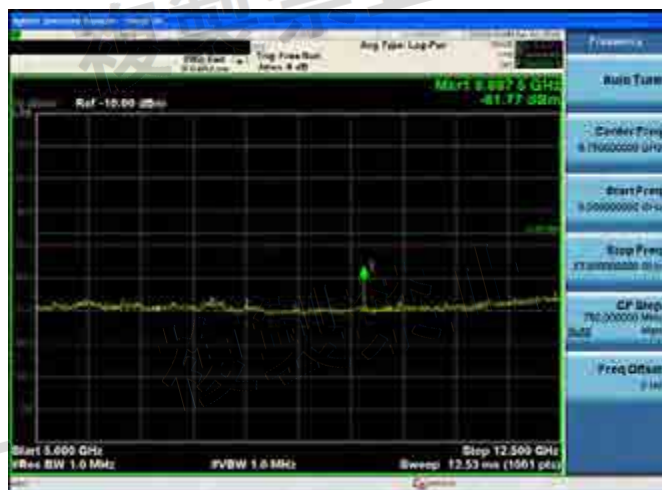
10MHz-1GHz



1-5GHz



5-12.5GHz



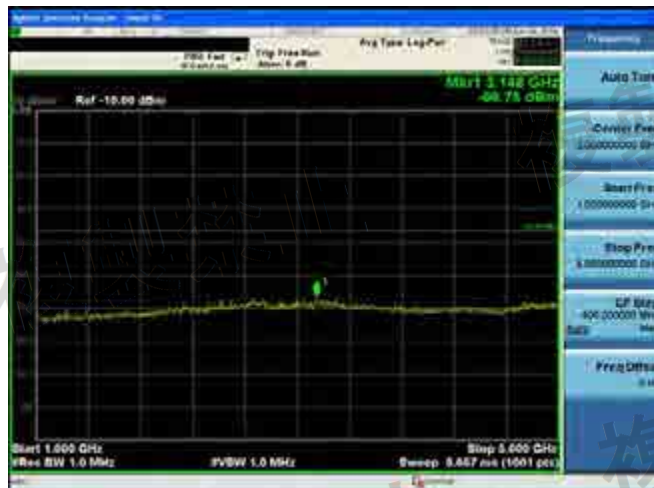
5.5 Rx Spurious Emission Strength(2)

Ch.7: 2442MHz

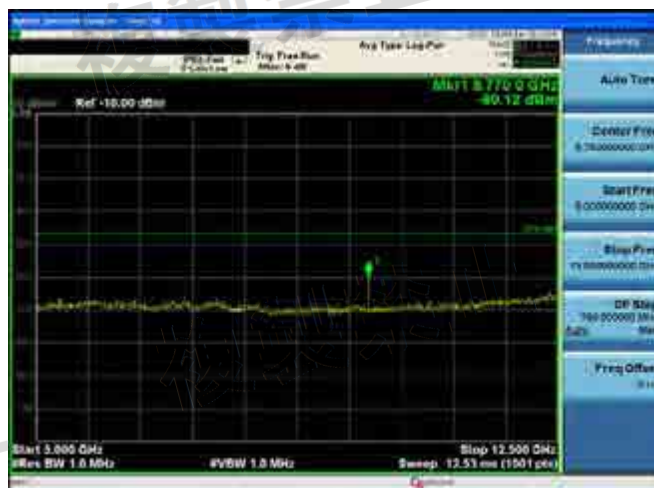
10MHz-1GHz



1-5GHz



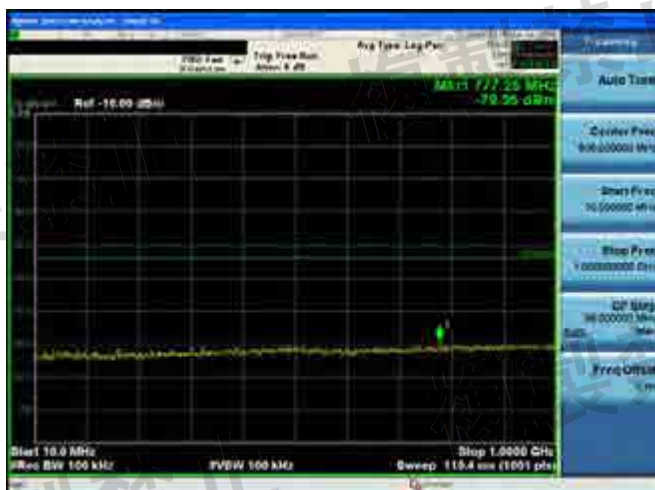
5-12.5GHz



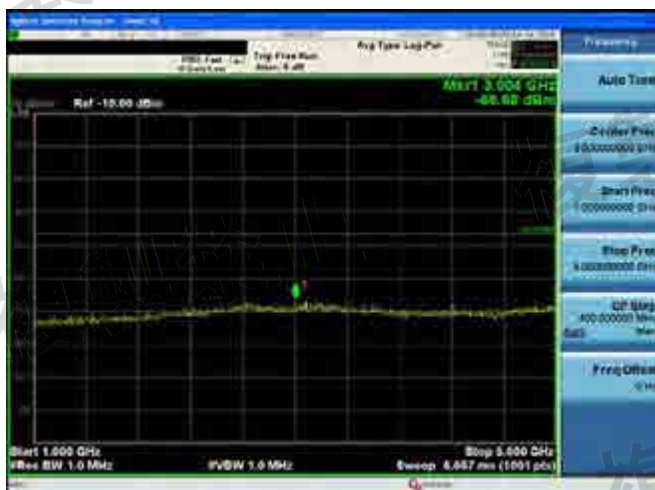
5.5 Rx Spurious Emission Strength(3)

Ch.11: 2462MHz

10MHz-1GHz



1-5GHz



5-12.5GHz



9. Laboratory description

1. Location

Name: DT&C Co., Ltd.

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

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: N/A

4) Industry Canada

Site number	Facility	Expiration date
5740A-4	DT&C Co., Ltd.	2020-10-16
-	-	-
-	-	-

5) VCCI Council

Registration number	Expiration date
-	-

6) KOLAS

Registration number	Expiration date
KT393	2021-01-13