

SAR Compliance Test Report

Date of Report	21/05/2019	Client's Contact person:	Nicola Grapputo
Number of pages:	6	Responsible Test engineer:	Ilari Kinnunen
Testing laboratory:	Verkotan Oy Elektroniikkatie 17 90590 Oulu Finland	Client:	Nokia Solutions and Networks Kft. Bókay János utca 36-42 H-1083 Budapest Hungary
Tested devices	Nokia HAIP Locator LD-6L		
Related reports:	-		
Testing has been carried out in accordance with:	47CFR §2.1091 Radiofrequency Radiation Exposure Evaluation: Mobile Devices FCC published RF exposure KDB procedures RSS-102 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory		
Test Results:	The DUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document		
Date and signatures:	21.05.2019		
For the contents:			

Laboratory Manager

TABLE OF CONTENTS

1. SUMMARY OF SAR TEST REPORT	4
1.1 TEST DETAILS	4
1.2 EVALUATION RESULTS	4
2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT).....	5
2.1 SUPPORTED FREQUENCY BANDS AND OPERATIONAL MODES	5
2.2 TEST EXCLUSIONS.....	5
3. OUTPUT POWER.....	7
3.1 MAXIMUM DEFINED OUTPUT POWER	7
4. RESULTS.....	7
4.1 FCC RESULTS.....	7
4.2 ISED RESULTS	7

1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Devise under Test (DUT):

Product:	Nokia HAIP Locator
Manufacturer:	Nokia
Model:	LD-6L
FCC ID:	2AEJSLD-6L
IC ID:	661F-LD6L
Portable/ Mobile device:	Mobile
Document ID:	FCC SAR test report_LD-6L_ID3629b_21052019.docx

1.2 Evaluation Results

The device conforms to the requirements of the standards when the maximum output power is less than or equal to the Test Exclusion Threshold/Exemption Limit.

Regulator	System	Equipment Class	Test Exclusion Threshold/Exemption Limit [mW]	Maximum Output Power [mW]	Result
FCC	HAIP/Bluetooth LE	DTS	10	2.51	PASS
ISED	HAIP/Bluetooth LE	NA	4	2.51	PASS

2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is used for locating and tracking any objects equipped with HAIP tags in an indoor environment equipped with HAIP locators. The DUT can use either HAIP (High Accuracy Indoor Positioning) or Bluetooth Low Energy for locating devices.

Exposure Environment	General population, uncontrolled
-----------------------------	----------------------------------

2.1 Supported Frequency Bands and Operational Modes

Bands	Modes of Operation	Transmitter Frequency Range (MHz)
2.4	HAIP/Bluetooth LE	2400-2483.5

2.2 Test Exclusions

FCC SAR test exclusion thresholds in 447498D01 are shown in a table below.

Appendix A

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

ISED Test exclusion based on RSS-102 are shown in a table below.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

3. OUTPUT POWER

3.1 Maximum defined Output Power

From the customer:

Transmission mode	Output power [dBm]	Output power [mW]
HAIP/BLE	4	2.51

4. RESULTS

4.1 FCC results

According Appendix A in 447498D01 the SAR test exclusion power threshold for 2450MHz is 10mW at ≤ 5 mm separation distance.

The maximum output power of the DUT is 2.51 mW thus it is below the test exclusion threshold.

4.2 ISED results

According Table 1 in RSS-102, the SAR test exclusion power threshold is for 2450MHz is 4mW at ≤ 5 mm separation distance.

The maximum output power of the DUT is 2.51 mW thus it is below the test exclusion threshold.