

TEST REPORT

Report number: DRTTEC1801-0016**Issue Date: Feb 14, 2018**

Applicant	:	COWON SYSTEMS, Inc. 540, Enoju-ro, Gangnam-gu, Seoul
Equipment under test	:	True wireless stereo(TWS)
Model Name	:	COWON CF2
Added Model Name	:	CF2, CF2-BT
Serial Number	:	Identical prototype
Test Method	:	The Ministry of Internal Affairs and Communications notification in Annex 43* of Article 88 *Annex 43 is the statement in the case of Bluetooth
Date of Test	:	2018. 01. 22 ~ 2018. 01. 23
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.

Tested Engineer;

Dongwook Jung

Approval Person;

GeunKi Son

1. Test Results

Environment of Test Room	Test Date	2018-01-22 ~ 2018-01-23
	Temperature	20 ~ 23 °C
	Humidity	47 ~ 49 %

Peak Antenna Gain	4.97	dBi
Declaration Output Power	0.037	mW/MHz
Declaration Output Power	-14.3180	dBm/MHz
E.I.R.P.	-9.3480	dBm/ MHz
Input Power Voltage	3.7	VDC

Tested Circuit Insertion Loss	0	dB
Frequency equal to the Transmission rate	1	MHz
Transmission Time	ON TIME	2.880
	OFF TIME	0.870
	Ratio	0.7680
Packet Type (Mode)	3DH5	mode
Transmit Speed	1	MHz

Note: The insertion loss was corrected during the test.

Test Category ;	2.4GHz Band Wideband Low-Power Data Communication System Bluetooth_8DPSK
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	2441	2480	Result	Limit	Note
Channel Number		Ch.	0	39	79	---	---	
Reading Frequency		MHz	2402.008421	2441.008580	2480.008730	---	---	
Frequency Tolerance		ppm	3.50594	3.51507	3.52036	PASS	±50×10 ⁻⁶ (50ppm)	
Occupied Bandwidth		MHz	78.325			PASS	83.5MHz or below	
Spread Bandwidth		MHz	71.002			PASS	500kHz or more	
RF Output Power		mW/MHz	0.019470	0.023354	0.032536	PASS	3mW/MHz or below	
RF Output Power Tolerance		%	-47.378106	-36.880075	-12.064047	PASS	+20 to -80%	
Tx Spurious Emission Strength	30 to 2387MHz	uW/MHz	0.018941			PASS	2.5uW/MHz or below	
		MHz	2264.4			----		
	2387 to 2400MHz	uW/MHz	0.636063			PASS	25uW/MHz or below	
		MHz	2399.896			----		
	2483.5 to 2496.5MHz	uW/MHz	0.106267			PASS	25uW/MHz or below	
		MHz	2483.591			----		
	2496.5 to 12500MHz	uW/MHz	0.056416			PASS	2.5uW/MHz or below	
		MHz	12270			----		
Rx Spurious Emission Strength	10 to 1000MHz	nW	0.480397			PASS	4nW or below	
		MHz	384.22			----		
	1000 to 5000MHz	nW	0.548782			PASS	20nW or below	
		MHz	4800			----		
	5000 to 12500MHz	nW	0.851138			PASS	20nW or below	
		MHz	9605.0			----		
Time of occupancy hopping frequency		sec	0.002880			PASS	0.4sec or below	
		sec	0.305280			PASS	0.4sec or below	0.4sec×Spread rate
Spreading Factor		---	71.002000			PASS	5 or more	
Interference Prevention Function		----	Good	Good	Good	PASS		

2. 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

α) : 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)

β) : 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 ~

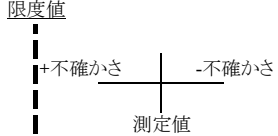
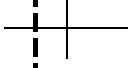
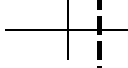
ハ) : 外国において行う較正であつて、機構又は第百二条の十八第一項の指定較正機関 (TELEC, インターテックジャパン、キーサイト) が行う較正に相当するもの

γ) : 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

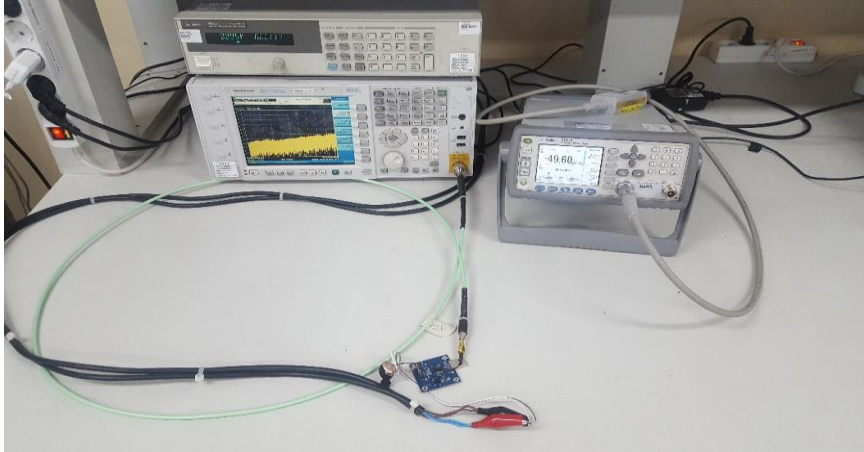
δ) : Calibration conducted by using other equipment that listed above from α) to γ)

3. Uncertainty

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。

4. Configuration Photographs

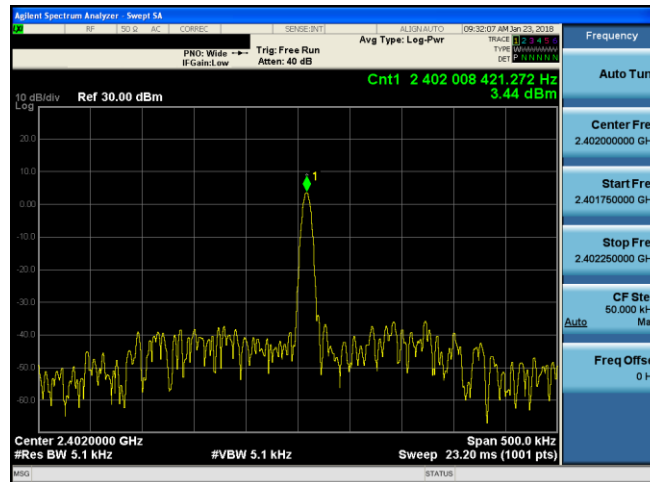
Conducted Measurement Photo



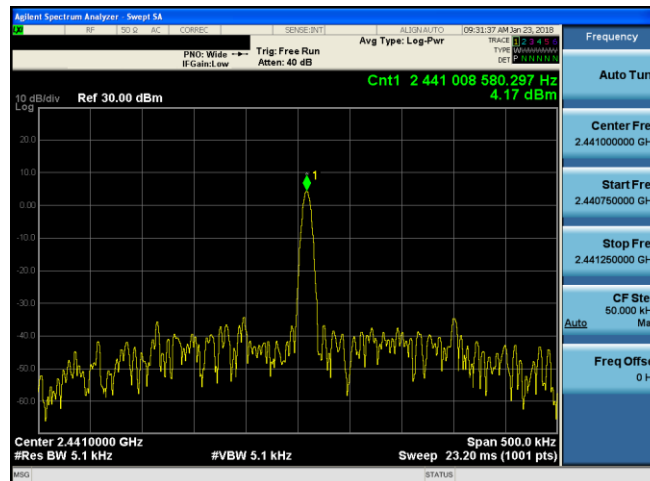
5. Trace Data

5.1 Frequency Tolerance

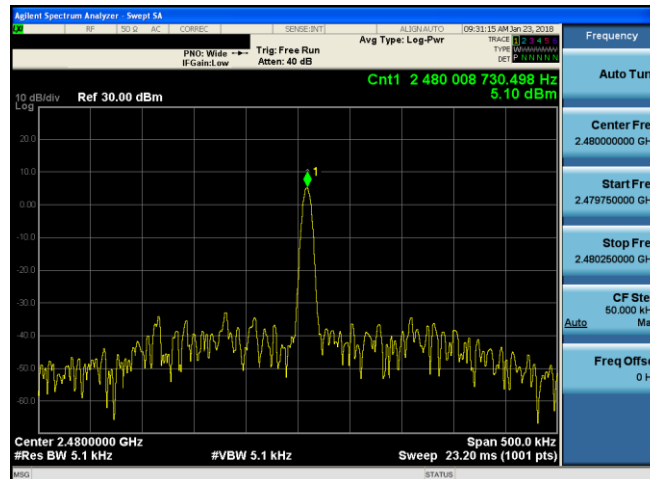
Ch.1: 2402MHz



Ch.40: 2441MHz

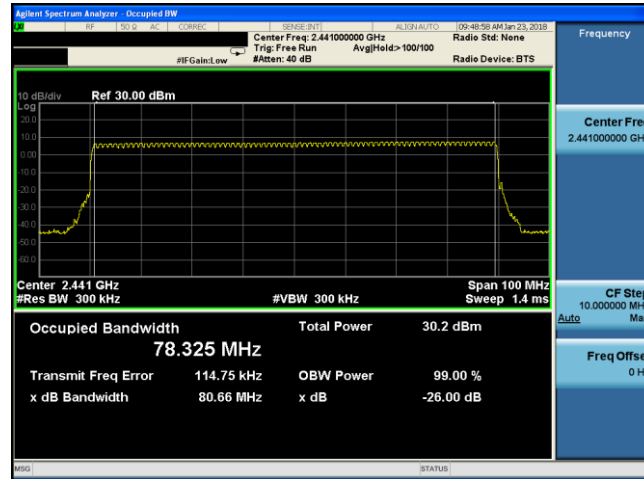


Ch.79: 2480MHz

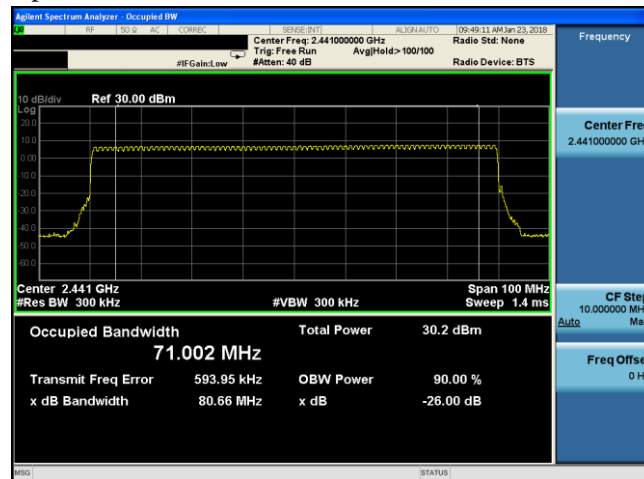


5.2 Occupied and Spread Bandwidth

Occupied Bandwidth

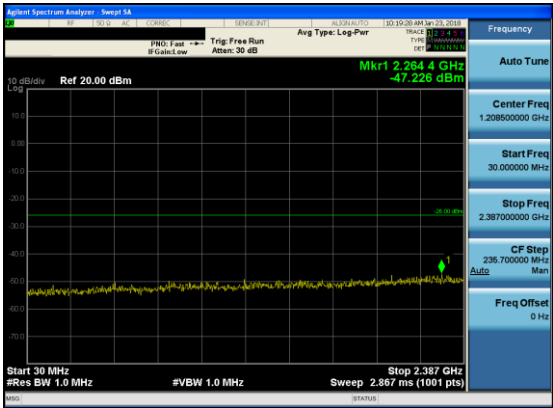


Spread Bandwidth

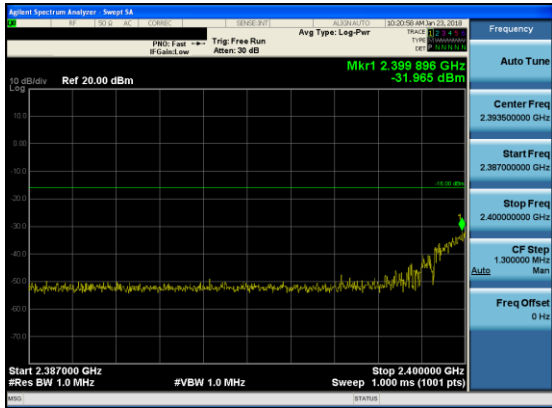


5.3 Tx Spurious Emission Strength

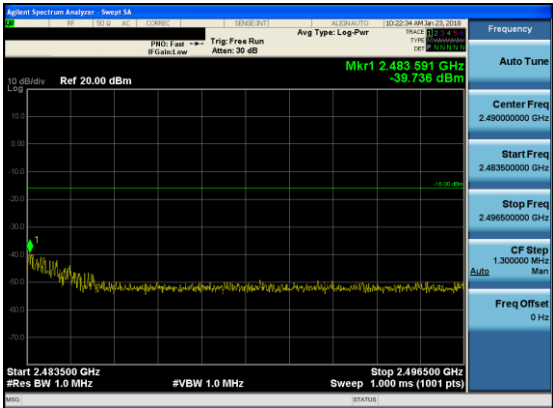
30-2387MHz



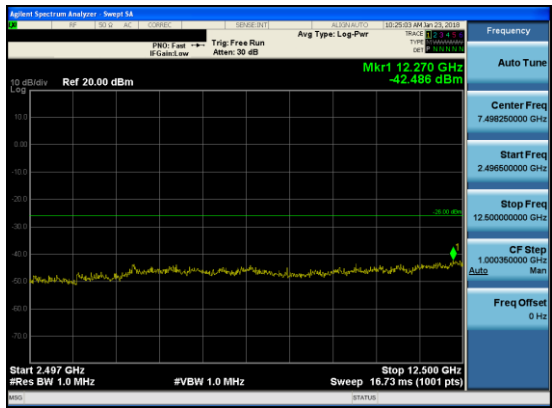
2387-2400MHz



2483.5-2496.5MHz

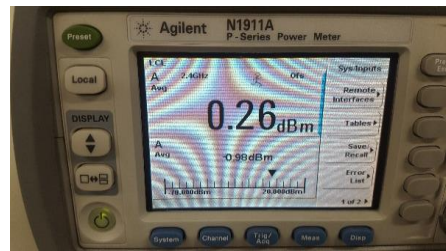


2496.5-12500MHz



5.4 RF Output Power

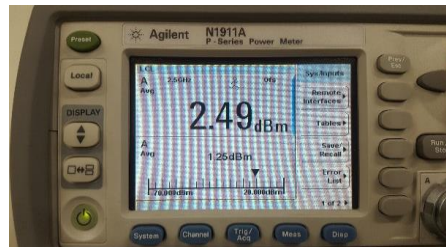
Ch.1: 2402MHz



Ch.40: 2441MHz

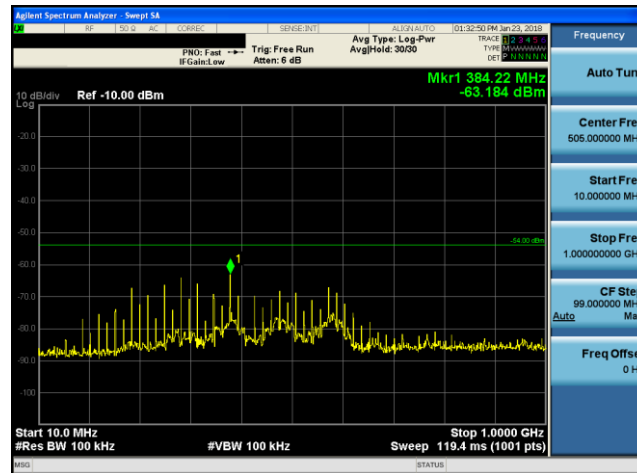


Ch.79: 2480MHz

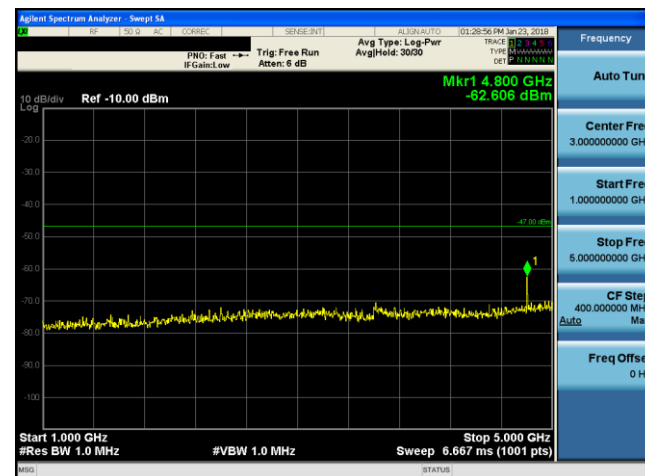


5.5 Rx Spurious Emission Strength

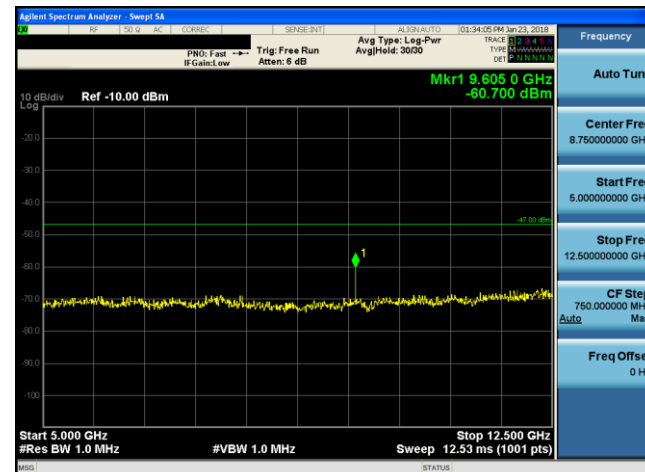
10MHz-1GHz



1-5GHz



5-12.5GHz



5.6 Hopping Frequency Dwell Time

ON/OFF

