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Zodiac Pool Care Europe
SPOT CHECK REPORT

SCOPE OF WORK
EMC TESTING – POOL CLEANER – CYCLONEXT, VORTEX, VORTEX REFRESH

REPORT NUMBER
200037360UDI-EMC

ISSUE DATE
June 7, 2023

REVISED DATE
June 18, 2025

PAGES
21

TEST REPORT
ETSI 300 328 / ETSI 301 893
Radio Spectrum Matters

Report Reference No. ..... :	200037360UDI-EMC-R02
Compiled by (+ signature) ..... :	Mauro Sabidussi
Approved by (+ signature)..... :	Felice Manarin
Date of issue..... :	June 7, 2023; Amendment N.02: June 18, 2025
Total number of pages ..... :	21
Testing Laboratory..... :	Intertek Italia S.p.A.
Address..... :	Via Principe di Udine, 114 I - 33030 Campoformido (UD)
Applicant's name ..... :	ZODIAC POOL CARE EUROPE SAS
Address..... :	ZA LA BALME, BP42 31450 BELBERAUD - FRANCE
Test specification:	
Standards..... :	ETSI 300 328 v2.2.2 and ETSI 301 893 v2.1.1
Test procedure ..... :	
Non-standard test method..... :	N/A
Test item description.....:	Automatic pool cleaner
Trade Mark..... :	Zodiac, Polaris, AstralPool, Aqua Products, Baracuda, Fluidra
Manufacturer ..... :	Zodiac Pool Care Europe
Model/Type reference ..... :	CYCLONEXT
Ratings..... :	100-130 V or 220-240 V or 110-240 V; 50/60 Hz; 150 W

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REPORT INDEX

1.0 Program details

TESTING LOCATION:	
Testing Laboratory:	Intertek Italia S.p.A.
Testing location/ address:	EMC Lab Via Principe di Udine, 114 I - 33030 Campoformido (UD)

Test item description ..... :	Automatic pool cleaner
Trade Mark ..... :	Zodiac, Polaris, AstralPool, Aqua Products, Baracuda, Fluidra
Manufacturer ..... :	Zodiac Pool Care Europe
Model/Type reference ..... :	CYCLONEXT
Ratings ..... :	100-130 V or 220-240 V or 110-240 V; 50/60 Hz; 150 W
Test item identification ..... :	UDI2305031149-001 UDI2301301207-001 UDI2301301207-002
Protection class ..... :	Class II
Possible test case verdicts:	
- test case does not apply to the test object .:	N/A
- test object does meet the requirement .....:	P (Pass)
- test object doesn't meet the requirement .:	F (Fail)
Statement of the measurement uncertainty:	
The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.	
Testing .....:	
Date of receipt of test item .....:	January 30 and May 03, 2023
Date (s) of performance of tests .....:	May 3, 2023
Amendment N.01 .....:	No test required
Amendment N.02 .....:	No test required

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

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Throughout this report a comma is used as the decimal separator.

General product information:

Results can be extended to all models coded as described below:
ENXYZZ or ECXYZZ* where

- E=ETL
- N=Cyclonext Series, C=Vortex Series
- X = refer to power supply: 1 = 220-240 V; 2 = 100-130 V; 3 = 100-240 V
- Y= any digit from 1 thru 9 to indicate country in which product is to be marketed: 1 =EU, 2 =CH, 3 =UK, 4 =RSA, 5 =AUS, 6 =Japan, 7 =US ZZ = two digits from 00-99

* may be followed by a letter (example A for Vortex Refresh)

Revision summary:

Amendment N.01: Updated General product information section to extended codification for Vortex and Vortex Refresh models. Results can be extended due to similarities to all these models

Amendment N.02: inserted “X” code description of extended model in section General Product Information and updated ratings

List of Attachments (including a total number of pages in each attachment):

1.1 Equipment description

The equipment under test is an appliance used to clean the walls and the free water surface of swimming pools. It is composed of two parts: a robot, equipped with wheels, is submersed in the water and moves over the whole surface by means of 2 independent traction wheels (one motor per wheel). A pump is providing the sucking action to force the water through a filter and to provide the propulsion of the robot when it is not touching the walls.

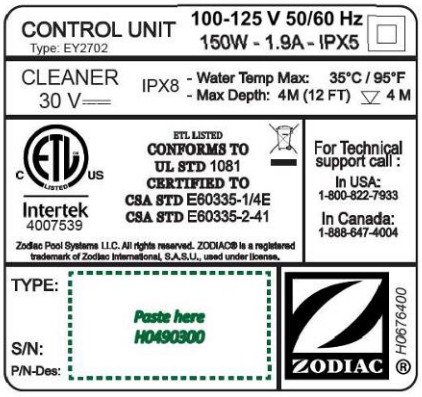
The robot is supplied and commanded through a 30 m long cable, by means of a control box. The man machine interface on the controller permits the setting of different operating modes (cleaning only the free surface of water, only the floor of the pool or a complete cycle with surface, floor and walls), starting and stopping the cycle, and other specific functions.

For model VORTEX and VORTEX REFRESH the control box includes also a WiFi module, by means of which, using a suitable app, it is possible to control the robot the same way as done with the controller pushbuttons.

The dimensions of the robot are 50 x 45 x 35 (h) cm, those of the controller 20 x 20 x 12 (h) cm.

1.2 Equipment marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective certification bodies that own these marks.



USA :
Vortex refresh /
cyclonext labels
H0676400

1.3 Equipment used during test:

USE*	PRODUCT TYPE	MANUFACTURER	MODEL	COMMENTS
EUT	Pool cleaner, Robot	Zodiac Pool Care Europe	VORTEX REFRESH	Intertek id: UDI2305031149-001
EUT	Pool cleaner, Robot	Zodiac Pool Care Europe	CYCLONEXT	Intertek id: UDI2301301207-001
EUT	Pool cleaner, Ebox	Zodiac Pool Care Europe	CYCLONEXT	Intertek id: UDI2301301207-002

Note:

* Use = EUT - Equipment Under Test,
AE - Auxiliary/Associated Equipment, or
SIM - Simulator (Not Subjected to Test)

1.4 Input / Output ports:

PORT #	NAME	TYPE*	CABLE MAX. >3M	CABLE SHIELDED	COMMENTS
0	Enclosure	N/E	—	—	None
1	Mains	AC	No	No	180 cm long cable
2	Robot supply	DC+I/O	Yes	No	30 m long cable

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.5 EUT Internal Operating Frequencies:

FREQUENCY	DESCRIPTION
80 MHz	Highest frequency on control PCB

1.6 Power Interface:

MODE #	VOLTAGE (V)	CURRENT (A)	POWER (W)	FREQUENCY (DC/AC-Hz)	PHASES (#)	COMMENTS
Rated	220-240	---	150	AC-50/60	1	
1	230	---	---	AC-50	1	

1.7 EUT Operation Modes:

MODE #	DESCRIPTION
1	Communication set according to standard. Robot in stand-by mode

1.8 EUT Configuration Modes:

MODE #	DESCRIPTION
1	Control box is connected to the robot with a 3-wire cable, carrying DC voltage supply and communication. The robot is intended to work submersed in the pool's water.

1.9 EUT Technical documentation

DOCUMENT	REFERENCE

1.10 Result Summary

ETSI 300 328			
CLAUSE	**REQUIREMENT – TEST**	**RESULT**	**VERDICT**
4.3.2.2	Transmitter output power		P
4.3.2.9	Transmitter unwanted emissions in the spurious domain		P

1.11 Test Results – RF output power

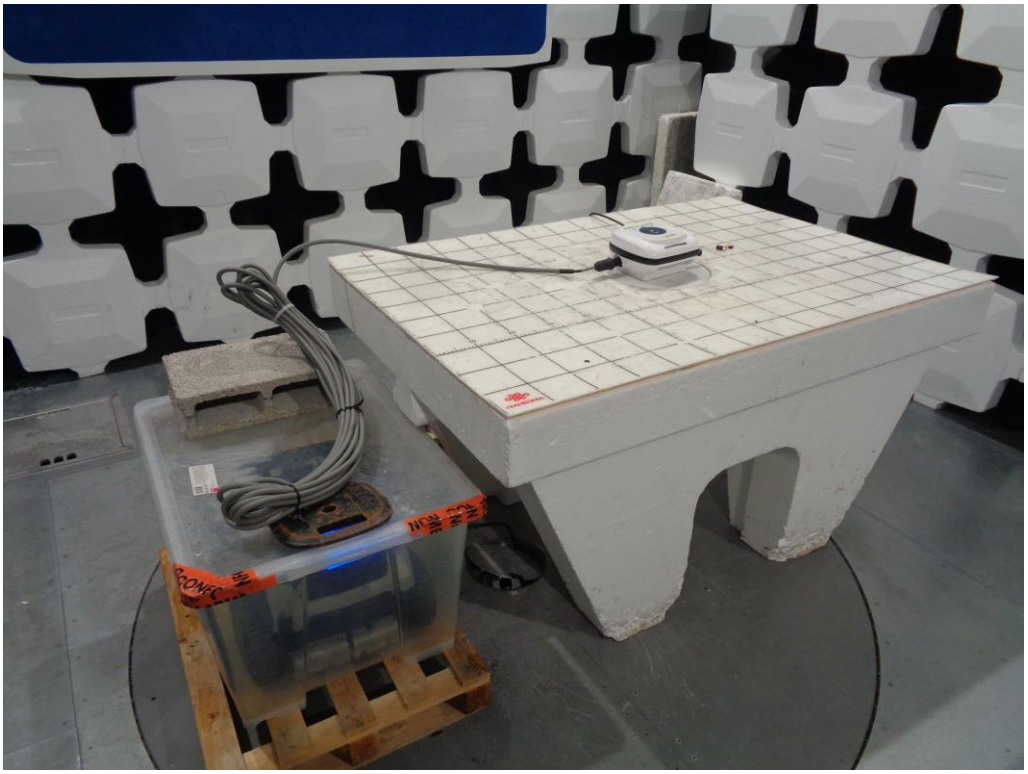
1.11	TEST: EMISSION – RF OUTPUT POWER	VERDICT
		P

Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	10 to 40 °C	25 °C
Relative Humidity	10 to 90 %	40 %
Equipment mode	Power interface mode	1
	EUT configurations mode	1
	Operation mode	1

1.11.1 Test Equipment Used

DESCRIPTION	MANUFACTURER	MODEL	IDENTIFIER	CALIBRATION DATE	CALIBRATION DUE
EMI Receiver	Rohde & Schwarz	ESR26	2203	Aug 12, 2022	Aug 12, 2023
Digital Multimeter	Fluke	177	1187	Nov 25, 2022	Nov 25, 2023
Double-Ridge Waveguide Horn Antennas	ETS Lindgren	3117	2243	Dec 01, 2022	Dec 01, 2023
Thermo-hygrograph	PCE Group	PCE-HT110	1786	Feb 01, 2023	Feb 01, 2024
Thermo-hygrograph	Delta Ohm	HD35EDL14bNTV.E	1600-10	Apr 18, 2023	Apr 18, 2024
Horn antenna	AH Systems	SAS-571	2001	Sep 13, 2022	Sep 13, 2023
Signal Generator	Rohde & Schwarz	SMB100A	2239	Feb 22, 2023	Feb 22, 2024

1.11.2 Photo of the test setup



1.11.3 Measurement tables / Graphical representation for Emission – RF output power

Wi-Fi

TABULATED RESULTS FOR RF OUTPUT POWER				
Frequency (MHz)	Channel	Measured power (dBm)	Limit (dBm)	Margin (dBm)[1]
2412	1	13,59	20,00	6,41
2442	7	11,47	20,00	8,53
2484	14	14,54	20,00	5,46
Note: [1] Margin = Limit – Level Results above refer to the worst Wi-Fi RF Output Power results				

Bluetooth

TABULATED RESULTS FOR RF OUTPUT POWER				
Frequency (MHz)	Channel	Measured power (dBm)	Limit (dBm)	Margin (dBm)[1]
2404	0	16,71	20,00	3,29
2432	13	16,17	20,00	3,83
2478	36	18,16	20,00	1,84
Note: [1] Margin = Limit – Level Results above refer to the worst Bluetooth RF Output Power results				

1.12 Test Results –TRANSMITTER SPURIOUS EMISSIONS

1.12	TEST: TRANSMITTER SPURIOUS EMISSIONS	VERDICT
		P

Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	10 to 40 °C	25 °C
Relative Humidity	10 to 90 %	40 %
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point
	30 MHz – 12,75 GHz	Enclosure
Equipment mode	Power interface mode	1
	EUT configurations mode	1
	Operation mode	1

Limits EN 300 328			Limits EN 301 893		
Frequency (MHz)	Limit (dBm)		Frequency (MHz)	Limit (dBm)	
	Erp/eirp	Results		Erp/eirp	Results
30 to 47[1]	-36	P	30 to 47[1]	-36	P
47 to 74[1]	-54	P	47 to 74[1]	-54	P
74 to 87,5[1]	-36	P	74 to 87,5[1]	-36	P
87,5 to 118[1]	-54	P	87,5 to 118[1]	-54	P
118 to 174[1]	-36	P	118 to 174[1]	-36	P
174 to 230[1]	-54	P	174 to 230[1]	-54	P
230 to 470[1]	-36	P	230 to 470[1]	-36	P
470 to 862[1]	-54	P	470 to 862[1]	-54	P
862 to 1000[1]	-36	P	862 to 1000[1]	-36	P
1000 to 12750[1]	-30	P	1000 to 5150[1]	-30	P
---	---	---	5350 to 5470[1]	-30	P
---	---	---	5725 to 26000[1]	-30	P

Supplementary information:

[1] At transitional frequencies the lower limit applies.

1.12.1 Test Equipment Used

DESCRIPTION	MANUFACTURER	MODEL	IDENTIFIER	CALIBRATION DATE	CALIBRATION DUE
EMI Receiver	Rohde & Schwarz	ESR26	2203	Aug 12, 2022	Aug 12, 2023
Digital Multimeter	Fluke	177	1187	Nov 25, 2022	Nov 25, 2023
Double-Ridge Waveguide Horn Antennas	ETS Lindgren	3117	2243	Dec 01, 2022	Dec 01, 2023
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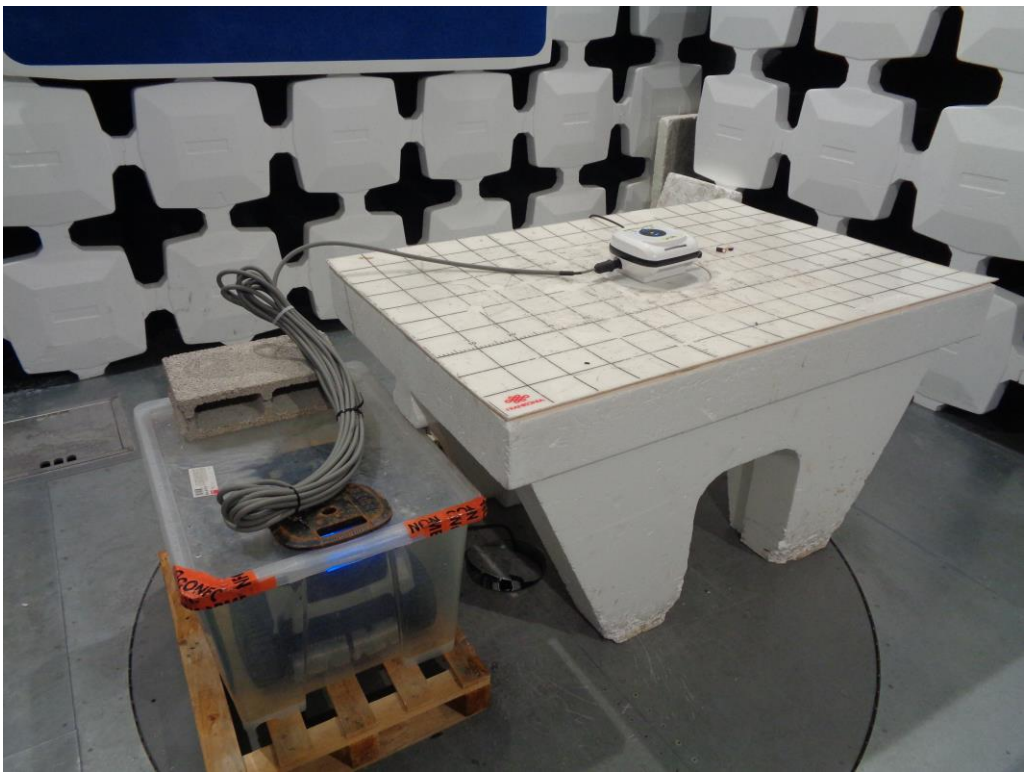
Thermo-hygrograph	Delta Ohm	HD35EDL14bNTV.E	1600-10	Apr 18, 2023	Apr 18, 2024
Horn antenna	AH Systems	SAS-571	2001	Sep 13, 2022	Sep 13, 2023
Signal Generator	Rohde & Schwarz	SMB100A	2239	Feb 22, 2023	Feb 22, 2024

1.12.2 Photo of the test setup



1.12.3 Measurement tables / Graphical representation for transmitter spurious emissions

Cyclonext

Wi-Fi

TABULATED RESULTS FOR SPURIOUS EMISSIONS			
Frequency (MHz)	Measured Value (dBm)	Limit (dBm)	Margin[1] (dB)
203,966033	-75,32	-54,00	21,32
240,014175	-77,46	-36,00	41,46
10304,369107	-45,57	-30,00	15,57
12293,772219	-42,71	-30,00	12,71
Note: [1] Margin = Limit – Level Results refer to the worst case			

Bluetooth

TABULATED RESULTS FOR SPURIOUS EMISSIONS			
Frequency (MHz)	Measured Value (dBm)	Limit (dBm)	Margin[1] (dB)
204,016030	-77,22	-54,00	23,22
240,014175	-79,66	-36,00	43,66
10347,367013	-42,49	-30,00	12,49
12341,769882	-40,24	-30,00	10,24
Note: [1] Margin = Limit – Level Results refer to the worst case			

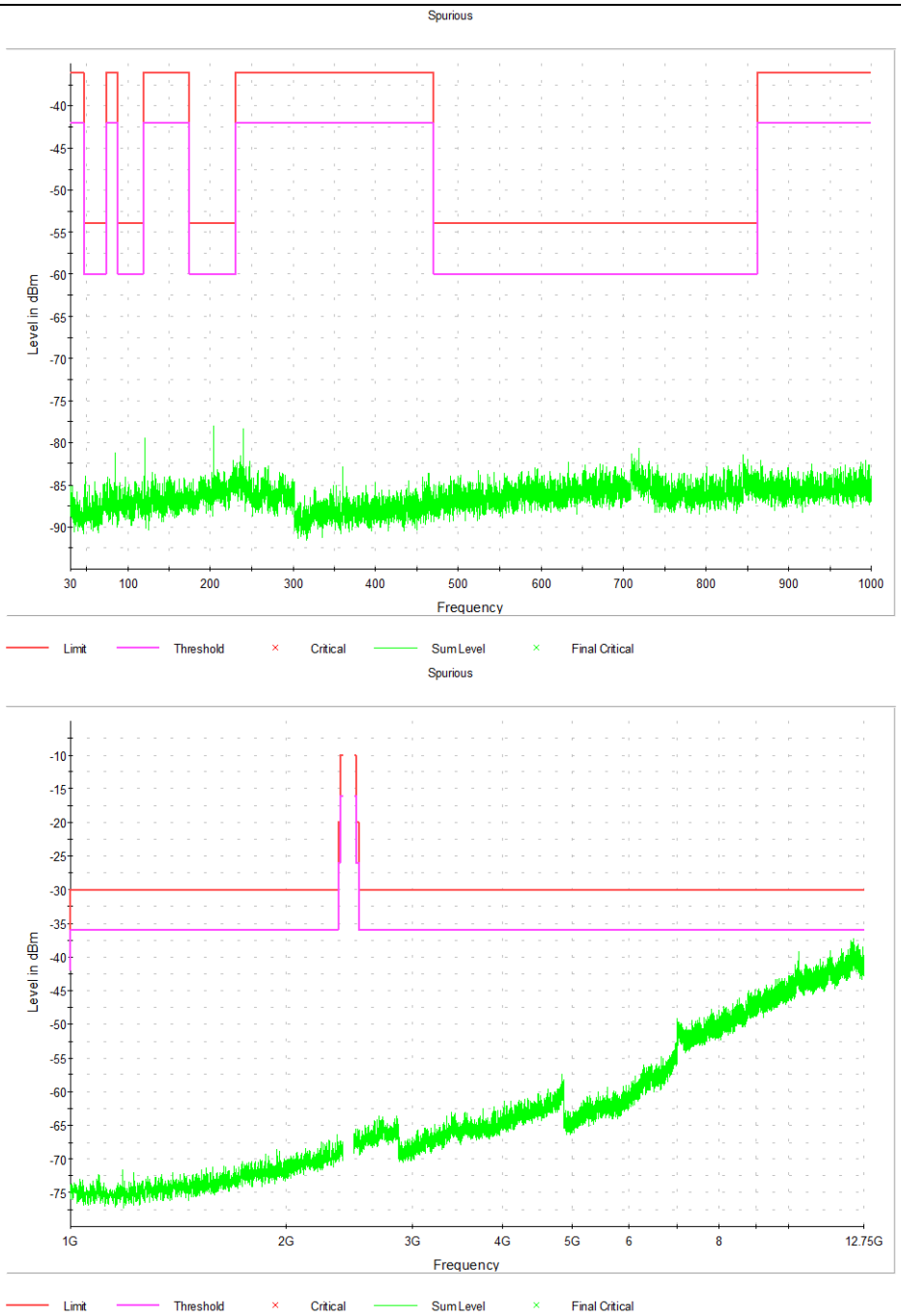
Vortex Refresh

Wi-Fi

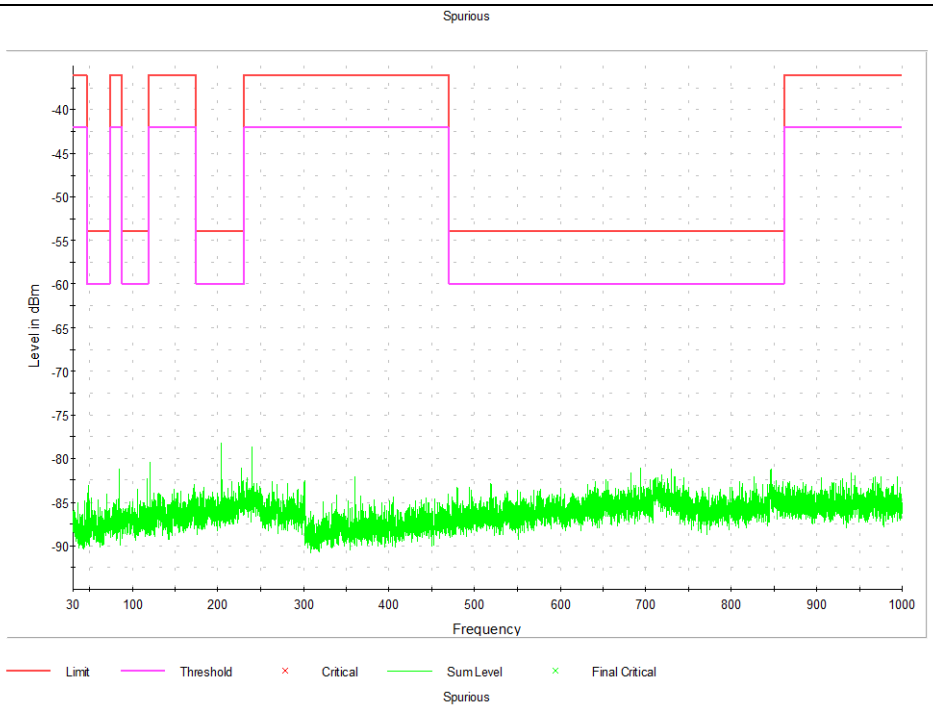
TABULATED RESULTS FOR SPURIOUS EMISSIONS			
Frequency (MHz)	Measured Value (dBm)	Limit (dBm)	Margin[1] (dB)
203,966033	-78,51	-54,00	24,51
240,014175	-79,12	-36,00	43,12
10304,369107	-41,35	-30,00	11,35
12293,772219	-38,89	-30,00	8,89
Note: [1] Margin = Limit – Level Results refer to the worst case			

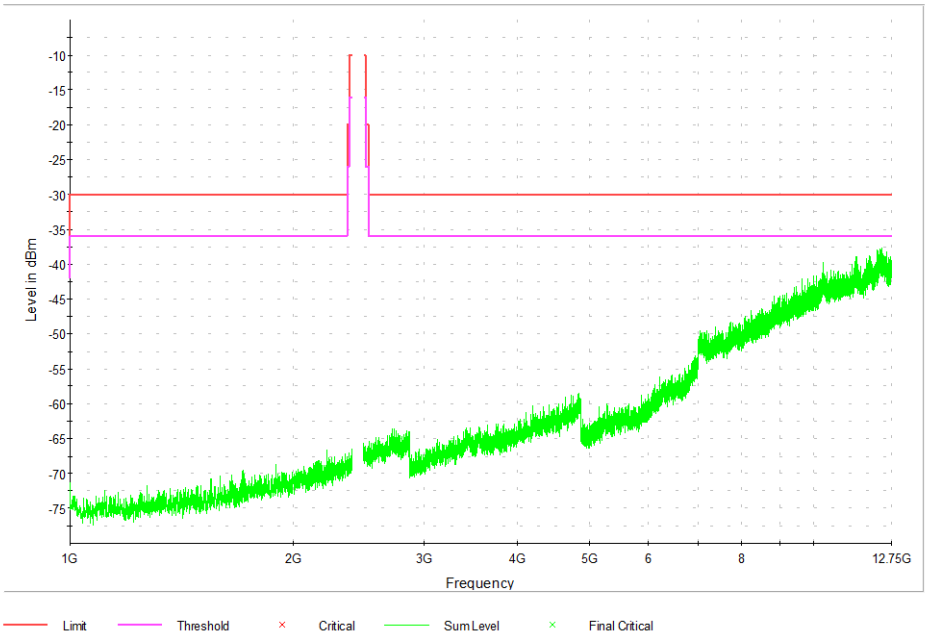
Bluetooth

TABULATED RESULTS FOR SPURIOUS EMISSIONS			
Frequency (MHz)	Measured Value (dBm)	Limit (dBm)	Margin[1] (dB)
204,016030	-75,28	-54,00	21,28
240,014175	-78,69	-36,00	42,69
10347,367013	-42,49	-30,00	12,49
12341,769882	-40,40	-30,00	10,4
Note: [1] Margin = Limit – Level Results refer to the worst case			

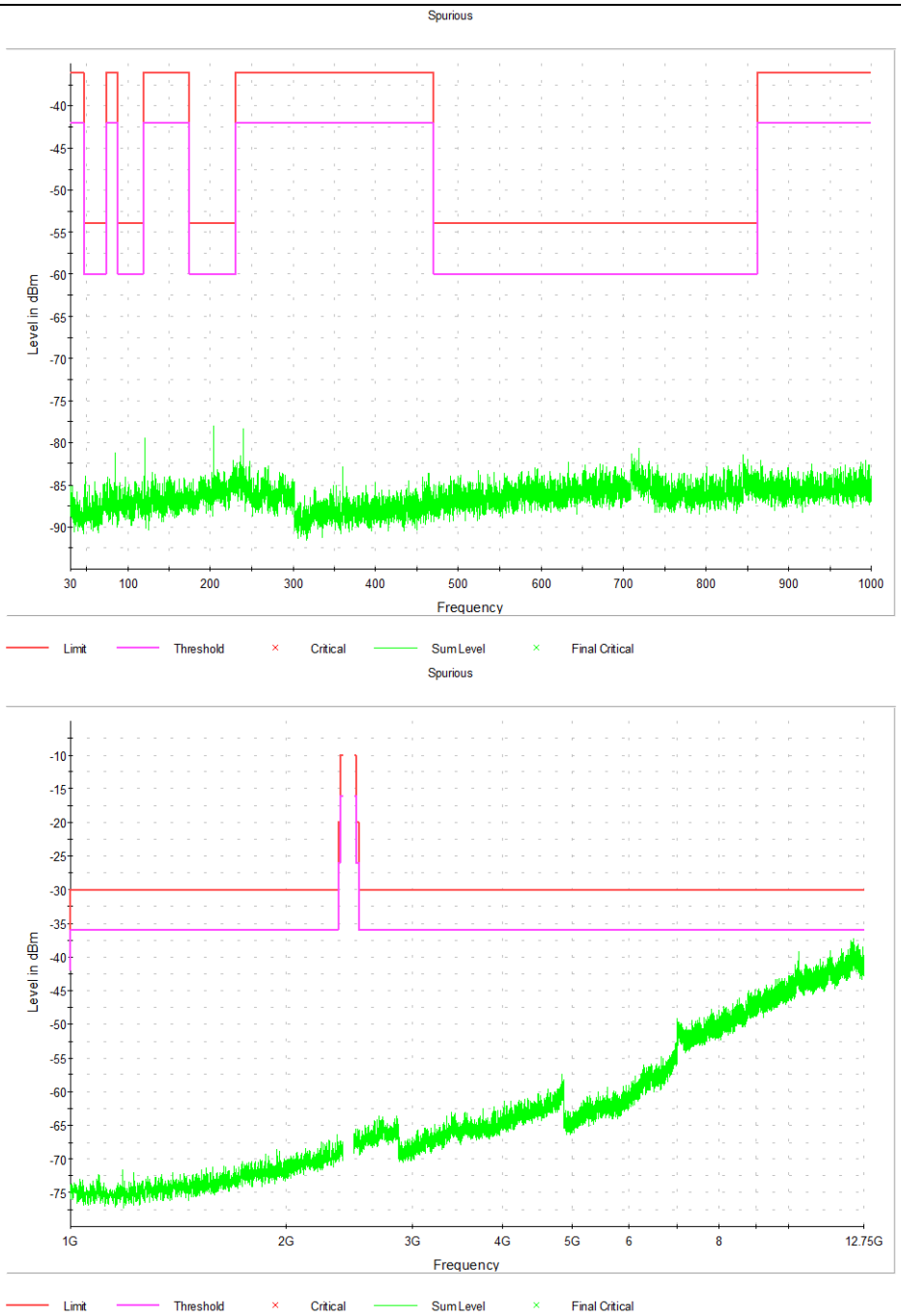


Client: Zodiac Pool Care Europe – Gateway – Model: Cyclonext
Project: 37360
Date: May 3, 2023
Configuration mode: 1; Operation mode: 1; Power mode: 1; Transmission on channel 1
Wi-Fi

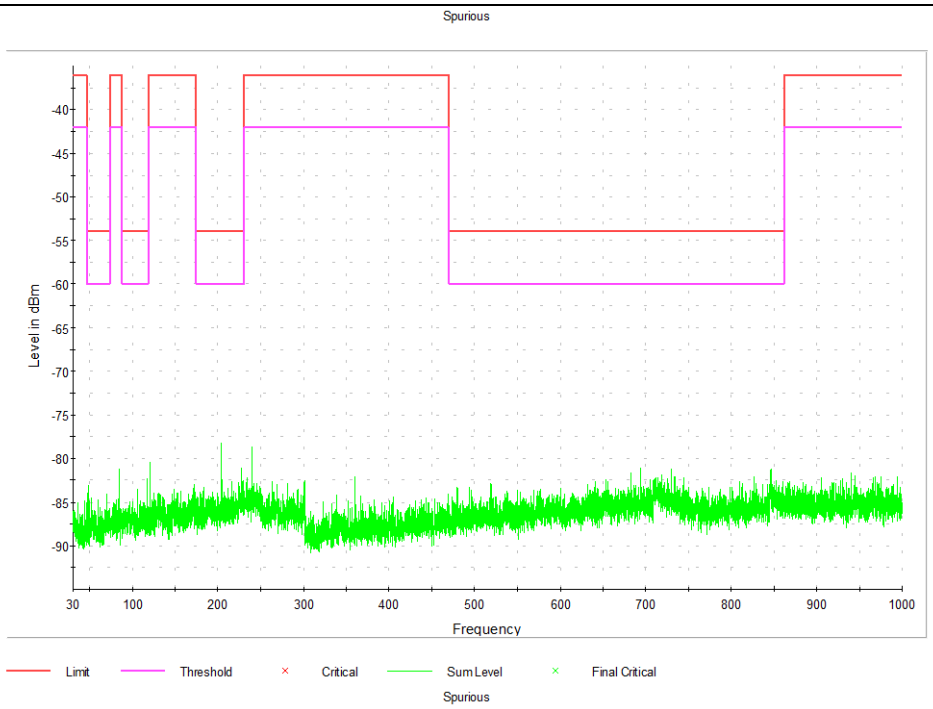


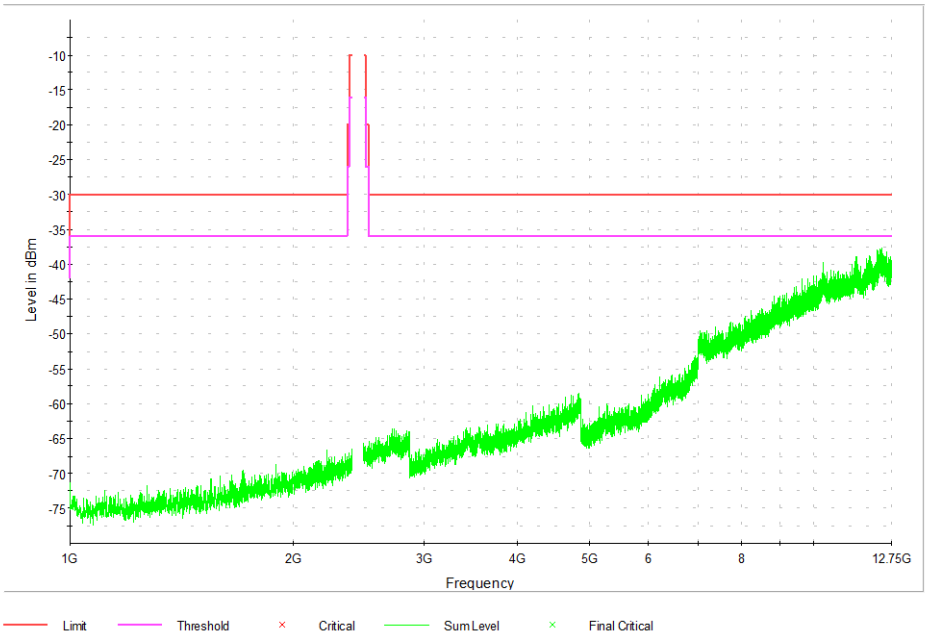


Client: Zodiac Pool Care Europe – Gateway – Model: Cyclonext
Project: 37360
Date: May 3, 2023
Configuration mode: 1; Operation mode: 1; Power mode: 1; Transmission on channel 1
Bluetooth



Client: Zodiac Pool Care Europe – Gateway – Model: Vortex Refresh
Project: 37360
Date: May 3, 2023
Configuration mode: 1; Operation mode: 1; Power mode: 1; Transmission on channel 1
Wi-Fi





Client: Zodiac Pool Care Europe – Gateway – Model: Vortex Refresh
Project: 37360
Date: May 3, 2023
Configuration mode: 1; Operation mode: 1; Power mode: 1; Transmission on channel 1
Bluetooth