TEST REPORT

Report number: DRTCET1901-0004(1)

Issue Date: Jan 16, 2019

Applicant	:	**Partron Co., Ltd.** 22, Samsung 1-ro 2-gil, Hwaseong-si, Gyeonggi-do, Korea
Equipment under test	:	Wi-Fi Module
Model Name	:	W8188RHPS
Date of Test	:	2019-01-02 ~ 2019-01-09
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; Hyunyong Seol

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	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	PASS
9	Carrier Sensing Function (2)	Conducted	N/A
10	Absoluto 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. Test Information

1. Applicant

Partron Co., Ltd.

2. Equipment under test
Wi-Fi Module

3. Model number
W8188RHPS

4. Serial number
Identical prototype

5. Size

(W) 12.20 x (D) 13.00 x (H) 2.00 mm

6. Terminal limitation
-20˚C to 50˚C

7. RF Specification Frequency range
2412-2472MHz

8. Number of RF Channels
13 Channels

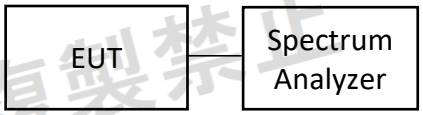
9. Modulation method & Data rate

Direct Sequence Spread Spectrum
(1Mbps: DBPSK, 2Mbps: DQPSK, 5.5/11Mbps: CCK)
Freauency equal to the transmission rate of the modulation siginal
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)

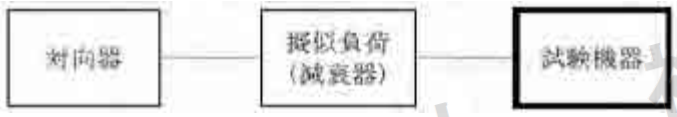
10. Variation of the family model(s)
-

3. Configuration of equipment

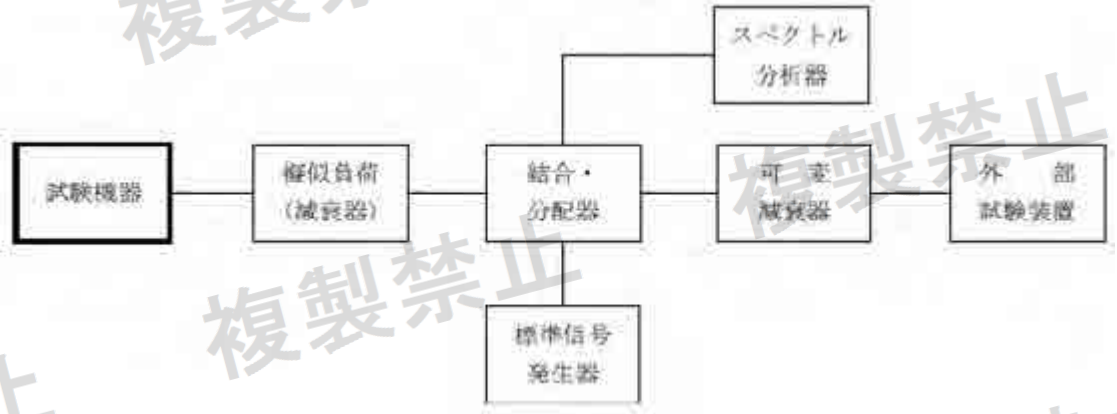
1. Frequency tolerance, RF output power tolerance, Occupied bandwidth, Spread bandwidth, Unwanted(Spurious) emission strength, Rx Spurious Emission Strength



2. Interference Prevention Fuction



3. Carrier Sensing Function



4. Test Result

Environment of Test Room	Test Date	2019-01-02 ~ 2019-01-09
	Temperature	20 ~ 23 °C
	Humidity	50 ~ 54 %

Peak Antenna Gain	1.99	dBi
Declaration Output Power	0.6	mW/MHz
Declaration Output Power	-2.2185	dBm/MHz
E.I.R.P.	**-0.2285**	**dBm/MHz**
Input Power Voltage	3.30	VDC

Tested Circit Insertion Loss		0	dB
Frequency equal to the Transmission rate		-	MHz
Transmission Time	ON TIME	0.9445	ms
	OFF TIME	0.1255	ms
	Ratio	88%	%
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 ± 1% as the input voltage from the external power supply to the receiver varies ± 10% (excluding power supply).

Measurement Frequency		MHz	2422	2442	2462	Result	Limit	Note
Channel Number		Ch.	3	7	11	---	---	
Reading Frequency		MHz	2422.004	2442.004	2462.004	---	---	
Frequency Tolerance		ppm	1.63790	1.72482	1.58123	**PASS**	$\pm 50\times10^{-6}$(50ppm)	
Occupied Bandwidth		MHz	35.857	35.805	35.965	**PASS**	38MHz or below	
RF Output Power		mW/MHz	0.454132	0.401035	0.417044	**PASS**	5mW/MHz or below	
RF Output Power Tolerance		%	-24.311384	-33.160904	-30.492677	**PASS**	+20 to -80%	
Tx Spurious Emission Strength	30 to 2387MHz	uW/MHz	0.295121	0.135425	0.070486	**PASS**	2.5uW/MHz or below	
		MHz	2384.6	2382.3	2384.6	-----		
	2387 to 2400MHz	uW/MHz	1.798871	0.177542	0.119674	**PASS**	25uW/MHz or below	
		MHz	2399.870	2390.861	2398.141	-----		
	2483.5 to 2496.5MHz	uW/MHz	0.422669	0.392916	2.790615	**PASS**	25uW/MHz or below	
		MHz	2487.569	2488.323	2484.150	-----		
	2496.5 to 12500MHz	uW/MHz	0.055590	0.070323	0.444631	**PASS**	2.5uW/MHz or below	
		MHz	2506	2517	2506	-----		
Rx Spurious Emission Strength	10 to 1000MHz	nW	0.087056	0.082985	0.086179	**PASS**	4nW or below	
		MHz	39.70	39.70	39.70	-----		
	1000 to 5000MHz	nW	0.104954	0.101789	0.116011	**PASS**	20nW or below	
		MHz	4924	4924	4924	-----		
	5000 to 12500MHz	nW	0.131613	0.070958	0.122433	**PASS**	20nW or below	
		MHz	12365.0	12492.5	12365.0	-----		
Carrier Sensing Function			Good	Good	Good	**PASS**	100mV/m	
Interference Prevention Function		-----	Good	Good	Good	**PASS**		

5. List of Measuring Instruments

USE	Equipment	Company	Model No.	Serial No.	Calibrated by	Cal. Method	Cal. Due	Cal. Date
X	Spectrum analyzer	Agilent Technologies	N9020A	MY50410399	MPC	ハ(c)	Jul. 5, 2019	Jul. 5, 2018
X	Power Supply	Agilent Technologies	66332A	GB37470200	MPC	ハ(c)	Dec. 19, 2019	Dec. 19, 2018
X	Signal generator	ROHDE&SCHWARZ	SMF100A	102341	MPC	ハ(c)	Jun. 7, 2019	Jun. 7, 2018
X	Multimeter	FLUKE	17B	26030065WS	MPC	ハ(c)	Dec. 18, 2019	Dec. 18, 2018
X	Thermohygrometer	BODYCOM	BJ5478	1209	MPC	ハ(c)	Dec. 27, 2019	Dec. 27, 2018

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
a): 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〜.

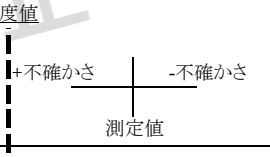
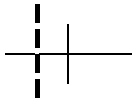
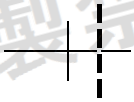
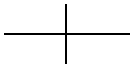
ロ): 計量法（ 平成四年法律第五十一号） 第百三十五条 又は第百四十四条 の規定に基づく 校正（ JCSS校正）
b): Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)〜Japan Calibration Service System〜

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

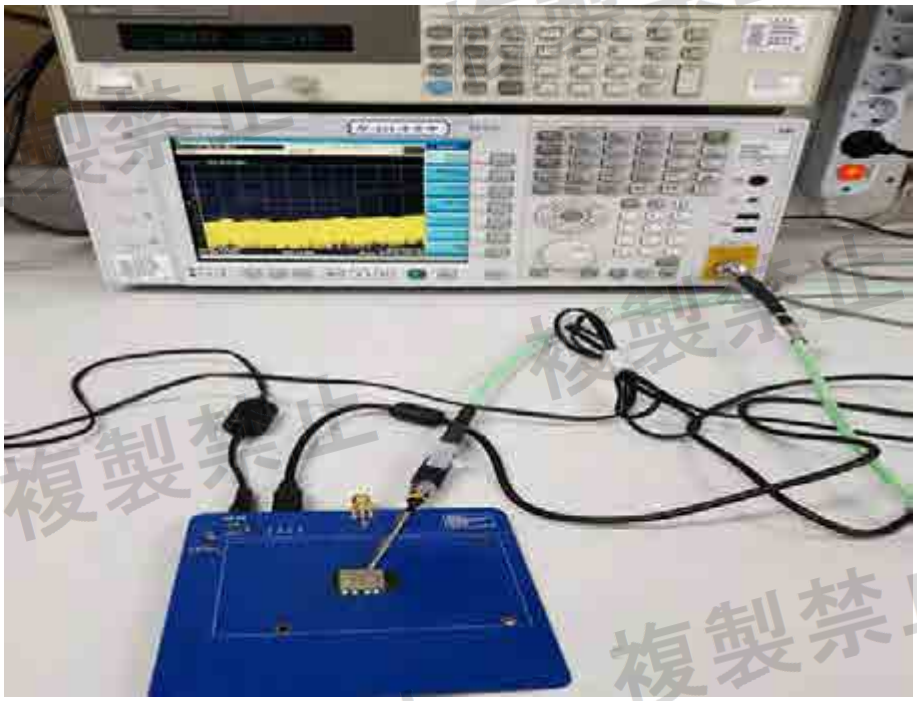
6. Uncertainty

Parameter	Uncertainty
Total RF power conducted	0.9 dB
Spurious emissions conducted	0.9 dB
Temperature	0.3℃
Humidity	4%

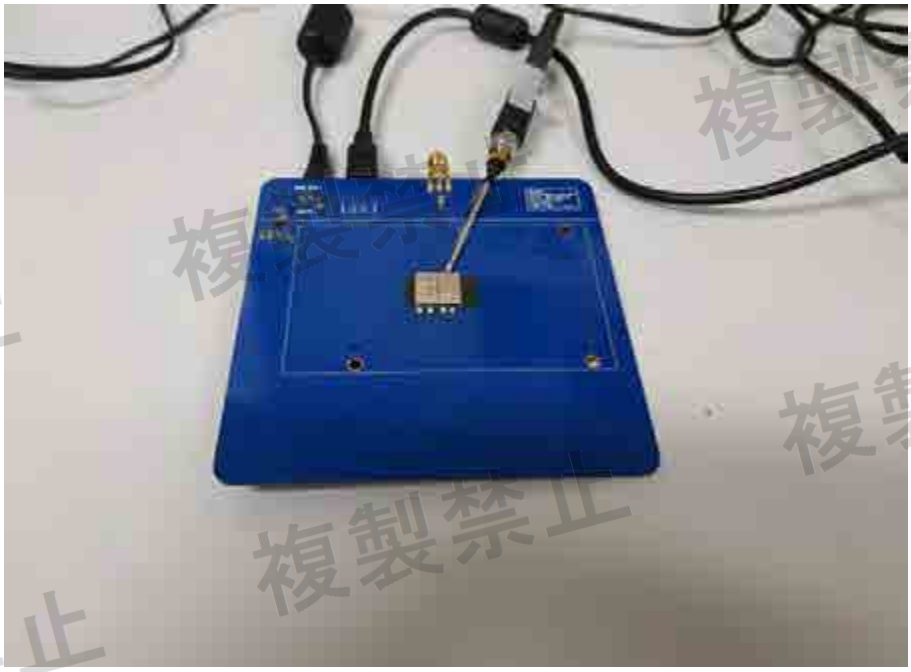
判定	測定データにおける不確かさの判断とその範囲
適合	**例 A**  測定結果と不確かさは与えられた限度値内に入っています。 これを『適合』と呼びます。
	例 B  完全には、限度値内でも限度値外でもありません。 この場合の適合性については、確実な結論を出すことは出来ません。
不適合	**例 C**  完全には、限度値内でも限度値外でもありません。 この場合の適合性については、確実な結論を出すことは出来ません。
	例 D  測定結果も不確かさも与えられた限度値内に入っていません。 これは『不適合』と呼びます。

7. Configuration Photographs

Conducted Measurement Photo(1)



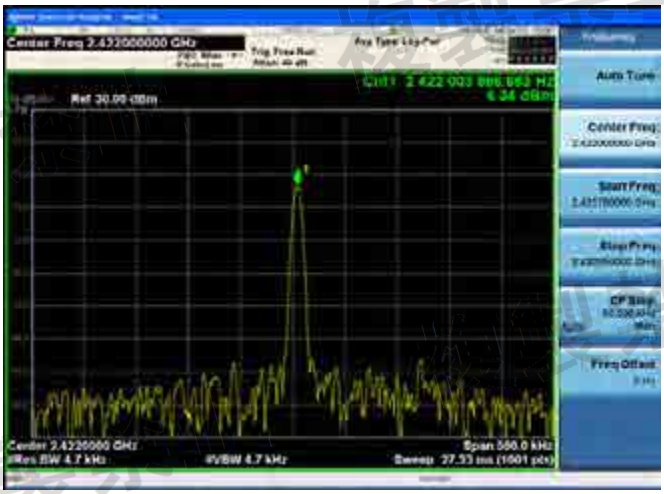
Conducted Measurement Photo(2)



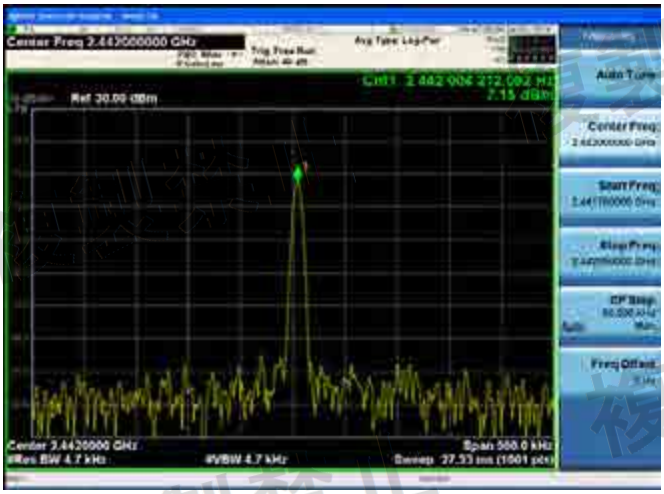
8. Trace Data

8.1 Frequency Tolerance

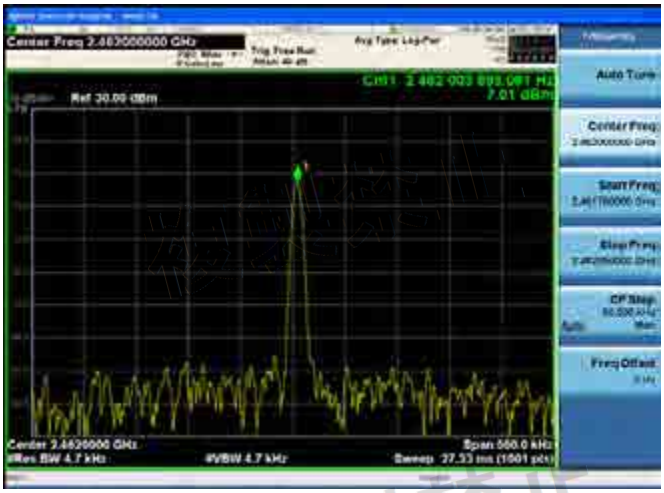
Ch.3: 2422MHz



Ch.7: 2442MHz



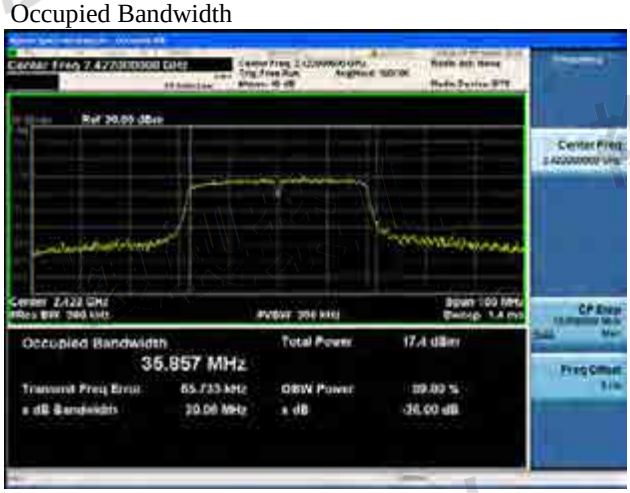
Ch.11: 2462MHz



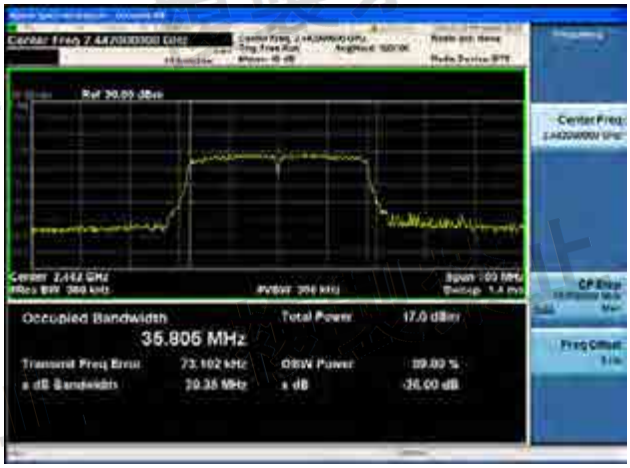
8.2 Occupied Bandwidth

Ch.3: 2422MHz

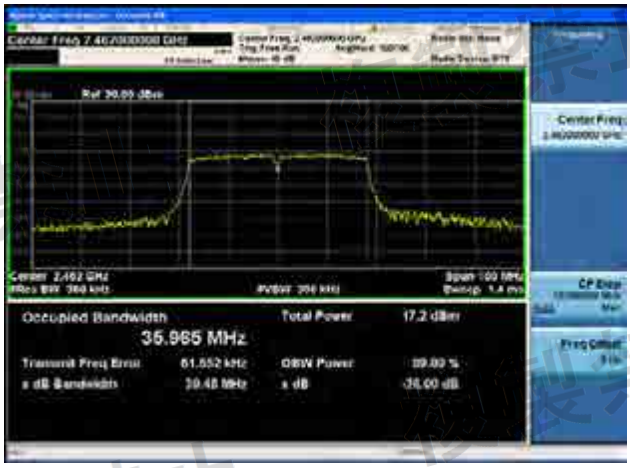
Occupied Bandwidth



Ch.7: 2442MHz



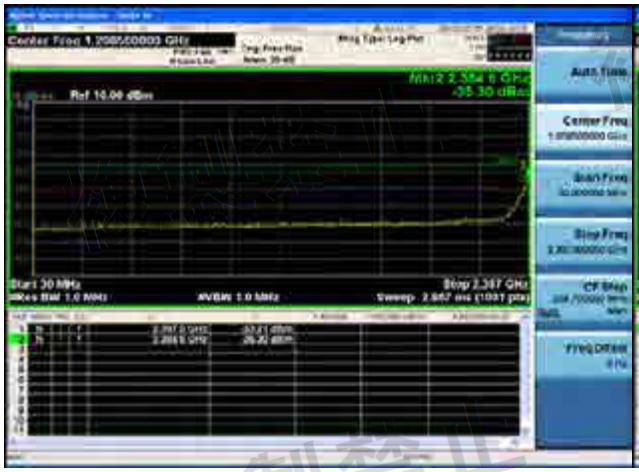
Ch.11: 2462MHz



8.3 Tx Spurious Emission Strength

Ch.3: 2422MHz

30-2387MHz



2387-2400MHz

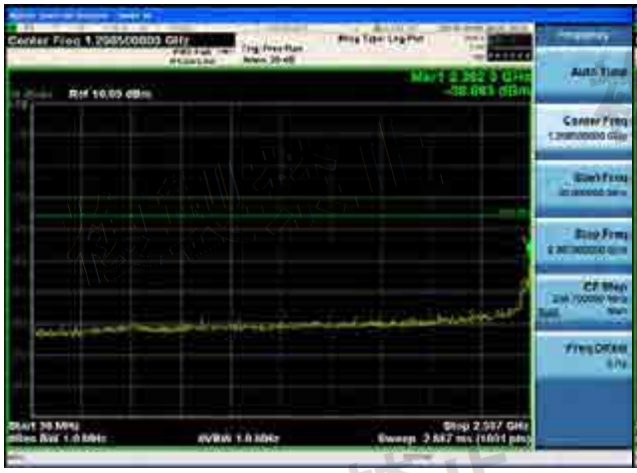
2483.5-2496.5MHz

2496.5-12500MHz

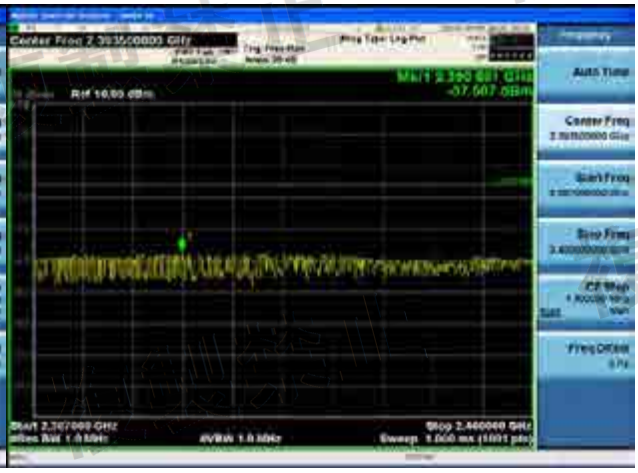
5.3 Tx Spurious Emission Strength(2)

Ch.7: 2442MHz

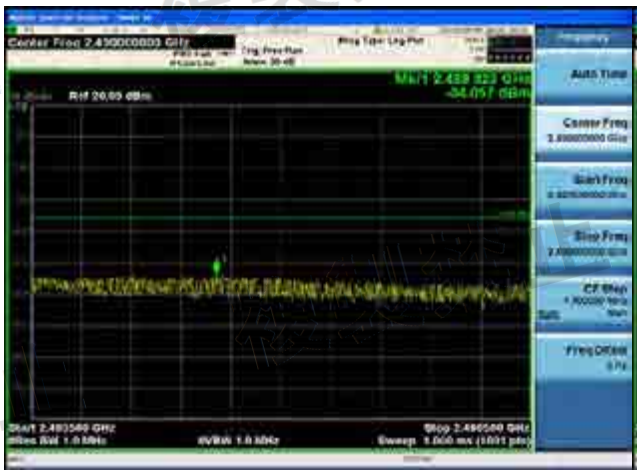
30-2387MHz



2387-2400MHz



2483.5-2496.5MHz



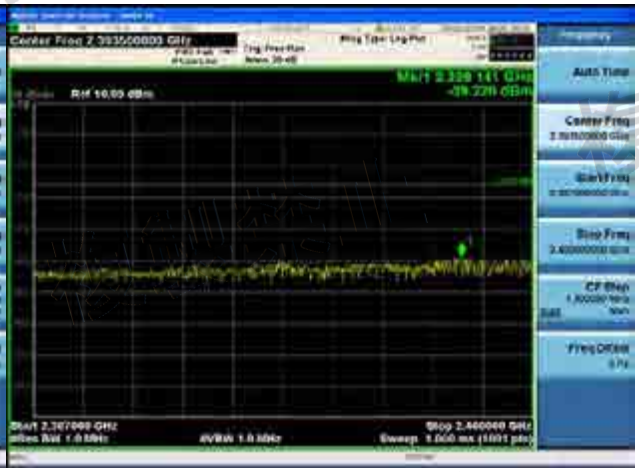
2496.5-12500MHz

5.3 Tx Spurious Emission Strength(3)

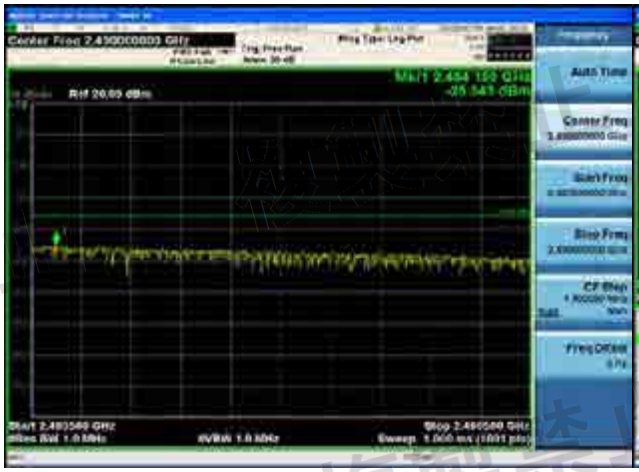
Ch.11: 2462MHz

30-2387MHz

2387-2400MHz



2483.5-2496.5MHz



2496.5-12500MHz

8.4 RF Output Power

Ch.3: 2422MHz

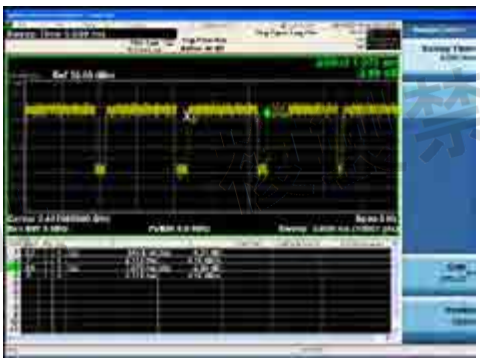
Ch.7: 2442MHz

Ch.11: 2462MHz

5.4 空中線電力の偏差

RF output power tolerance

Port A ON/OFF time



8.5 Rx Spurious Emission Strength

Ch.3: 2422MHz

10MHz-1GHz

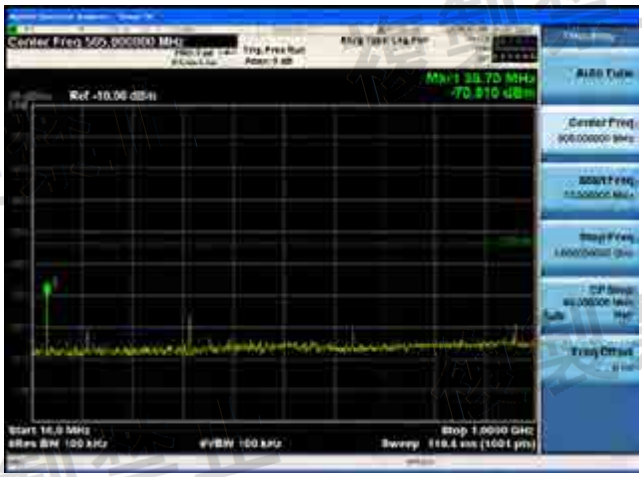
1-5GHz

5-12.5GHz

5.5 Rx Spurious Emission Strength(2)

Ch.7: 2442MHz

10MHz-1GHz



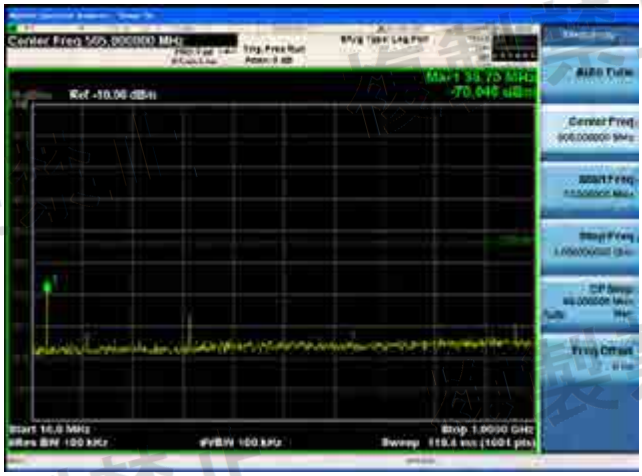
1-5GHz

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