



RA-24-07105389-6/A Ed. 0

**FCC CERTIFICATION
RADIO Measurement
Technical Report**

**standard to apply:
FCC Part 15.231**

**Equipment under test:
BLUETOOTH HANDS-FREE KIT
FOR SCOOTER AND MOTO
(REMOTE CONTROL PART)
SK4000**

**FCC ID :
RKXMOTOSREM**

**Company:
PARROT**

DISTRIBUTION: Mr PIDOU

Company: PARROT

Number of pages: 15 including 3 annexes

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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: BLUETOOTH HANDS-FREE KIT FOR SCOOTER AND MOTO
(Remote Control Part)

Reference / model: SK4000

Trade mark: PARROT

Serial number: not communicated

MANUFACTURER: PARROT

COMPANY SUBMITTING THE PRODUCT:

Company: PARROT

Address: 174, quai de Jemmapes
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Responsible: Mr PIDOU

DATE(S) OF TEST: 31 May 2008
14 June 2008

TESTING LOCATION: EMITECH ATLANTIQUE laboratory at ANGERS (49) FRANCE
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FRANCE

Registration Number by FCC: 101696/FRN: 0006 6490 08

TESTED BY: M. DUMESNIL

TUTOR: P. BONNENFANT

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1. INTRODUCTION

This document presents the result of RADIO test carried out on the following equipment: BLUETOOTH HANDS-FREE KIT FOR SCOOTER AND MOTO (Remote Control Part) SK4000 in accordance with normative reference.

2. PRODUCT DESCRIPTION

Class: B (residential environment)

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

Utilization: Bluetooth hands-free kit (Remote Control Part)

Antenna type: integral antenna

Operating frequency: 433.92 MHz

No of channels: 1

Channel spacing: not concerned

Frequency generation: SAW Resonator Crystal Synthesizer

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

Power source: 3 Vd.c. (Lithium battery CR 2025)

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) 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 bands 40.66 – 40.70 MHz and above 70 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 15.107	CONDUCTED LIMITS			X		
FCC Part 15.109	RADIATED EMISSION LIMITS (unintentional radiator)			X		
DCC 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 ($F = 433.92 \text{ MHz}$)

$41.6667 (F) - 7083.3333 = 10996.68 \mu\text{V/m}$ at 3 m = $80.83 \text{ dB}\mu\text{V/m}$ 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 851 kHz (see annex 1), less than 0.25 % of the centre frequency (433.92 MHz).

Conclusion:

The sample of BLUETOOTH HANDS-FREE KIT FOR SCOOTER AND MOTO (Remote Control Part) SK4000 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. 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 AB 888	1539
Multimeter	Fluke 77-2	0812
Power source E3610A	Hewlett Packard	4195

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 ($F < 1$ GHz)

Bandwidth: 120 kHz ($F < 1$ 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 (%): 65

Sample n° 3

Power source: 3 Vd.c. by an external power source

	Measured level (dB μ V/m) at frequency: 433.892 MHz
Normal test conditions	76.7
Limits	80.83

Polarization of test antenna: horizontal (height: 100 cm)
Position of equipment: flat position (see photo in annex 2) (azimuth: 185 degrees)

Measurement uncertainty:

62.5 MHz \leq Frequencies \leq 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	Hewlett 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 AB 888	1539
Multimeter	Fluke 77-2	0812
Power source E3610A	Hewlett Packard	4195

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 ($F_{\text{carrier}} \leq 1 \text{ GHz}$)

Detection mode: Quasi-peak or average ($F < 1 \text{ GHz}$)
Peak ($F > 1 \text{ GHz}$)

Bandwidth: 120 kHz ($F < 1 \text{ GHz}$)
1 MHz ($F > 1 \text{ GHz}$)

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): 24.5
 Relative humidity (%): 67

Sample n° 3

Power source: 3 Vd.c. by an external power source

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)
867.784	Q	X	153	V	354	40.7	60.83
1301.845*	P	X	100	V	355	53.79 ⁽¹⁾	73.98
1301.845*	A	X	100	V	355	52.58	53.98
1735.794	P	X	219	V	231	42.57 ⁽¹⁾	80.83
1735.794	A	X	219	V	231	37.83	60.83
2169.733	P	X	100	V	162	50.59 ⁽¹⁾	80.83
2169.733	A	X	100	V	162	48.23	60.83
2603.691	P	X	215	H	360	44.53 ⁽¹⁾	80.83
2603.691	A	X	215	H	360	39.26	60.83

⁽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 A: average
 X: to put flat Q: quasi peak
 Y: on the edge P: Peak
 Z: up right

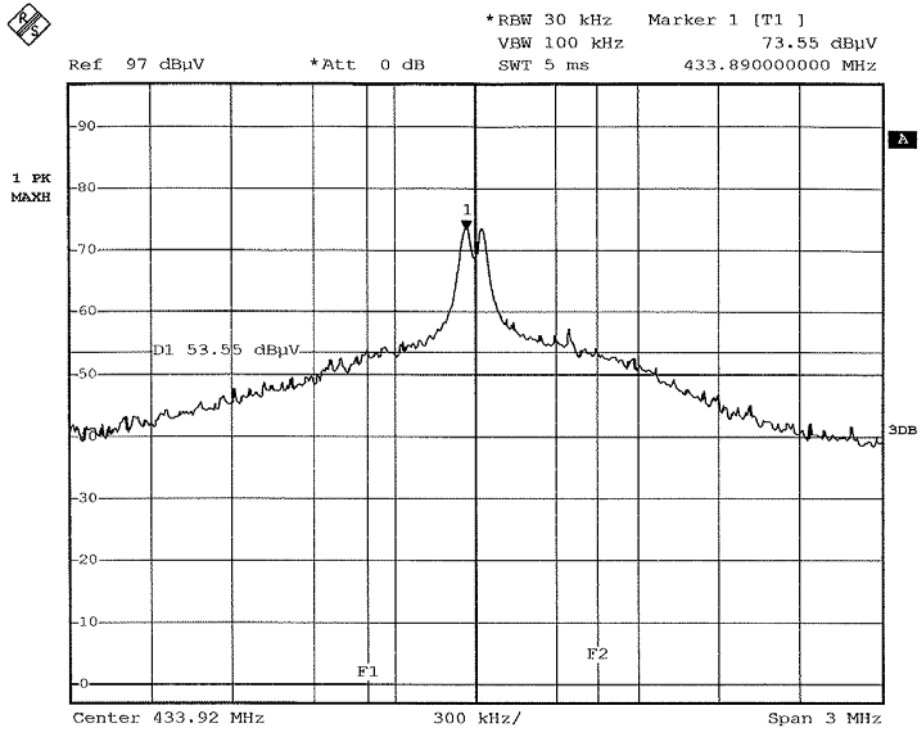
Note: 10996.68 μV/m at 3 m = 80.83 dBμV/m at 3 m; 1099.66 μV/m at 3 m = 60.83 dBμV/m at 3 m.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

All reading above 1 GHz were taken using a peak detector function and the duty cycle correction factor in order to determinate the average value of the emission (see §15.35; pulsed modulated devices)

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

ANNEX 1: EMISSION BANDWIDTH



$F_1 = 433,520.8 \text{ MHz}$ $F_2 = 434,371.8 \text{ MHz}$

Date: 14.JUN.2008 11:22:01

$F_2 - F_1 = 851 \text{ kHz}$

EM

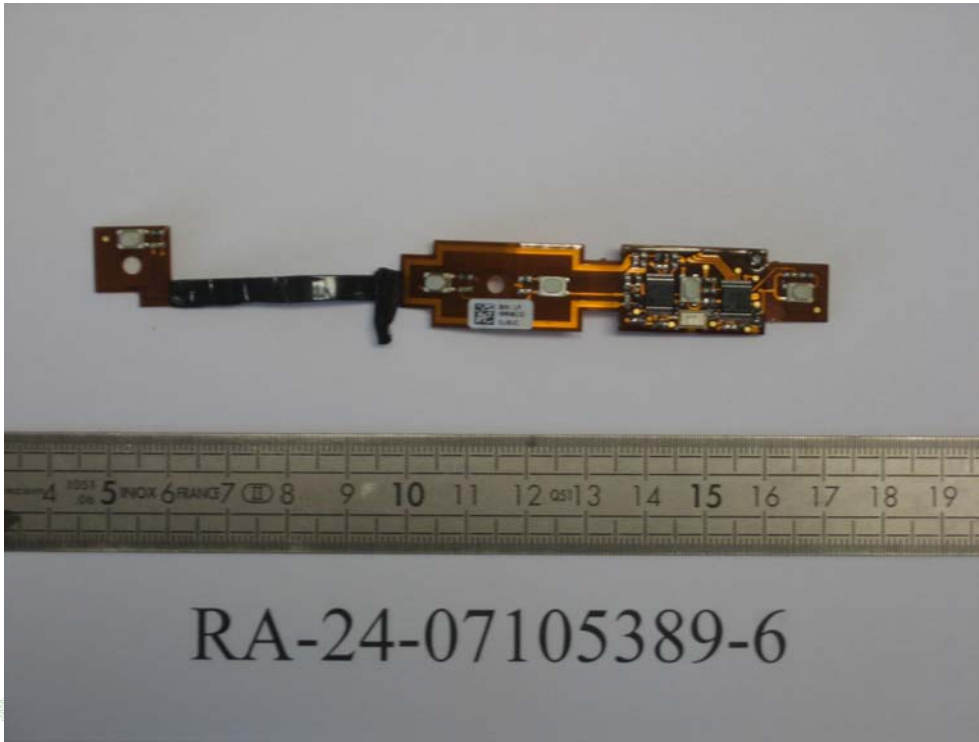
EM

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 RADIATED MEASUREMENT



EMITECH

EMITECH



EMITECH

EMITECH

OPEN AREA TEST SITE

