WiMOD - iM88x

Application Note AN011 / Version 1.1

Range Test

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Version	Description
0.1	Preliminary version.
1.0	Released
1.1	Extended scope to iM880B. Renamed document to iM88x_AN011_RangeTest.doc

Aim of this Document

Aim of this document is to give an overview about the result of various range tests made with the SK-iM880x (iM880A and iM880B) and SK-iM881A (iM881A).

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1 Overview

Aim of this document is to give an overview about the result of various range tests made with the iM880x StarterKit SK-iM880x, see www.wireless-solution.de.

2 Range Tests

2.1 Test 7720 Meter

This range test was performed on a distance of 7.72 km near the cities Schaephuysen, Neukirchen-Vluyn and Kamp-Lintfort.

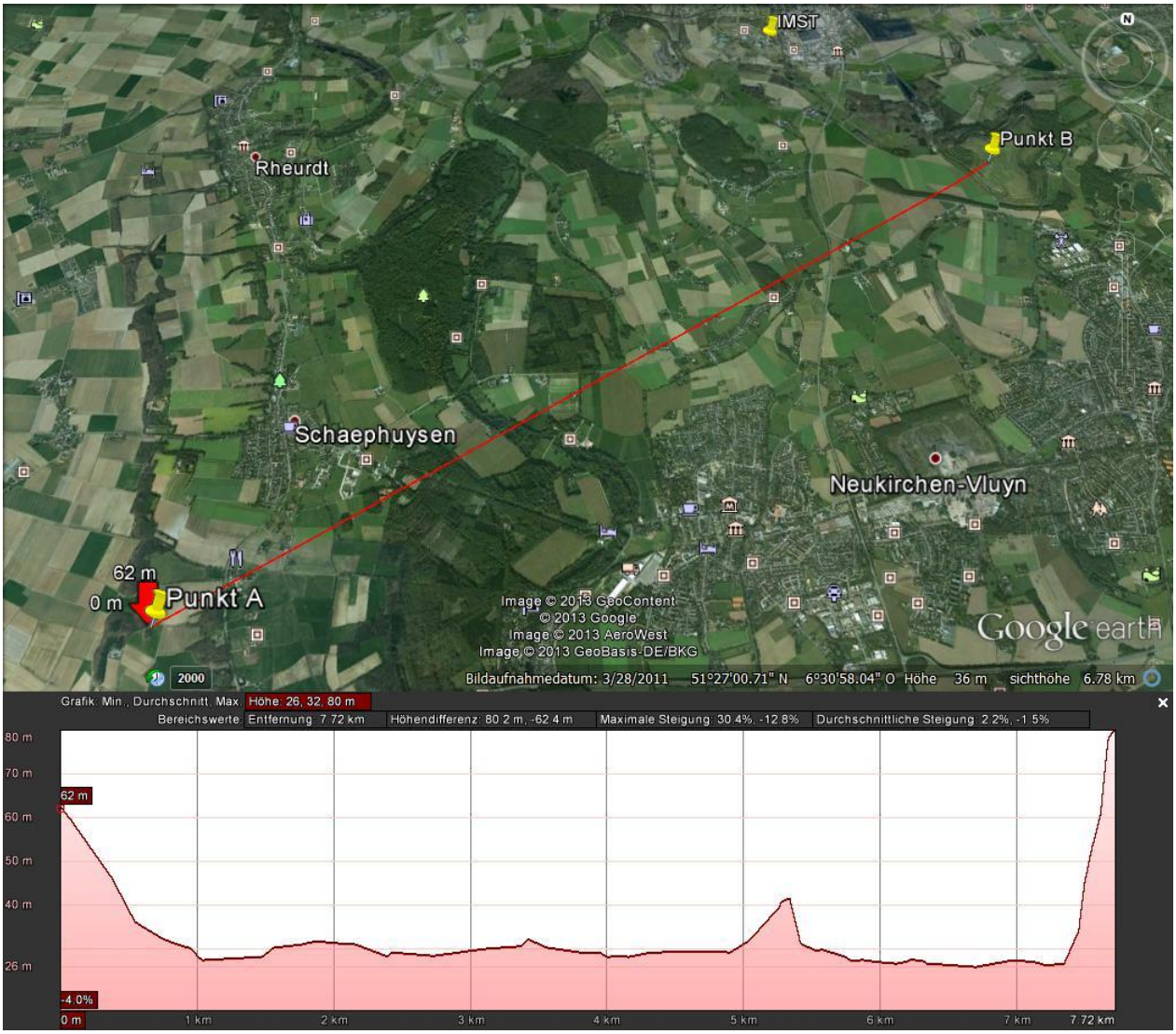

Figure 2-1: Distance and elevation profile between point A and B from Google Earth.

2.1.1 Settings

LoRa Signal Bandwidth: 125 kHz

Devices: iM880A_B101_Nr.1 @Point A; iM880A_B101_Nr.2 @Point B

Distance: 7,720 m

Frequency Band: 869.525 MHz

Payload: 22 Byte

2.1.2 Results

RF Power	Cyclic Coding Rate	Spreading Factor	PER [%]
+20 dBm	4/8	12	0.00
+20 dBm	4/8	7	0.00
+20 dBm	4/6	7	0.00

2-1: Results PER of the Range Test 7720 m with +20 dBm

RF Power	Cyclic Coding Rate	Spreading Factor	PER [%]
+14 dBm	4/8	12	0.00
+14 dBm	4/8	10	0.00
+14 dBm	4/8	7	0.00
+14 dBm	4/6	7	0.31
+14 dBm	4/5	7	0.35

2-2: Results PER of the Range Test 7720 m with +14 dBm

2.2 Test 12000 Meter

This range test was performed on a distance of 12 km near the cities Moers and Kamp-Lintfort.

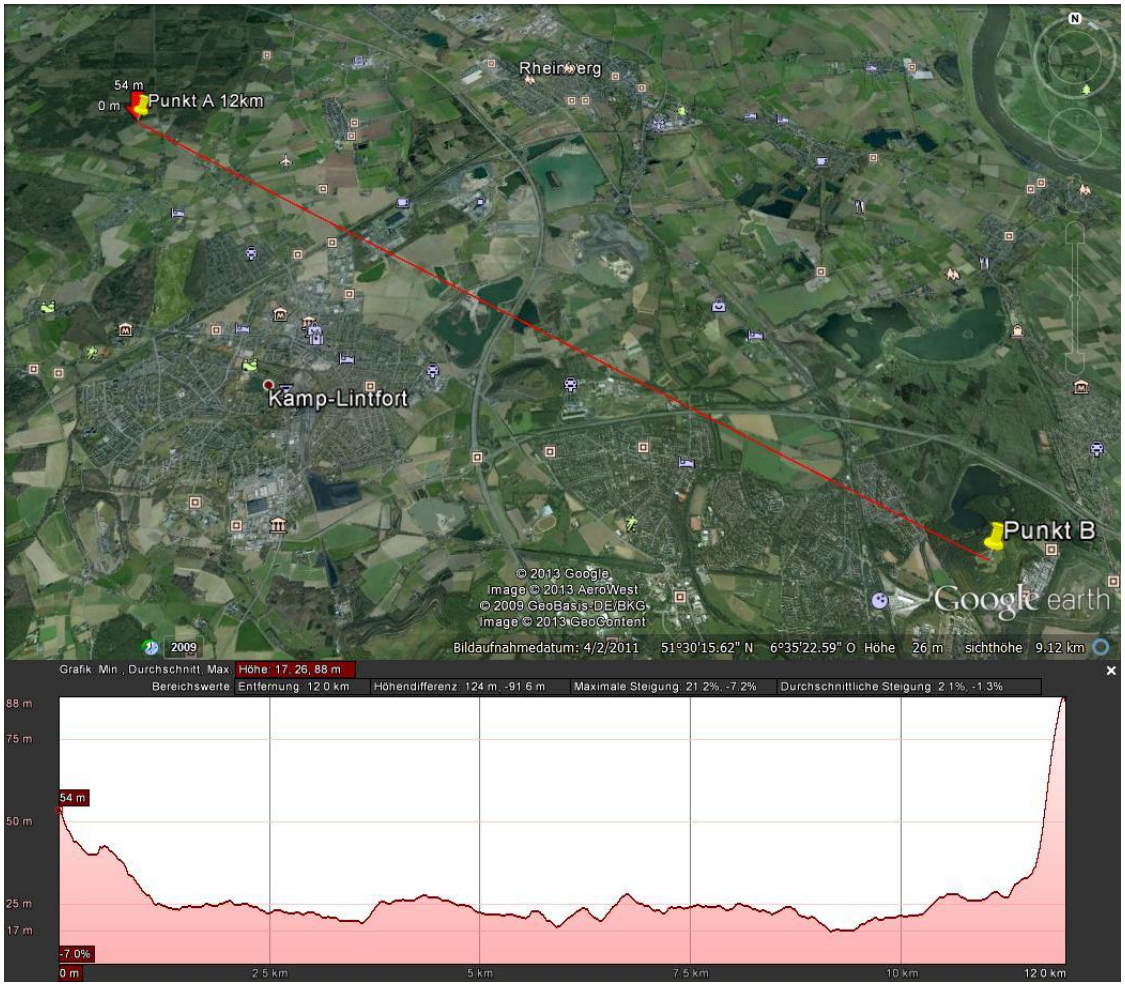

Figure 2-2: Distance and elevation profile between point A and B from Google Earth.

2.2.1 Results

RF Power	Cyclic Coding Rate	Spreading Factor	PER [%]
+20 dBm	4/8	12	0.00
+20 dBm	4/8	11	0.36
+20 dBm	4/8	10	0.65
+20 dBm	4/8	9	1.05
+20 dBm	4/8	8	4.67

2-3: Results PER of the Range Test 12000 m with +20 dBm

RF Power	Cyclic Coding Rate	Spreading Factor	PER [%]
+14 dBm	4/8	12	0.00
+14 dBm	4/8	11	0.00
+14 dBm	4/8	10	0.50
+14 dBm	4/6	9	6.37

2-4: Results PER of the Range Test 12000 m with +14 dBm

3 Appendix

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4 Regulatory Compliance Information

The use of radio frequencies is limited by national regulations. The radio module has been designed to comply with the European Union's R&TTE (Radio & Telecommunications Terminal Equipment) directive 1999/5/EC and can be used free of charge within the European Union. Nevertheless, restrictions in terms of maximum allowed RF power or duty cycle may apply.

The radio module has been designed to be embedded into other products (referred as "final products"). According to the R&TTE directive, the declaration of compliance with essential requirements of the R&TTE directive is within the responsibility of the manufacturer of the final product. A declaration of conformity for the radio module is available from IMST GmbH on request.

The applicable regulation requirements are subject to change. IMST GmbH does not take any responsibility for the correctness and accuracy of the aforementioned information. National laws and regulations, as well as their interpretation can vary with the country. In case of uncertainty, it is recommended to contact either IMST's accredited Test Center or to consult the local authorities of the relevant countries.

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