



RA-24-08101180-1/A Ed. 0

FCC CERTIFICATION RADIO Measurement Technical Report

Permissive change

standard to apply:
FCC Part 15.247

Equipment under test:
BLUETOOTH HIFI SPEAKER
SIRIUS

FCC ID:
RKXSIRIUS

Company:
PARROT

DISTRIBUTION: Mr PIDOU

Company: PARROT

Number of pages: 15 including 2 annexes

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			Name	Visa	Name	Visa
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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: BLUETOOTH HIFI SPEAKER

Reference / model: SIRIUS

Serial number: not communicated

MANUFACTURER: not communicated

COMPANY SUBMITTING THE PRODUCT:

Company: PARROT

Address: 174, quai de Jemmapes
75010 PARIS
FRANCE

Responsible: Mr PIDOU

DATE(S) OF TEST: 20 March 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: L. BERTHAUD

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1. INTRODUCTION

This document presents the result of RADIO test carried out on the following equipment: BLUETOOTH HIFI SPEAKER SIRIUS in accordance with normative reference.

2. PRODUCT DESCRIPTION

ITU Emission code: 1M00F7D

Class: B (residential environment)

Utilization: Bluetooth Hifi Speaker

Antenna type: incorporated antenna

Operating frequency range: from 2402 MHz to 2480 MHz

Number of channels: 79

Channel spacing: 1 MHz

Frequency generation: SAW Resonator Crystal Synthesizer

Modulation: Frequency Hopping Spread Spectrum (FHSS)
 Amplitude Digital Frequency Phase

Power source: Lithium battery (4.8 Vd.c.) + battery charger.

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 (2003) Methods of Measurement of Radio-Noise Emissions from Low-voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz.

Public Notice DA 00-705 Filing and Measurement Guideline for Frequency Hopping Spread Spectrum Systems.

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 203: antenna requirement
- Paragraph 205: restricted bands of operation
- Paragraph 207: conducted limits
- Paragraph 209: radiated emission limits; general requirements
- Paragraph 247: operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz

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

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	Note 6
FCC Part 15.209	RADIATED EMISSION LIMITS; general requirements	X				Note 2
FCC Part 15.247	OPERATION WITHIN THE BAND 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz					
	(a) (1) <i>hopping systems</i>				X	Note 6
	(a) (1) (i) 902 – 928 MHz			X		
	(a) (1) (ii) 5725 – 5850 MHz			X		
	(a) (1) (iii) 2400 – 2483.5 MHz				X	Note 6
	(a) (2) <i>digital modulation techniques</i>			X		
	(b) <i>max output power</i>	X				Note 3
	(c) <i>operation with directional antenna gains > 6 dBi</i>			X		Note 4
	(d) <i>intentional radiator</i>	X				
	(e) <i>peak power spectral density</i>			X		
	(f) <i>hybrid system</i>			X		
	(g)	X				
	(h)	X				
	(i) <i>RF exposure compliance</i>	X				Note 5
DA 00-705	BAND EDGE COMPLIANCE				X	Note 6

NAP: Not Applicable

NAs: Not Asked

Note 1: internal antenna (pcb antenna), see photos in annex 1.

Note 2: see FCC part 15.247 (d).

Note 3: conducted measurement is not possible (integral antenna), so we used the radiated method in open field.

Note 4: the antenna gain is less than 6 dBi.

Note 5: this type of equipment uses less than 0.5 W of output power with a high signal transmitting duty factor (section 3 from Oet 65c).

Note 6: test already realized (permissive change). See Emitech report RA-24-07101294-2/A Ed. 0.

Conclusion:

The sample of BLUETOOTH HIFI SPEAKER SIRIUS 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. PEAK OUTPUT POWER**Standard:** FCC Part 15**Test procedure:** paragraph 15.247**Test equipment:**

TYPE	BRAND	EMITECH NUMBER
Spectrum analyzer FSP 40	Rohde & Schwarz	4088
Antenna RGA60	Electrometrics	1204
Open site	EMITECH	1274
Power meter 8541B	Gigatronics	3479
Power sensor 80401A	Gigatronics	3182
Variac R213	Dereix	1419

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.

We use for this measure outdoor test site and substitution method. The measuring distance between the equipment and the test antenna is 3 m. The test antenna has been oriented in the two polarizations, we have recorded only the highest level.

A measurement of the electro-magnetic field is realized, with a resolution bandwidth and video bandwidth adjusted at 1 MHz on lowest, middle and highest channels.

Distance of antenna: 3 meters**Antenna height:** 1 to 4 meters**Antenna polarization:** vertical and horizontal**Equipment under test operating condition:**

The equipment under test is blocked in continuous transmission mode, modulated by internal data signal, at the highest output power level which the transmitter is intended to operate.

Results:

Ambient temperature (°C): 18

Relative humidity (%): 43

Power source: 115 Va.c. + battery in charging mode

Polarization of test antenna: horizontal (height: 129 cm)

Position of equipment: flat position (azimuth: 182 degrees)

Sample n° 1 Channel 1

	Level dB μ V	Cable loss dB	Antenna factor dB	Electro-magnetic field (dB μ V/m):	P* (W)
Normal test conditions	63	4.75	29.16	96.91	1.473×10^{-3}

Power change compared to previous version: -0.01 dB.

Sample n° 1 Channel 40

	Level dB μ V	Cable loss dB	Antenna factor dB	Electro-magnetic field (dB μ V/m):	P* (W)
Normal test conditions	62.1	4.75	29.16	96.01	1.197×10^{-3}

Power change compared to previous version: -0.34 dB.

Sample n° 1 Channel 79

	Level dB μ V	Cable loss dB	Antenna factor dB	Electro-magnetic field (dB μ V/m):	P* (W)
Normal test conditions	63.6	4.75	29.16	97.51	1.691×10^{-3}

Power change compared to previous version: -0.58 dB.

 * $P = (E \times d)^2 / (30 \times G_p)$ with $d = 3$ m and $G_p = 1$
Test conclusion:

RESPECTED STANDARD

8. RADIATED EMISSION OF TRANSMITTER

Standard: FCC Part 15

Test procedure: paragraph 15.205
 paragraph 15.209
 paragraph 15.247

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	728
Log periodic antenna HL 223	Rohde & Schwarz	1999
Open site	Emitech	1274
Antenna RGA-60	Electrometrics	1204
Low-noise amplifier 2 to 18 GHz	Microwave DB	1922
High pass filter HP12/3200-5AA	Filtek	
Antenna WR42	IMC	1939
Variac R213	Dereix	1419
Low-noise amplifier 18 to 26 GHz	ALC	3036

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 9 kHz to harmonic 10 ($F_{\text{carrier}} \leq 10 \text{ GHz}$)

Bandwidth: 120 kHz ($F < 1 \text{ GHz}$) or 100 kHz, following 15.205 or 15.247
 1 MHz ($F > 1 \text{ GHz}$) or 100 kHz, following 15.205 or 15.247

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 under test is blocked in continuous transmission mode, modulated by internal data signal, at the highest output power level which the transmitter is intended to operate.

Results:

Ambient temperature (°C): 18
Relative humidity (%): 43

Power source: 115 Va.c. through a variac + battery in charging mode

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

Channel 1

Not any spurious has been detected.

Channel 40

Not any spurious has been detected.

Channel 79

Not any spurious has been detected.

Applicable limits: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

The highest level recorded in a 100 kHz bandwidth is 96.79 dB μ V/m on channel 79.

So the applicable limit is **76.79 dB μ V/m**.

In addition, radiated emissions which fall in the restricted band, as defined in section 15.205 (a), must also comply with the radiated emission limits specified in section 15.209 (a) (see section 15.205 (c)).

Any spurious that has more than 20 dB of margin compared to the applicable limit is not necessary reported.

TEST CONCLUSION:

RESPECTED STANDARD

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

ANNEX 1: PHOTOS OF THE EQUIPMENT UNDER TEST

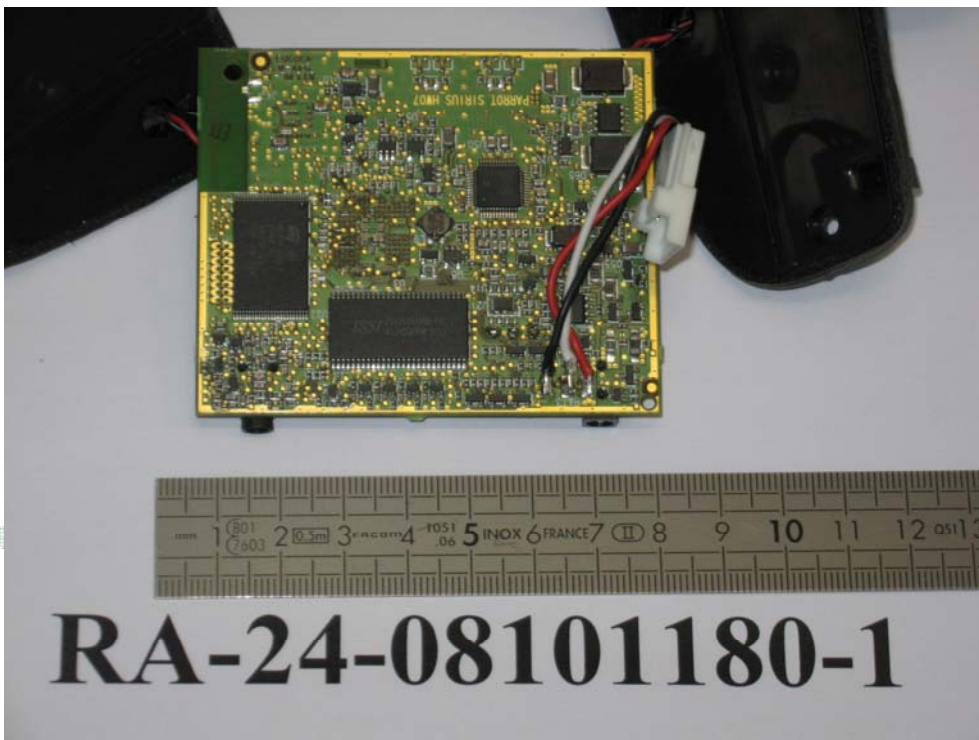
GENERAL VIEW



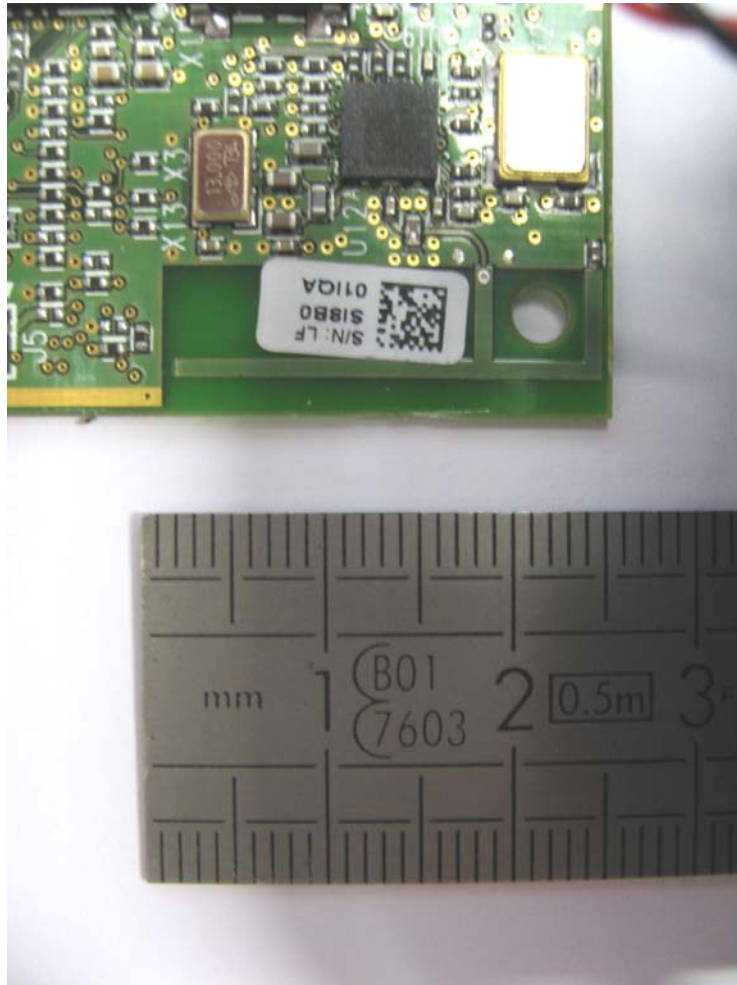
Printed circuit board: face 1



Printed circuit board: face 2



Antenna



ANNEX 2: TEST SET UP AND OPEN AREA TEST SITE

TEST SET UP RADIATED MEASUREMENT



OPEN AREA TEST SITE

