

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Nokia HS-128W

Partial Testing To: FCC Part 15.247: 2006 (Subpart C),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

**Test Report Serial No:**  
RFI/RPT1/RP73810JD05B

This Test Report Is Issued Under The Authority  
Of Steve Flooks, Service Leader:

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Checked By: Nigel Davison	Report Copy No: PDF01
Issue Date: 26 September 2008	Test Dates: 31 March 2008 to 07 April 2008

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**1. Customer Information**

<b>Company Name:</b>	GN Netcom A/S
<b>Address:</b>	Lautrupbjerg 7 2750 Ballerup Denmark
<b>Contact Name:</b>	Mr T Ringtved

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## **2. Equipment Under Test (EUT)**

The following information (with the exception of the date of receipt) has been supplied by the customer:

### **2.1. Identification of Equipment Under Test (EUT)**

Description:	Bluetooth Headset
Brand Name:	Nokia
Model Name or Number:	HS-128W
Serial Number:	None Stated
FCC ID Number:	PYAHS-128W
IC Number:	661V-HS128W
Date of Receipt:	31 March 2008

### **2.2. Description of EUT**

The equipment under test was a Bluetooth Headset.

### **2.3. Modifications Incorporated in the EUT**

During the course of testing the EUT was not modified.

### **2.4. Support Equipment**

No support equipment was used to exercise the EUT during testing.

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## 2.5. Additional Information Related to Testing

Power Supply Requirement:	Internal battery supply of 3.7 V		
Equipment Category:	Bluetooth		
Type of Unit:	Bluetooth Headset		
Transmit Frequency Range:	2402 MHz to 2480 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2402
	Middle	40	2441
	Top	79	2480
Receive Frequency Range:	2402 MHz to 2480 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2402
	Middle	40	2442
	Top	79	2484

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### **3. Test Specification, Methods and Procedures**

#### **3.1. Test Specification**

Reference:	FCC Part 15.247: 2006 Subpart C
Title:	Code of Federal Regulations, Part 15.247 (47CFR15) (Intentional Radiators operating within the band 2400 MHz to 2483.5 MHz)

Reference:	RSS-210 Issue 7 June 2007
Title:	Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment.

Reference:	RSS-Gen Issue 2 June 2007
Title:	General Requirements and Information for the Certification of Radio communication Equipment.

#### **3.2. Methods and Procedures**

The methods and procedures used were as detailed in:

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic Noise and Field Strength Instrumentation, 10 Hz to 40 GHz.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

DA00-705 (2000)

Title: Filing and Frequency Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

#### **3.3. Definition of Measurement Equipment**

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

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#### **4. Deviations from the Test Specification**

There were no deviations from the test specification.

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## **5. Operation and Configuration of the EUT during Testing**

### **5.1. Operating Modes**

The EUT was tested in the following operating modes, unless otherwise stated:

- In *Bluetooth* test mode connected to a *Bluetooth* tester over the air.

### **5.2. Configuration and Peripherals**

The EUT was tested in the following configuration:

- 20 dB bandwidth and TX carrier frequency separation tests were carried out in normal and EDR modes.
- EDR mode was found to be the worst case and EDR results only are included in the report.

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## **6. Summary of Test Results**

Range of Measurements	FCC Part 15 Reference	IC RSS Reference	Port Type	Result
Transmitter 20 dB Bandwidth	Section 15.247(a)(1)	RSS-210 A8.1(a)	Antenna	Complied
Transmitter Carrier Frequency Separation	Section 15.247(a)(1)	RSS-210 A8.1(b)	Antenna	Complied
Transmitter Average Time of Occupancy	Section 15.247(a)(1)(iii)	RSS-210 A8.1(d)	Antenna	Complied

### **6.1. Location of Tests**

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ.

### **6.2. Site Registration Numbers**

FCC: 90895

IC: 3485

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## **7. Measurements, Examinations and Derived Results**

### **7.1. General Comments**

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

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## **7.2. Test Results**

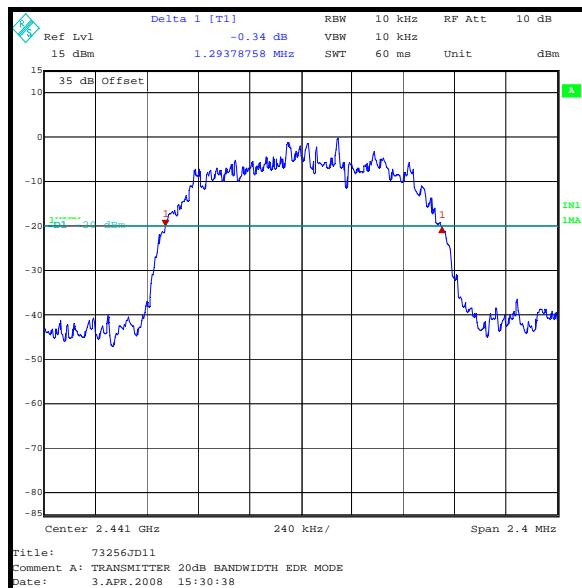
### **7.2.1. Transmitter 20 dB Bandwidth**

Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000).

Tests were performed to identify the 20 dB bandwidth.

#### **Results:**

Transmitter 20 dB Bandwidth (kHz)	Limit (kHz)
1293.787	None specified



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Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000)

Tests were performed to identify the carrier frequency separation.

**Results:**

Transmitter Carrier Frequency Separation (kHz)	Limit ( $>^2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1000.000	862.524	137.476	Complied



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**7.2.3. Transmitter Average Time of Occupancy**

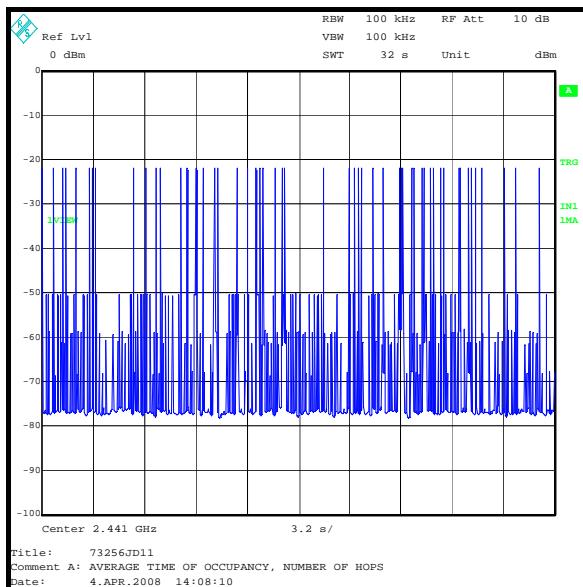
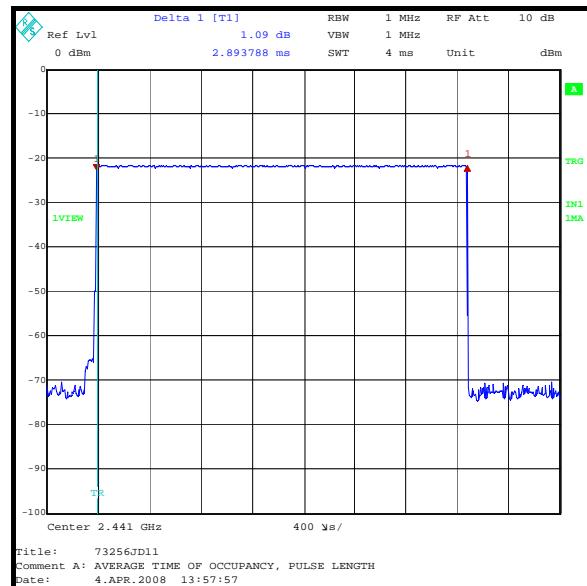
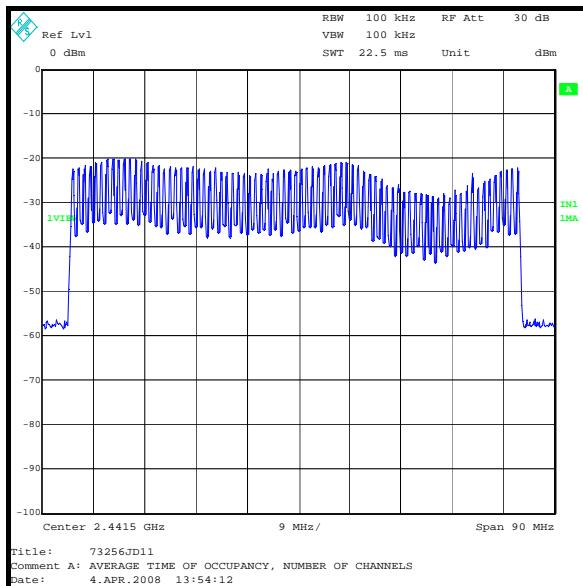
Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000).

Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.

**Results:**

Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2893.788	54	0.156	0.4	0.244	Complied

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## **8. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Transmitter Carrier Frequency Separation	Not applicable	95%	+/- 0.01 ppm
Transmitter Average Time of Occupancy	Not applicable	95%	+/- 10 %
20 dB Bandwidth	Not applicable	95%	+/- 0.12 %

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

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RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
S207	Site 7	RFI	7	None	Calibration not required	-

**NB** In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.