RA-24-08102812-2/A Ed. 0

FCC CERTIFICATION
RADIO Measurement
Technical Report

standard to apply:
FCC Part 15.231

Equipment under test:
WIRELESS STEREO SPEAKERS (REMOTE CONTROL PART)

FCC ID:
RKXREM

Company:
PARROT

DISTRIBUTION: Mr GUERRAB **Company: PARROT**

Number of pages: 18 including 3 annexes

Ed.	Date	Modified pages	Written by Name	Visa	Technical Verification Quality Approval Name	Visa
0	7-Oct-08	Creation	M. DUMESNIL	M. D.	P. BONNENFANT	

Duplication of this test report 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:	**WIRELESS STEREO SPEAKERS (REMOTE CONTROL PART)**
Reference / model:	Parrot by starck
Serial number:	not communicated
MANUFACTURER:	PARROT

COMPANY SUBMITTING THE PRODUCT:

Company:	PARROT
Address:	174 quai de Jemmapes 75010 PARIS FRANCE
Responsible:	Mr GUERRAB
DATE(S) OF TEST:	23 August 2008 17 September 2008
TESTING LOCATION:	EMITECH ATLANTIQUE laboratory at ANGERS (49) FRANCE EMITECH ATLANTIQUE open area test site in LA POUEZE (49) FRANCE Registration Number by FCC: 101696/FRN: 0006 6490 08
TESTED BY:	M. DUMESNIL
TUTOR:	P. BONNENFANT

CONTENTS

TITLE **PAGE**

1.INTRODUCTION

This document presents the result of RADIO test carried out on the following equipment: WIRELESS STEREO SPEAKERS (REMOTE CONTROL PART) in accordance with normative reference.

2.PRODUCT DESCRIPTION

ITU Emission code: F1D

Class: B (residential environment)

Intermittent control signals with no continuous transmission, the transmitter operates only when a key is depressed.

Utilization: remote control for wireless stereo speakers

Antenna type: integral antenna

Operating frequency: 433.92 MHz

No of channels: 1

Channel spacing: not concerned

Frequency generation: O SAW Resonator O Crystal ⊙ Synthetiser

Modulation: O Amplitude (pulsed modulated device) O Digital ⊙ Frequency O Phase

Power source: 3 Vd.c (lithium battery CR 2032)

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 (2007)	Code of Federal Regulations Title 47 - Telecommunication Chapter 1 - Federal Communications Commission Part 15 - Radio frequency devices Subpart C - Intentional Radiators
ANSI C63.4 (03)	American National Standard for Methods of measurement of Radio-Noise from low-voltage. Electrical and Electronic 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 231: Periodic operation in the band 40.66 – 40.70 MHz and above 70 MHz

5.TEST UNIT CONFIGURATION

JOINED DOCUMENTATIONS

"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

Test procedure	Description of test	Criteria respected?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.107	CONDUCTED LIMITS			X		
FCC Part 15.109	RADIATED EMISSION LIMITS			X		
FCC Part 15.111	ANTENNA POWER CONDUCTED LIMITS FOR RECEIVERS			X		
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		
FCC Part 15.209	RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS	X				
FCC Part 15.231	PERIODIC OPERATION IN THE BAND 40.66 – 40.70 MHz AND ABOVE 70 MHz					
	(a) Type of momentary signals	X				*Note 2*
	(b) Field strengths and frequency bands	X				*Note 3*
	(c) Bandwidth of momentary signals	X				*Note 4*
	(d) Frequency stability			X		
	(e) Intensity of reduced field			X		

NAp: Not Applicable NAs: Not Asked

Note 1: internal antenna without connector.

Note 2: the equipment is manually operated and employ a switch that deactivates automatically the transmitter and ceases transmission within 5 seconds after activation.
The transmitter does not perform periodic transmissions.
The transmitter is not activated automatically.

Note 3: field strength limit of fundamental (F = 433.92 MHz)
41.6667 (F) - 7083.3333 = 10996.68 µV/m at 3 m = 80.83 dBµV/m at 3 m.
The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

Note 4: the bandwidth of the emission at 20 dB is 992 kHz (see annex 1), less than 0.25 % of the centre frequency (433.92 MHz).

Conclusion:

The sample of WIRELESS STEREO SPEAKERS (REMOTE CONTROL PART) submitted to the tests complies with the regulations of the standard FCC Part 15 (2007) in accordance with the limits or criteria defined in this report.

7.PERIODIC OPERATION IN THE BAND 40.66 – 40.70 MHz AND ABOVE 70 MHz

Standard: FCC Part 15

Test procedure: paragraph 231

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Log periodic antenna	Rohde & Schwarz HL 223	1999
Spectrum analyzer	Rohde & Schwarz FSP40	4088
Open area test site	EMITECH	1274
Meteo station	Oregon Scientific T/H/P	2228
multimeter	Fluke 77-2	0812

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 azimuth corresponds to the front of the equipment under test.

Detection mode: Quasi-peak

Bandwidth: 120 kHz

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 under test is blocked in continuous transmission mode modulated.

Results:

Ambient temperature (°C): 24
Relative humidity (%): 50

Sample n° 1

Power source: we used for power source the internal batteries of the equipment and we noted:

Voltage at the beginning of test (V):	3.10
Voltage at the end of test (V):	2.97
Percentage of the voltage drop during the test (%):	4.19
Limits (%):	± 5

	Measured level (dBµV/m) at frequency: 433.876 MHz
Normal test conditions	78.2
Limits	80.83

Polarization of test antenna: vertical (height: 116 cm)
Position of equipment: up right (azimuth: 266 degrees)

Measurement uncertainty:

62.5 MHz ≤ Frequencies ≤ 1000 MHz: ± 2.6 dB

Test conclusion:

RESPECTED STANDARD

8.RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS (TRANSMITTER)

Standard: FCC Part 15

Test procedure: paragraph 205 / 209

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Biconical antenna	Hewlet Packard 11966 C	728
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
Meteo station	Oregon Scientific T/H/P	2228
Multimeter	Fluke 77-2	0812

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 azimuth corresponds to the front of the equipment under test.

Frequency range: from 30 MHz to harmonic 10 ($F_{carrier} \leq 1$ GHz)

Detection mode: Quasi-peak or average (F < 1 GHz)
Peak (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 under test is blocked in continuous transmission mode modulated.

Results:

Ambient temperature (°C): 25
Relative humidity (%): 49

Power source: we used for power source the internal batteries of the equipment and we noted:

Ten batteries have been necessary for this test:

	Battery 1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Voltage at the beginning of test (V):	3.08	3.07	3.12	3.09	3.07	3.09	3.05	3.04	3.05	3.05
Voltage at the end of test (V):	2.94	2.93	2.99	2.95	2.93	2.95	2.91	2.91	2.93	2.91
Percentage of the voltage drop during the test (%):	4.55	4.56	4.17	4.53	4.56	4.53	4.59	4.28	3.93	4.59

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

FREQUENCIES (MHz)	Detector	E.U.T. orientation	Antenna height (cm)	Polarization of antenna H: Horizontal V: Vertical	Azimuth (degrees)	Field strength (dBµV/m)	Limits (dBµV/m)
420.413	Q	Z	117	V	269	48.2	60.83
447.424	Q	Z	107	V	283	34.2	60.83
867.754	Q	Z	109	V	64	52.3	60.83
1301.631*	P	Z	132	V	156	54.17	73.98
1301.631*	A	Z	132	V	156	53.26	53.98
1735.507	P	Z	162	V	62	53.01 (1)	80.83
1735.507	A	Z	162	V	62	51.36	60.83
2169.388	P	Z	206	H	184	55.05 (1)	80.83
2169.388	A	Z	206	H	184	54.65	60.83
2603.263	P	Z	136	V	237	50.36 (1)	80.83
2603.263	A	Z	136	V	237	47.24	60.83
3037.139	P	Z	132	V	235	54.11 (1)	80.83
3037.139	A	Z	132	V	235	49.64	60.83
3471.020	P	Z	191	H	0	42.87 (1)	80.83
3471.020	A	Z	191	H	0	36.66	60.83
3904.900*	P	Z	142	H	12	53.63 (1)	73.98
3904.900*	A	Z	142	H	12	47.01	53.98

(1) the peak level is lower than the average limit
E.U.T.: Equipment Under Test
* restricted band of operation § 15.205.

E.U.T. orientation
X: to put flat
Y: on the edge
Z: up right

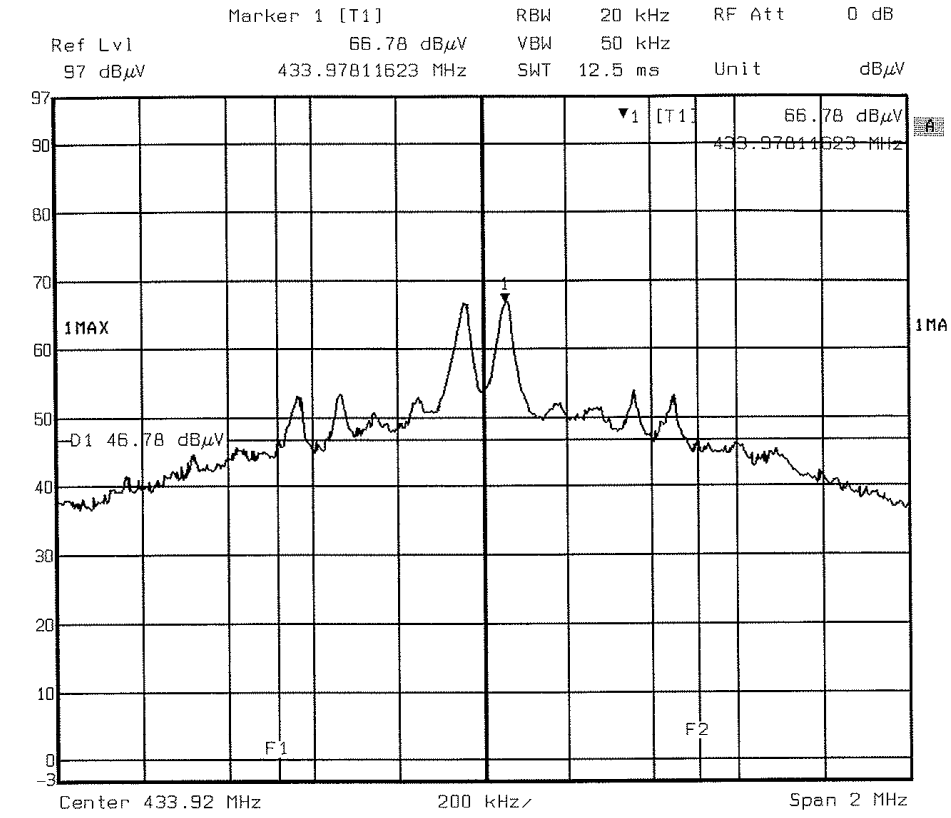
A: average
Q: quasi peak
P: Peak

Note: 10996.68 µV/m at 3 m = 80.83 dBµV/m at 3 m 1099.66 µV/m at 3 m = 60.83 dBµV/m at 3 m.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
All reading above 1 GHz was taken using a peak detector function and an average detection function.

□□□ End of report, 3 annexes to be forwarded □□□

ANNEX 1: EMISSION BANDWIDTH



$F_1 = 433,4364$ MHz.

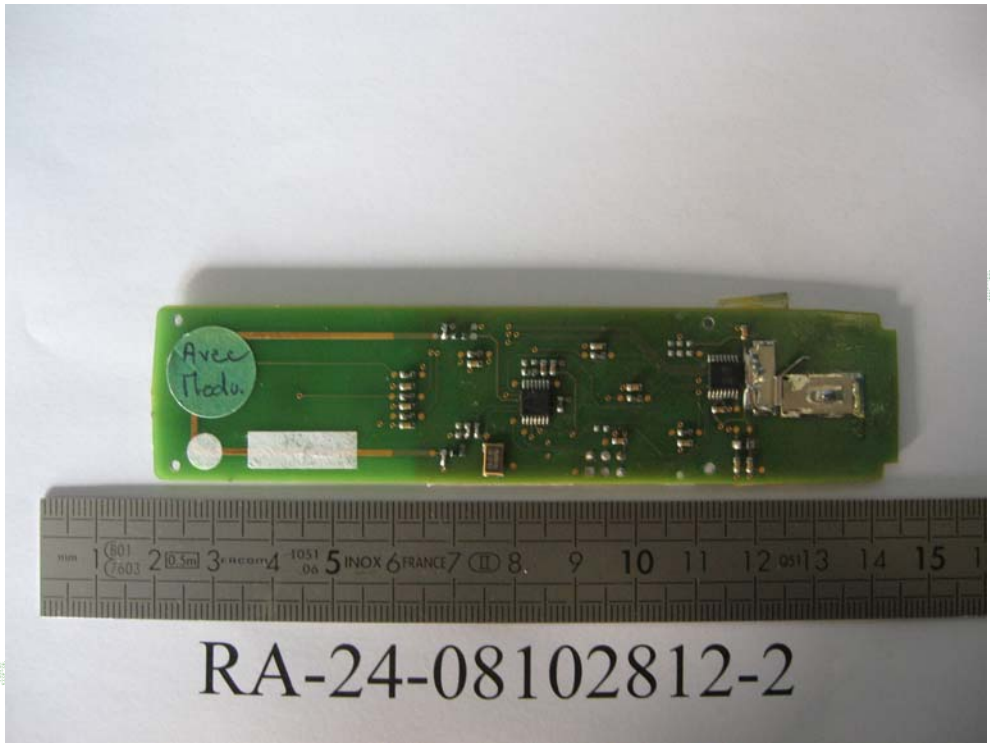
$F_2 = 434,4284$ MHz.

$F_2 - F_1 = 992$ kHz.

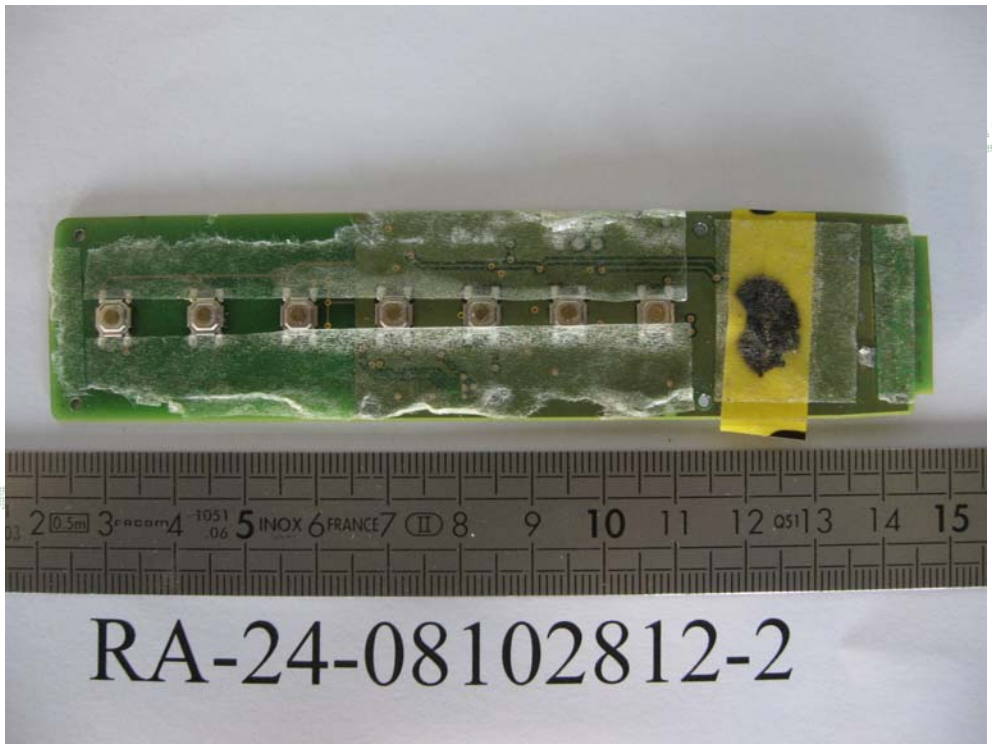
ANNEX 2: PHOTOS OF THE EQUIPMENT UNDER TEST

GENERAL VIEW

Printed circuit board: face 1



Printed circuit board: face 2



ANNEX 3: TEST SET UP AND OPEN AREA TEST SITE

TEST SET UP FOR RADIATED MEASUREMENTS

IN DISH POSITION

IN UP RIGHT POSITION

OPEN AREA TEST SITE