R051-24-10-103231-1/A Ed. 1

"This report cancels and replaces the test report N°R051-24-10-103231-1/A Edition 0"

RADIO test report

according to standard:
FCC Part 15
Permissive change

Equipment under test:
WAVEPORT CF 915 MHZ

FCC ID:
S28-WPOCF

Company:
CORONIS SYSTEMS

DISTRIBUTION: Mr RAMI **Company: CORONIS SYSTEMS**

Number of pages: 15 including 2 annexes

Ed.	Date	Modified pages	Written by Name / Visa	Technical Verification Quality Approval Name / Visa
1	23-Aug-10	8	L. BERTHAUD LB	P. BONNENFANT

Duplication of this document is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

PRODUCT:	**WAVEPORT CF 915 MHz**
Reference / model:	Waveport CF 915 MHz
Serial number:	011A0A60453B
MANUFACTURER:	CORONIS SYSTEMS

COMPANY SUBMITTING THE PRODUCT:

Company:	CORONIS SYSTEMS
Address:	espace concorde – Bât. B 120 impasse Jean-Baptiste Say 34470 PEROLS FRANCE
Responsible:	Mr RAMI
DATE(S) OF TEST:	30 June 2010
TESTING LOCATION:	EMITECH ATLANTIQUE laboratory at ANGERS (49) FRANCE EMITECH ATLANTIQUE open area test site in LA POUEZE (49) FRANCE FCC Registration Number: 101696/FRN: 0006 6490 08
TESTED BY:	L. BERTHAUD

CONTENTS

TITLE **PAGE**

1. INTRODUCTION

This document presents the result of RADIO test carried out on the following equipment: WAVEPORT CF 915 MHz in accordance with normative reference.

2. PRODUCT DESCRIPTION

Class:	B (residential environment)
Utilization:	PDA compatible equipment to communicate with Wavenis products
Antenna type:	dedicated antenna (RP SMA Connector)
Operating frequency range:	from 904.8384 MHz to 925.4592 MHz
Number of channels:	64
Channel spacing:	172.5 kHz
Frequency generation:	O SAW Resonator O Crystal ⊙ Synthesizer
Modulation:	O Amplitude O Digital ⊙ Frequency O Phase
Power source:	5 Vd.c

Power level, frequency range and channels characteristics are not user adjustable.

The details pictures of the product and the circuit boards are joined with this file.

3. NORMATIVE REFERENCE

The standards and testing methods related throughout this report are those listed below.
They are applied on the whole test report even though the extensions (version, date and amendment) are not repeated.

FCC Part 15 (2009)	Code of Federal Regulations Title 47 - Telecommunication Chapter 1 - Federal Communications Commission Part 15 - Radio frequency devices Subpart C - Intentional Radiators
ANSI C63.4 (2003)	Methods of Measurement of Radio-Noise Emissions from Low-voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz.

4. TEST METHODOLOGY

Radio performance tests procedures given in part 15:

Paragraph 33: frequency range of radiated measurements
Paragraph 35: measurement detector functions and bandwidths
Paragraph 107: conducted limits
Paragraph 109: radiated emission limits
Paragraph 111: antenna power conducted limits for receivers
Paragraph 203: antenna requirement
Paragraph 205: restricted bands of operation
Paragraph 207: conducted limits
Paragraph 209: radiated emission limits; general requirements
Paragraph 215: additional provisions to the general radiated emission limitations
Paragraph 249: operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz and 24.0 - 24.25 GHz

5. ADD ATTACHMENTS FILES

"Synoptic"
"Block diagram"
"External photos and Product labeling"
"Assembly of components"
"Internal photos"
"Layout pcb"
"Bil of materials"
"Schematics"
"Product description"
"User guide"

6. TESTS AND CONCLUSIONS

6.1 intentional radiator (subpart C)

Test procedure	Description of test	Criteria respected ?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.203	ANTENNA REQUIREMENT	X				*Note 1*
FCC Part 15.205	RESTRICTED BANDS OF OPERATION	X				
FCC Part 15.207	CONDUCTED LIMITS				X	*Permissive change*
FCC Part 15.209	RADIATED EMISSION LIMITS; general requirements	X				*Note 2*
FCC Part 15.215	ADDITIONAL PROVISIONS TO THE GENERAL RADIATED EMISSION LIMITATIONS				X	*Permissive change*
FCC Part 15.249	OPERATION WITHIN THE BANDS 902-928 MHZ, 2400-2483.5 MHZ, 5725-5875 MHZ AND 24.0-24.25 GHZ					
	(a) field strength fundamental and harmonics	X				
	(b) fixed point-to-point operation			X		
	(c) field strength distance	X				
	(d) radiated emissions outside specified frequency bands	X				
	(e) peak measurements	X				
	(f) requirement note of section 15.37 (d)	X				

NAp: Not Applicable NAs: Not Asked

Note 1: dedicated antenna (RP SMA connector)

Note 2: see FCC part 15.249 (d).

6.2 unintentional radiator (subpart B)

Test procedure	Description of test	Respected criteria?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.107	CONDUCTED LIMITS				X	Permissive change
FCC Part 15.109	RADIATED EMISSION LIMITS	X				
FCC Part 15.111	ANTENNA POWER CONDUCTED LIMITS FOR RECEIVER			X		

NAp: Not Applicable NAs: Not Asked

Conclusion:
The sample of WAVEPORT CF 915 MHz submitted to the tests complies with the regulations of the standard FCC Part 15 in accordance with the limits or criteria defined in this report.

7. FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS

Standard: FCC Part 15

Test procedure: paragraph 15.249 (a)

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Spectrum Analyzer FSP40	Rohde & Schwarz	4088
Antenna RGA-60	Electrometrics	1204
Open site	EMITECH	1274
Test receiver ESVS10	Rohde & Schwarz	1219
Logperiodic antenna HL223	Rohde & Schwarz	1999
High pass filter HPM11630	Microtronics	6609
Low noise amplifier 1-18 GHz	ALC	2648
Power source E3610A	Hewlett Packard	4195

Test set up:

The system is tested in an open area test site (OATS) and placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

Frequency range: from 9 kHz to harmonic 10 ($F \leq 10$ GHz)
Detection mode: Quasi-Peak ($F \leq 1$ GHz); Peak/Average ($F > 1$ GHz)
Resolution bandwidth: 120 kHz ($F \leq 1$ GHz); 1 MHz ($F > 1$ GHz)

Distance of antenna: 3 meters

Antenna height: 1 to 4 meters

Antenna polarization: vertical and horizontal

Equipment under test operating condition:

The equipment is blocked in continuous transmission mode, modulated by internal data signal.

Results:

Ambient temperature (°C): 25.5
Relative humidity (%): 43
Power supply: 5 Vd.c

The polarity column refers to the antenna polarity at which the maximum emissions level is measured.

Channel F1 (904.8384 MHz)

FREQUENCIES (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBµV/m)	Limits (dBµV/m)	Margin (dB)
904.83 (1)	QP	121	156	120	V	90.7	94	3.3
1809.68 (2)	P	100	125	1000	V	46.4	74	27.6

(1) Fundamental: power change compared to previous version = +0.4 dB
(2) The peak level is below the average limit (54 dBµV/m)

Channel F2 (915.3216 MHz)

FREQUENCIES (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBµV/m)	Limits (dBµV/m)	Margin (dB)
915.32 (1)	QP	121	156	120	V	91.1	94	2.9
1830.6 (2)	P	100	125	1000	V	46.8	74	27.2

(1) Fundamental: power change compared to previous version = -0.2 dB
(2)The peak level is below the average limit (54 dBµV/m)

Channel F3 (925.4592 MHz)

FREQUENCIES (MHz)	Detector	Antenna height (cm)	Azimuth (degree)	resolution bandwidth (kHz)	Polarization H: Horizontal V: Vertical	Field strength (dBµV/m)	Limits (dBµV/m)	Margin (dB)
925.46 (1)	QP	120	156	120	V	90.5	94	3.5
1850.91 (2)	P	100	125	1000	V	46.3	74	27.7

(1) Fundamental: power change compared to previous version = -1.8 dB
(2)The peak level is below the average limit (54 dBµV/m)

Note: any spurious which has more than 20 dB of margin compared to the limit is not necessarily reported.

Test conclusion:

RESPECTED STANDARD

8. RADIATED EMISSIONS OUTSIDE SPECIFIED FREQUENCY BANDS

Standard: FCC Part 15

Test procedure: paragraph 15.205
paragraph 15.209
paragraph 15.249 (d)

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Test receiver ESH3	Rohde & Schwarz	1058
Test receiver ESVS 10	Rohde & Schwarz	1219
Spectrum analyzer FSP 40	Rohde & Schwarz	4088
Loop antenna	EMCO	1406
Biconical antenna HP 11966C	Hewlett Packard	0728
Log periodic antenna HL 223	Rohde & Schwarz	1999
Open site	Emitech	1274
Antenna RGA-60	Electrometrics	1204
Power source E3610A	Hewlett Packard	4195

Test set up:

The system is tested in an open area test site (OATS) and placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

Frequency range: from 9 kHz to harmonic 10 ($F_{carrier} \leq 10$ GHz)

Bandwidth: 120 kHz (F < 1 GHz)
1 MHz (F > 1 GHz)

Distance of antenna: between 30 m and 3 m according the frequencies and the limits.

Antenna height: 1 to 4 meters

Antenna polarization: vertical and horizontal, only the highest level is recorded.

Equipment under test operating condition:

The equipment is blocked in continuous transmission mode, modulated by internal data signal.

Results:

Ambient temperature (°C): 22
Relative humidity (%): 62
Power supply: 5 Vd.c

The polarity column refers to the antenna polarity at which the maximum emissions level is measured.

Channel F1 (904.8384 MHz)

Not any spurious has been detected.

Channel F2 (915.3216 MHz)

Not any spurious has been detected.

Channel F3 (925.4592 Mhz)

Not any spurious has been detected.

Note: any spurious which has more than 20 dB of margin compared to the limit is not necessarily reported.

Test conclusion:

RESPECTED STANDARD

9. RADIATED EMISSION LIMITS

Standard: FCC Part 15

Test procedure: paragraph 15.109

Limit class: Class B

Standard deviation: For F > 1GHz, the measurement is carried out at 3 m, instead of 10 m

Test equipments:

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Biconical antenna	Hewlett Packard 11966 C	0728
Log periodic antenna	Rohde & Schwarz HL 223	1999
Double ridged guide antenna	Electrometrics EM 6961	1204
Spectrum analyzer	Rohde & Schwarz FSP40	4088
Open area test site	EMITECH	1274
Preamplifier 1 to 18 GHz	DBS Microwave DB97-1852	2648
High pass filter	Micro-tronics HPM11630	1673
Power source	Hewlett Packard E3610A	1495

Test set up:

The system is tested in an open area test site (OATS).
The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuths correspond to the front of the equipment under test.

Frequency range: The highest frequency generated in the device is f = 925.4592 MHz.
According the Sec.15.33 of the FCC Part 15 standard, the frequency range measured is indicated in the following table:

For unintentional radiator, including a digital device (Sec.15.33, §(b)(1) of the FCC Part 15standard) :

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

Detection mode: Quasi-peak (F < 1 GHz)
Average (F > 1 GHz)

Bandwidth: 120 kHz (F < 1 GHz)
1 MHz (F > 1 GHz)

Distance of antenna: 3 meters

Antenna height: 1 to 4 meters

Antenna polarization: vertical and horizontal (only the highest level is recorded)

Equipment under test operating condition:

The equipment is blocked in reception mode.

Results:

Ambient temperature (°C):	22
Relative humidity (%):	62

Power supply: 5 Vd.c

Not any spurious has been detected.

Note: any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

Test conclusion:

RESPECTED STANDARD

□□□ End of report, 2 annexes to be forwarded □□□

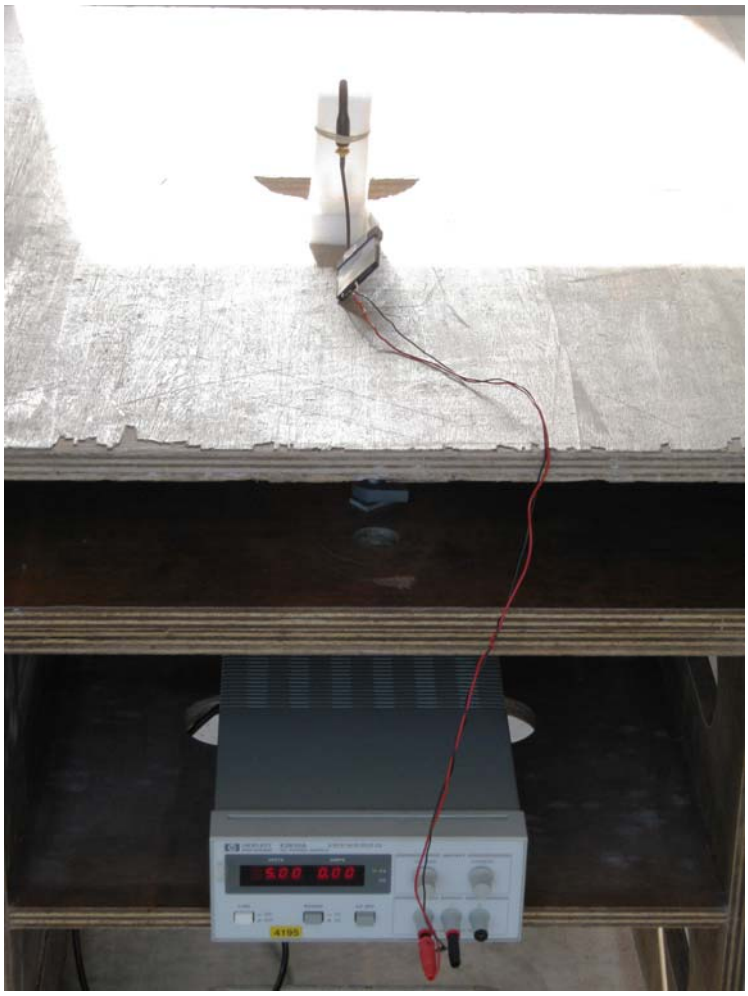
ANNEX 1: PHOTOS OF THE EQUIPMENT UNDER TEST

GENERAL VIEW

ANNEX 2: RADIATED MEASUREMENTS AND OPEN AREA TEST SITE

RADIATED MEASUREMENTS

RADIATED MEASUREMENTS



OPEN AREA TEST SITE