




Test Report

Product	DAB+ receiver		
Name and address of the applicant	Nasjonal kommunikasjonsmyndighet Nygård 1, Postboks 93 4791 Lillesand, Norway		
Name and address of the manufacturer	Sahaga AS Kråkerøyveien 2 1671 Kråkerøy Norway		
Model	POPYourCAR		
Rating	5 V DC (USB power)		
Trademark	POPYourCAR		
Serial number	100.000.377		
Additional information	DAB+, Class E1, Automotive accessory Receiver Nkom ref. 1505303-32-649		
Tested according to	IEC 62104 Characteristics of DAB receivers		
Order number	305070		
Tested in period	2016.03.01 to 2016.03.07		
Issue date	2016.03.10		
Name and address of the testing laboratory	 Instituttveien 6 Kjeller, Norway	TEL: +47 22 96 03 30 FAX: +47 22 96 05 50	
			
	Prepared by [Bjørn Nordset]	Approved by [Frode Sveinsen]	
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1 INFORMATION

1.1 Tested Items

EUT Information	
Brand	POPYourCAR
Model number	POPYourCAR
Serial number	100.000.377
Antenna Connector	Intern or combined with 3.5mm earphone jack
Bluetooth	No

The EUT is a Class E1 Automotive accessory Receiver.

The EUT supports DAB+ at VHF Band III.

The EUT has USB, AUX, FM transmitter and various other functions which have not been tested here.

The EUT has been tested radiated with its internal antenna.

1.2 Test Environment

1.2.1 Normal test condition

Temperature:	21.9 – 23.7 °C
Relative humidity:	17.5 – 41.5 %
Normal test voltage:	12 V DC (via included USB adapter)

All testing has been carried out with a regulated external power supply.

The values are the limits registered during the test period.

1.3 Standards and Regulations

IEC 62104-2015: Characteristics of DAB receivers; Edition 3.0; 2015-07

1.4 Test Engineer(s)

Bjørn Nordset

1.5 Additional Information

1.5.1 Test methods

The test methods have been according to IEC 62104-2015 Edition 3.0 (2015-07).

The tested equipment has an internal antenna and a possibility of an external antenna via the 3.5mm audio connector. All tests were performed radiated with the internal antenna. All tests were performed on VHF Band III.

The tests were performed with a 96kbps DAB+ stream (gross data rate: 2.048 Mbps). Since we had no access to the bit-stream, the tests were performed by listening to the audio signal. For all tests the acoustic signal was defined as impairment free as long as the number of dropouts were less than three per ten seconds.

The Adjacent channel interferer was generated with the arbitrary generator of the BTC tester. The interferer waveform selected was "T-DMB_DAB_M1_V1_251".

1.5.2 Selection Criteria

Test performed in this report were selected by Nasjonal kommunikasjonsmyndighet.

1.5.3 Test Equipment

See list of test equipment in clause 5.

1.6 Other Comments



THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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2 TEST REPORT SUMMARY

2.1 Abbreviations

The following abbreviations are used in the test summary:

Complies The test results are inside the limits in IEC 62104
Not Compliant The test results are outside the limits in IEC 62104

2.2 Test Summary

	RF sensitivity
Test result	Not compliant

3 TEST RESULTS

3.1 RF sensitivity

IEC 62104 clause 7.4

Measured values

Receiver	Measured minimum sensitivity (dB μ V/m)		Verdict
	Channel 11A	Channel 13F	
Measured value	45.8	47.8	Not compliant
Limit	≤ 29.1 dB μ V/m	≤ 29.9 dB μ V/m	

Comment: This test was performed on VHF Band III channels 11A and 13F.

Limit Ch 7.5.6

Minimum requirement			
	Channel 11A	Channel 13F	
Type E2 receiver	≤ 29.1 dB μ V/m	≤ 29.9 dB μ V/m	VHF Band III

Calculated from the formula $S_f = 29,2 + 20 \cdot \log_{10}(f / 220)$

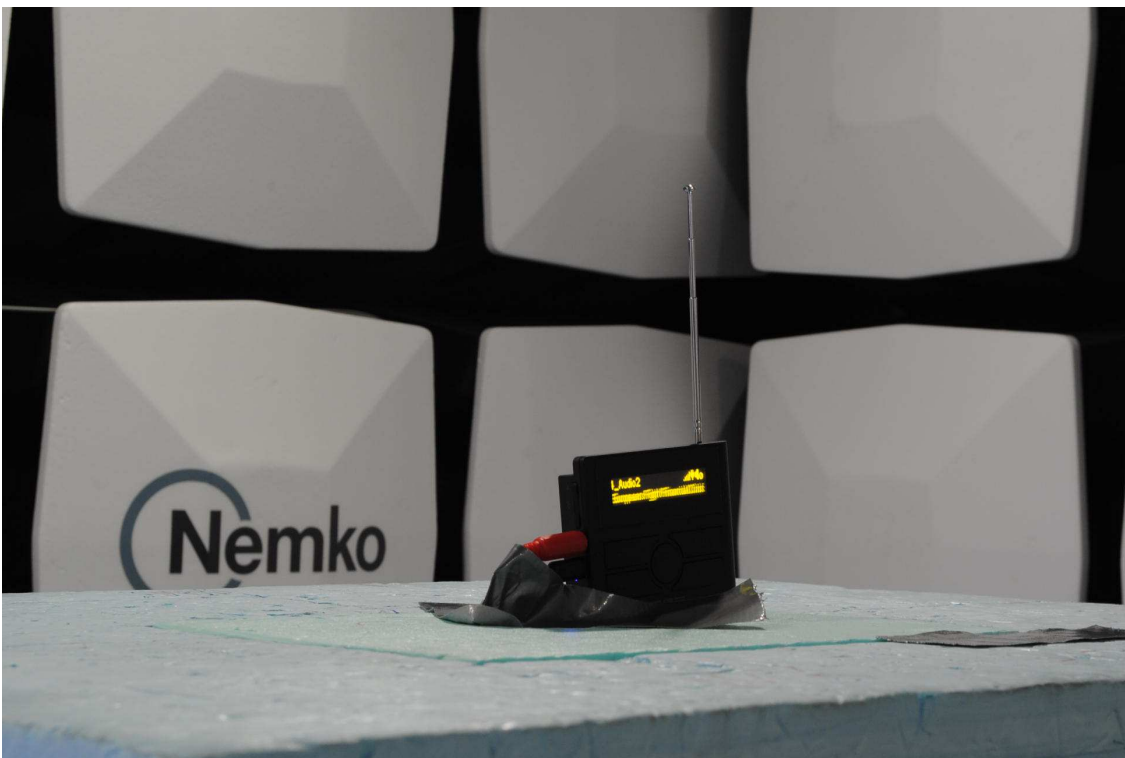
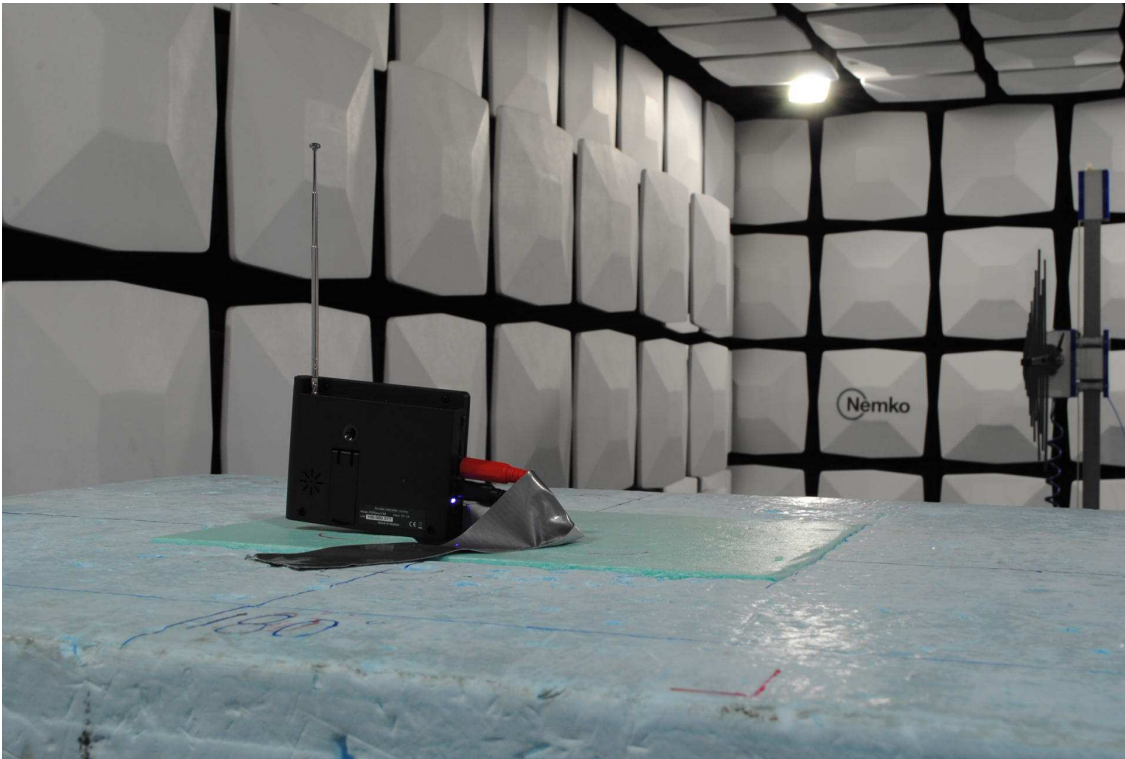
Test equipment used:1, 2, 3, 4, 5, 6....

3.2 Measurement Uncertainty

Measurement Uncertainty Values	
Test Item	Uncertainty
Maximum sensitivity radiated	+2.9 / -3.6 dB
Temperature Uncertainty	±1 °C

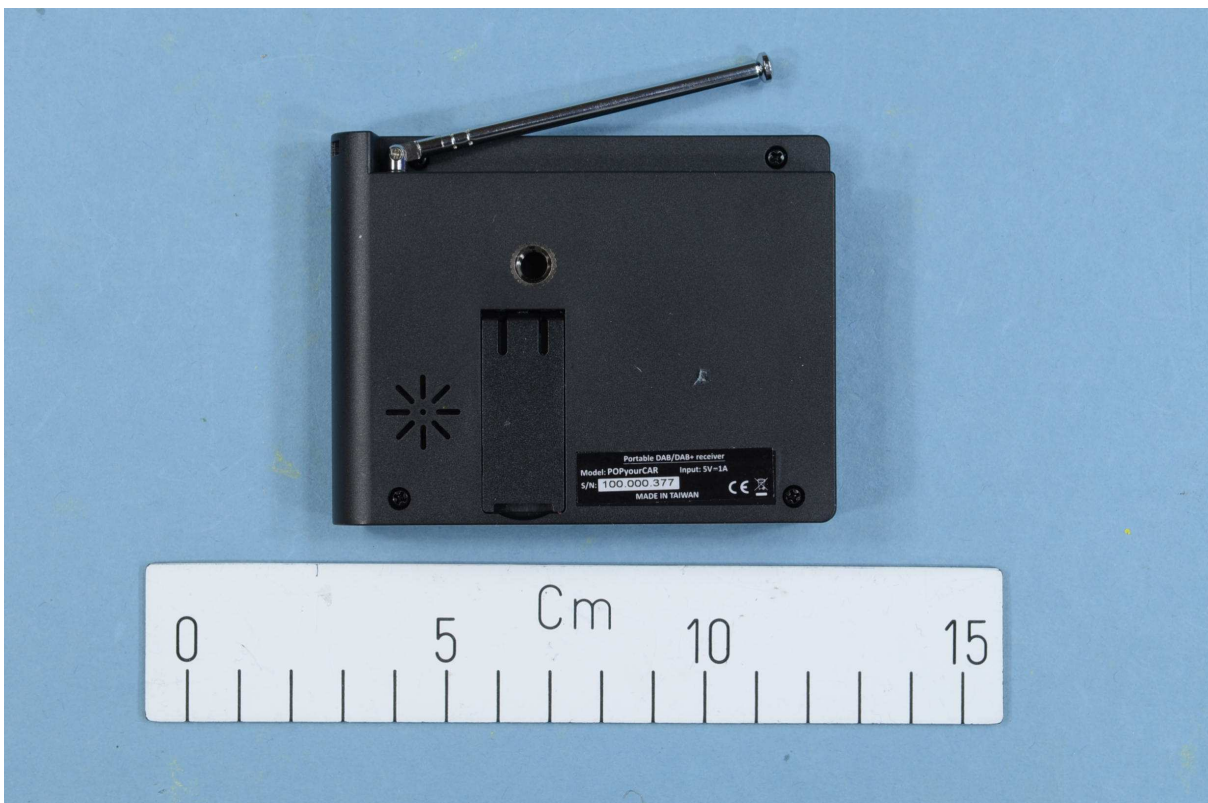
All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

4 Photos of the EUT



POPYourCar

5 Test Setup Photos



6 Test Equipment Used

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the testhouse.

No.	Instrument/ancillary	Type of instrument/ancillary	Manufacturer	Ref. no.	Cal Date	Cal Due
1	BTC	Broadcast Test Center	R&S	S.no.: 100138	Cal b4 use	
2	NRP-Z81	Wideband Power Sensor	R&S	LR 1644	2015-10	2016-10
3	Model 87 V	Multimeter	Fluke	LR 1597	2015-10	2016-10
4	B32-10R	Power Supply	Oltronics	LR 015	Cal b4 use	
5	Model 562	Noise Suppressor	Narda	LR 1527	Cal b4 use	
6	FSW26	Spectrum Analyzer	R&S	LR 1640	2015-11	2016-11

Revision history

Version	Date	Comment	Sign
1.0	2016.03.03	First edition	BN