4 TEST CONDITIONS AND RESULTS

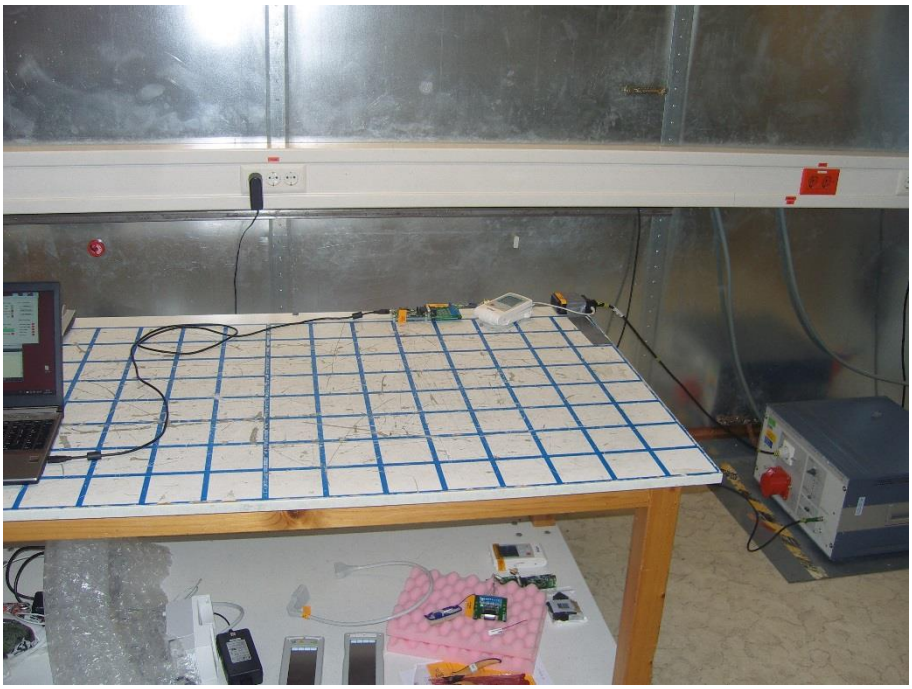
4.1 AC power line conducted emissions

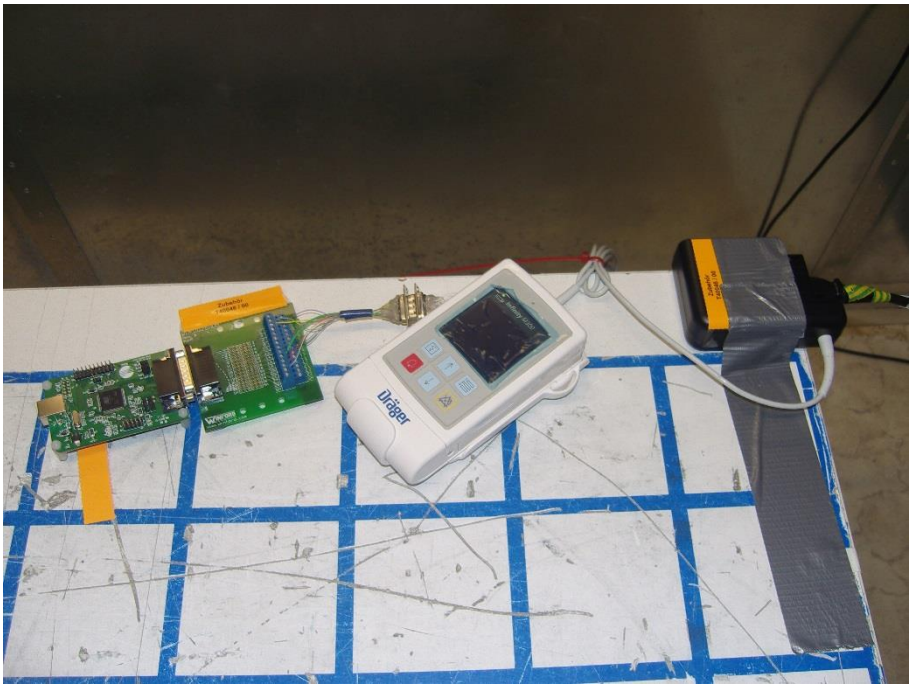
For test instruments and accessories used see section 6 Part **A 4**.

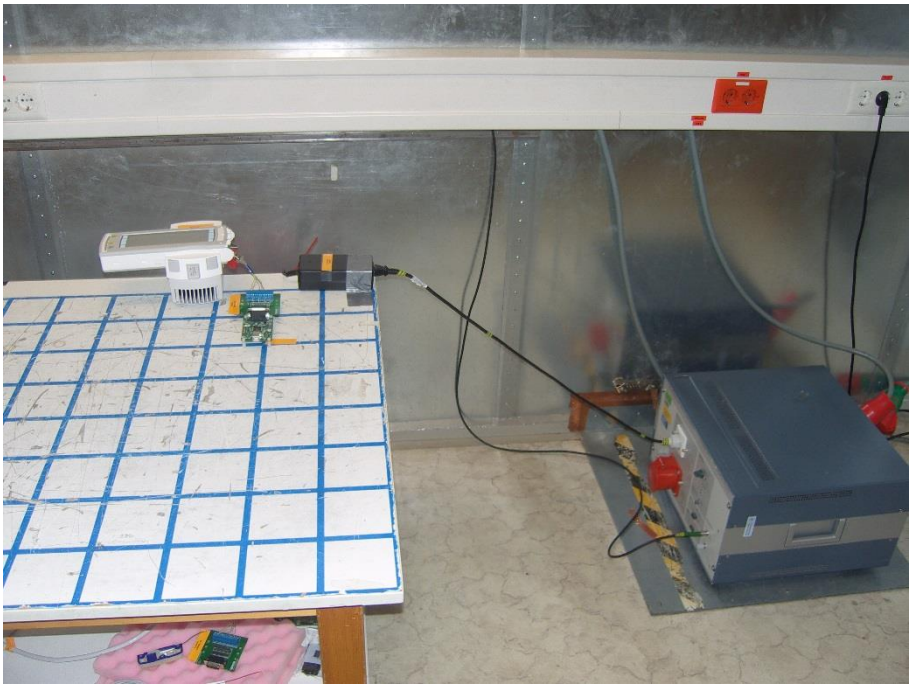
4.1.1 Description of the test location

Test location: Shielded Room S2

4.1.2 Photo documentation of the test set-up







Note: In the charger WLAN is not available.

4.1.3 Applicable standard

According to FCC Part 15, Section 15.207(a):
Except as shown in paragraphs (b) and (c) of this Section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the given limits.

4.1.4 Description of Measurement

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

4.1.5 Test result

Frequency range:	0.15 MHz - 30 MHz
Min. limit margin	23.5 dB at 25.050 MHz

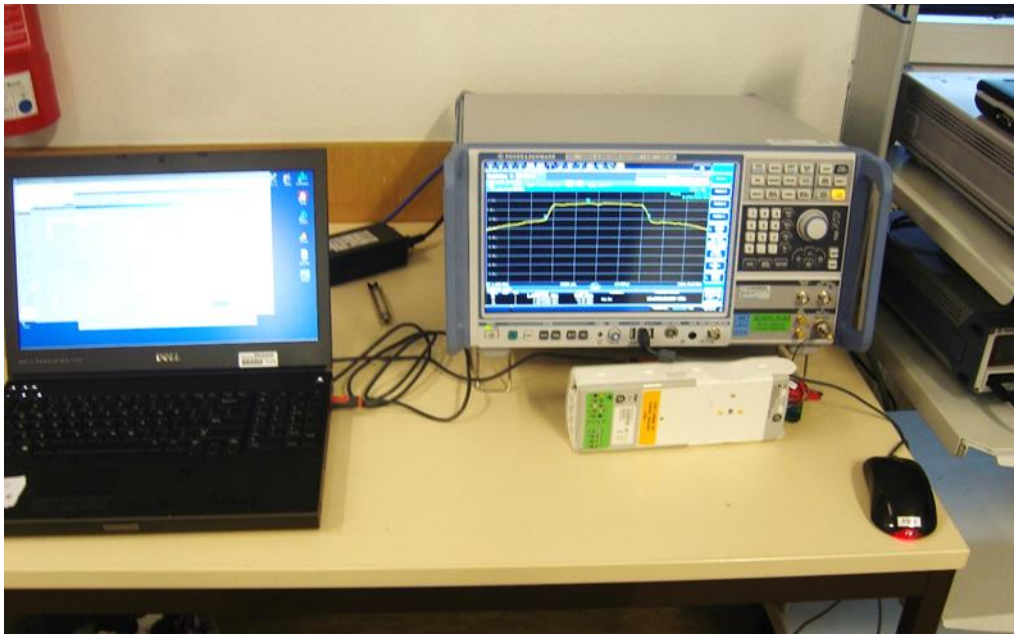
4.2 EBW and OBW

For test instruments and accessories used see section 6 Part **MB**.

4.2.1 Description of the test location

Test location: AREA4

4.2.2 Photo documentation of the test set-up



4.2.3 Applicable standard

According to FCC Part 15, Section 15.247(a)(2):
Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 – 2483.5 MHz and 5725 – 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

4.2.4 Description of Measurement

The bandwidth was measured at an amplitude level reduced from the reference level of a modulated channel by a ratio of -6 dB. The reference level is the level of the highest signal amplitude observed at the transmitter at either the fundamental frequency or the first order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical. An alternative is to use the bandwidth measurement of the analyser.

Spectrum analyser settings for EBW:
RBW: 100 kHz, VBW: 300 kHz, Detector: Max peak, Sweep time: 5 s, Span: 2 EBW;
Spectrum analyser settings for OBW:
RBW: 1-5% OBW, VBW: 3 RBW, Detector: Max peak, Sweep time: 5 s, Span: 2 OBW;

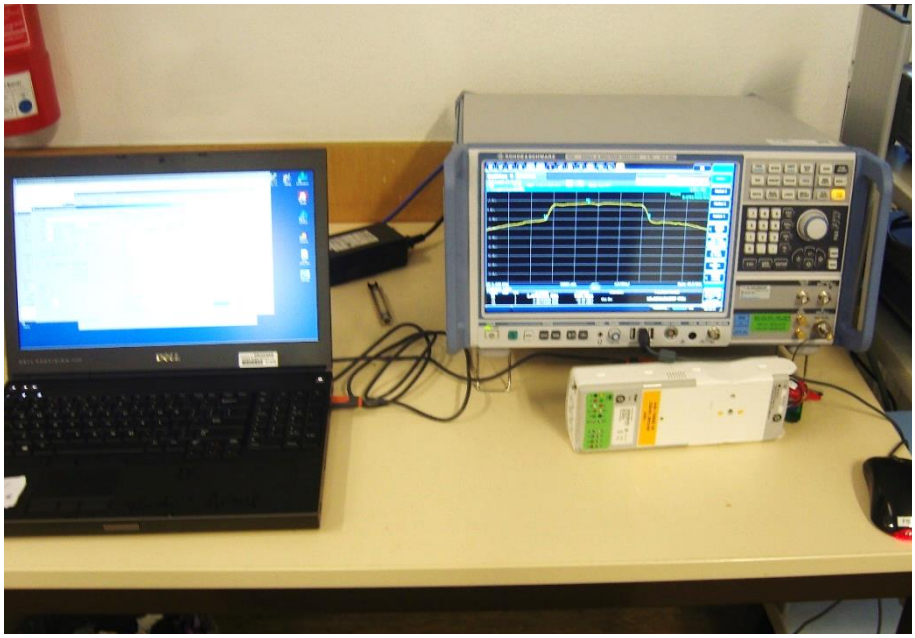
4.3 Maximum peak conducted output power

For test instruments and accessories used see section 6 Part **CPC 3**.

4.3.1 Description of the test location

Test location: AREA4

4.3.2 Photo documentation of the test set-up



4.3.3 Applicable standard

According to FCC Part 15, Section 15.247(b)(3):
For systems using digital modulation in the 2400 – 2483.5 MHz and 5725 – 5850 MHz bands, the maximum peak output power of the transmitter shall not exceed 1 Watt. The limit is based on transmitting antennas of directional gain that do not exceed 6 dBi.

4.3.4 Description of Measurement

The maximum peak conducted output power is measured using a spectrum analyser following the procedure set out in KDB 558074, item 9.1.1. The EUT is set in TX continuous mode while measuring.

4.3.5 Test result

WLAN Standard 802.11b

802.11b, 1 Mbps, 1 TX, P18		Test results conducted		
Duty cycle: 100%				
		A [Pmax] (dBm)	Limit (dBm)	Margin (dB)
Lowest frequency: CH1				
T_{nom}	V_{nom}	20.7	30.0	-9.3
Middle frequency: CH6				
T_{nom}	V_{nom}	20.5	30.0	-9.5
Highest frequency: CH11				
T_{nom}	V_{nom}	20.7	30.0	-9.3

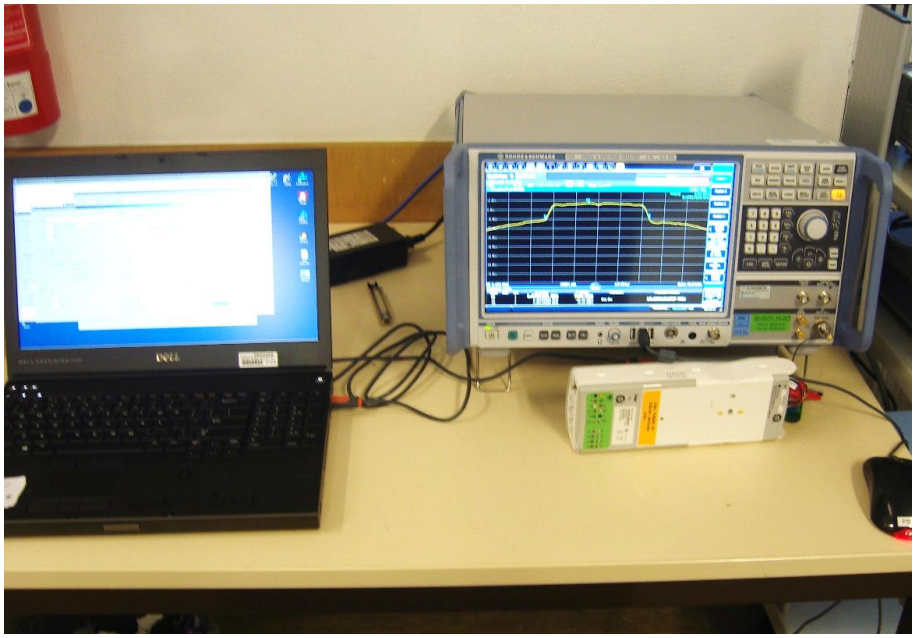
4.4 Power spectral density

For test instruments and accessories used see section 6 Part **CPC 3**.

4.4.1 Description of the test location

Test location: AREA4

4.4.2 Photo documentation of the test set-up



4.4.3 Applicable standard

According to FCC Part 15, Section 15.247(e):
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

4.4.4 Description of Measurement

The measurement is performed using the procedure 10.2 set out in KDB-558074. The power measurement was done as peak power measurement. Therefore the PKPSD is measured. The max peak was located and with the spectrum analyser and a marker set to peak.

Spectrum analyser settings:
RBW: 3 kHz, VBW: 10 kHz, Detector: Peak, Sweep time: 10 s,

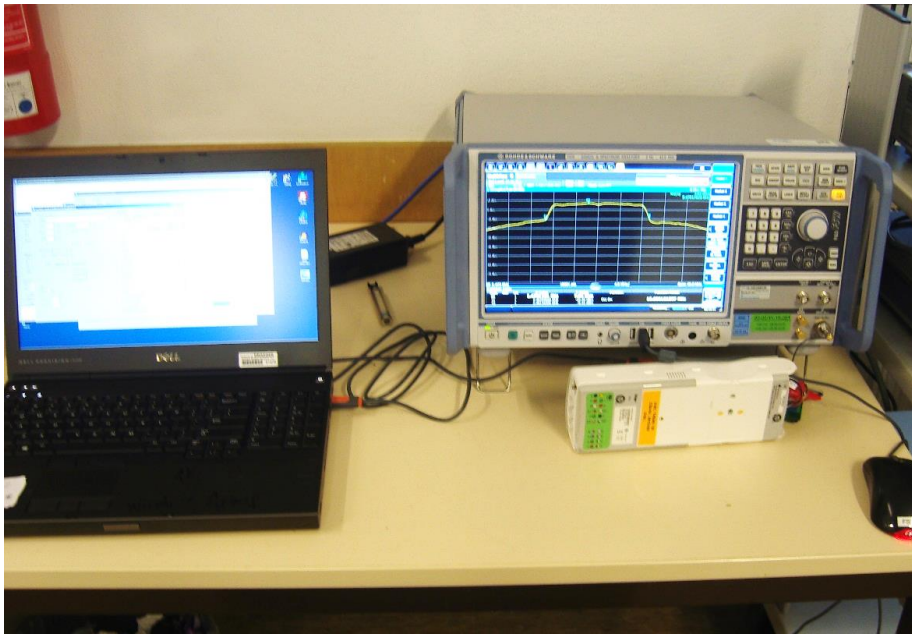
4.5 Unwanted emissions, conducted

For test instruments and accessories used see section 6 Part **SEC 2** and **SEC 3**.

4.5.1 Description of the test location

Test location: AREA4

4.5.2 Photo documentation of the test set-up



4.5.3 Applicable standard

According to FCC Part 15, Section 15.247(d):
In any 100 kHz bandwidth outside the frequency bands 2400 – 2483.50 MHz and 5725 – 5850 MHz, the digitally modulated radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or an radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limit specified in Section 15.209(a) (see Section 15.205(c)).

4.5.4 Description of measurement

The spurious emissions are measured conducted using a spectrum analyser in a test setup following the procedures set out in KDB 558074 for DTS. The transmitter is set to the lowest operating frequency (CH1), the middle (CH6) and to the highest operating frequency (CH11). The frequency spectrum outside from the operating frequency range (2400 - 2483.5 MHz) is scanned for emissions that exceed the limit. The measurement is performed at normal test conditions in modulated TX continuous mode.

Spectrum analyser search setting:
RBW: 100 kHz, VBW: 300 kHz, Detector: Max peak, Trace Mode: Max hold, Sweep time: 1 s

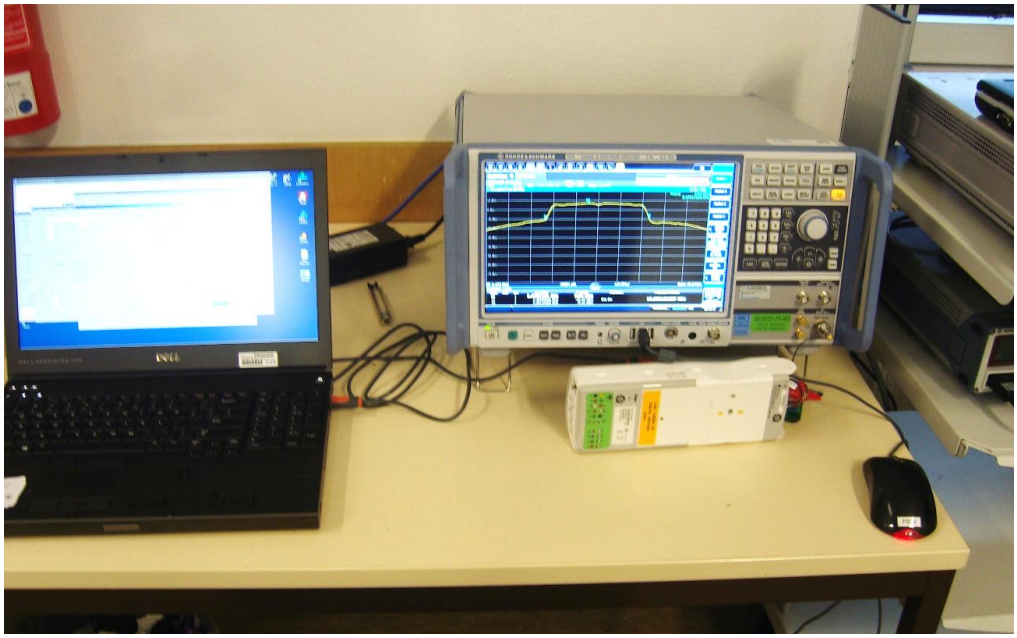
4.6 Band edge compliance

For test instruments and accessories used see section 6 Part **SEC3**.

4.6.1 Description of the test location

Test location: AREA4

4.6.2 Photo documentation of the test set-up



4.6.3 Applicable standard

According to FCC Part 15C, Section 15.247(d):
In any 100 kHz bandwidth outside the frequency bands 2400 – 2483.5 MHz and 5725 – 5850 MHz, the digitally modulated radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or an radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

4.6.4 Description of Measurement

A spectrum analyser is connected to the output of the transmitter via a suitable attenuator while EUT was operating in transmit mode at the assigned frequency according OET 558074, 05/6/2014, Item 13.3.1.

Spectrum analyser settings:
RBW: 100 kHz, VBW: 300 kHz, Detector: Max peak, Trace: Max hold, Sweep: auto

4.7 Unwanted emissions in restricted bands, cabinet radiation

For test instruments and accessories used see section 6 Part **SER 2, SER 3**.

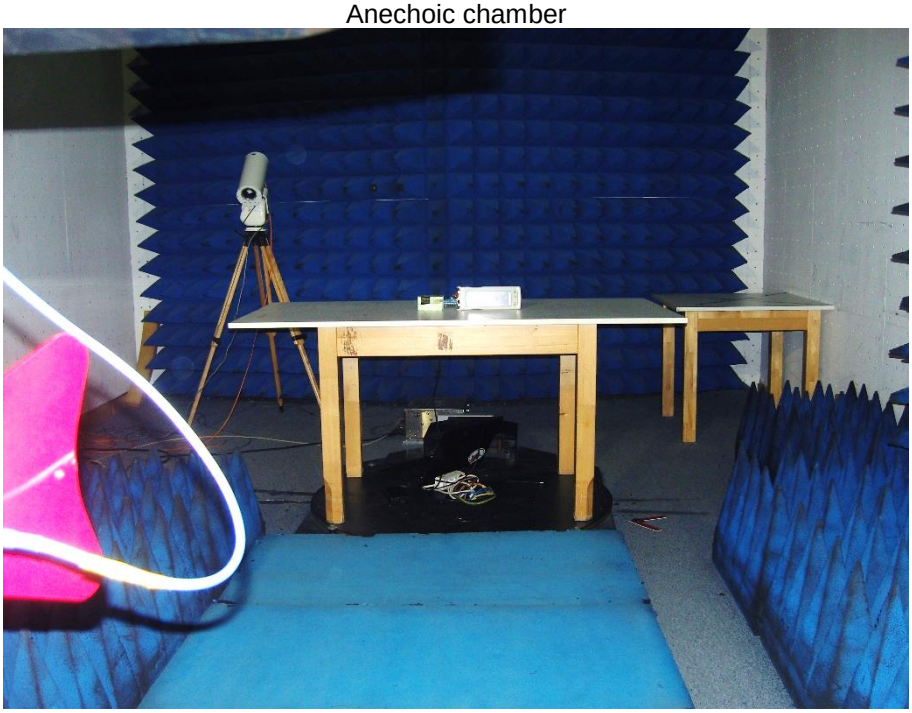
4.7.1 Description of the test location

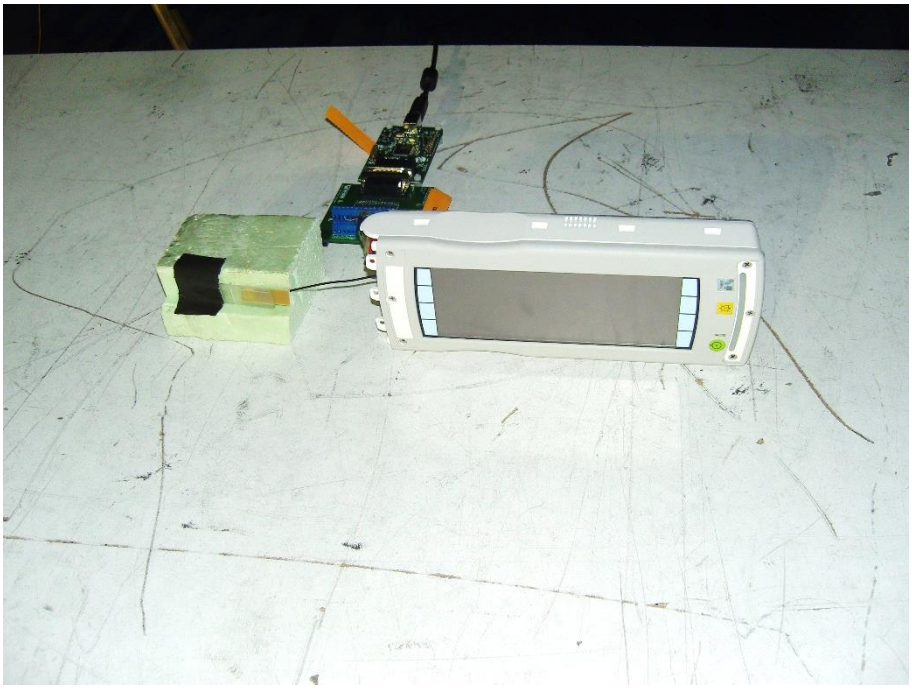
Test location: OATS 1
Test distance: 3 m
Test location: Anechoic chamber 2
Test distance: 3 m

4.7.2 Photo documentation of the test set-up

OATS1

Anechoic chamber





According to FCC Part 15, Section 15.205(a):
In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limit specified in Section 15.209(a).

4.7.3 Description of Measurement

The restricted bands are measured radiated. The span of the spectrum analyser is set wide enough to capture the restricted band and measure the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation. The restricted bands are measured falling emissions into it and the nearest restricted band are checked for emissions also the restricted band for the harmonics of the carrier.

Spectrum analyser settings:

9 kHz – 150 kHz	RBW: 200 Hz
150 kHz - 30 MHz	RBW: 9 kHz
30 MHz – 1000 MHz:	RBW: 120 kHz
1000 MHz – 25 GHz:	RBW: 1 MHz, VBW: 3 MHz, Sweep: Auto, Detector function: Peak

4.7.1 Test result

WLAN Standard 802.11b

9 kHz < f < 30 MHz
In this frequency range only noise floor could be measured.

30 MHz < f < 1 GHz

Frequency (MHz)	Reading Vert. (dBµV)	Reading Hor. (dBµV)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dBµV/m)	Level Hor. (dBµV/m)	Limit (dBµV/m)	Dlimit (dB)
383.95	17.7	25.0	19.1	18.7	36.8	43.7	46.0	-2.3
479.97	2.0	7.2	21.7	21.5	23.7	28.7	46.0	-17.3
576.00	8.6	6.9	24.6	24.1	33.2	31.0	46.0	-12.8
661.44	1.2	0.6	26.4	25.8	27.6	26.4	46.0	-18.4