EUT: Microwave Moisture and Density Measuring System MW-T
FCC ID: 2AAX7MWT

Date of issue: 2013-11-28

Deutsche Akkreditierungsstelle D-PL-12053-01-01

Test Report acc. to FCC Title 47 CFR Part 15 relating to TEWS Elektronik GmbH & Co. KG Microwave Moisture and Density Measuring System MW-T

Title 47 - Telecommunication
Part 15 - Radio Frequency Devices
Subpart C – Intentional Radiators
Measurement Procedure:
ANSI C63.4-2009

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

Manufacturer's details	
Manufacturer	TEWS Elektronik GmbH & Co. KG
Manufacturer's grantee code	**2AAX7**
Manufacturer's address	TEWS Elektronik GmbH & Co. KG
	Sperberhorst 10
	22459 Hamburg
	Germany
	+49 (0) 40 55 59 11 53
	+49 (0) 40 552 57 59
	stephan.eichner@tews-elektronik.com
Relevant standard used	47 CFR Part 15C - Intentional Radiators
	ANSI C63.4-2009

Test Report prepared by	
Technical engineer	Ralf Trepper
	m. dudde hochfrequenz-technik (laboratory)
	Rottland 5a
	51429 Bergisch Gladbach
	Germany
	Phone: +49 2207 96890
	Fax: +49 2207 968920
	Email: m.duddelabor@dudde.com

Equipment **U**nder **T**est **(EUT)**	
Equipment category	Indoor UWB System
Trade name	TEWS
Type designation	**Microwave Moisture and Density Measuring System MW-T**
Serial no.	---
Variants	---

1. Test result summary

Clause	Requirements headline	Test result			Report page number
8.1	General requirements	**Pass**	~~Fail~~	~~N.t.*~~	9
8.2	Conducted limits	**Pass**	~~Fail~~	~~N.t.*~~	10 to 12
8.3	Radiated emissions at or below 960 MHz	**Pass**	~~Fail~~	~~N.t.*~~	13 to 19
8.4	Radiated emissions above 960 MHz	**Pass**	~~Fail~~	~~N.t.*~~	20 to 26
8.5	Bandwidth (-10 dB)	**Pass**	~~Fail~~	~~N.t.*~~	27 to 28

* Not tested

The equipment passed the conducted tests	**Yes**	~~No~~

Signature: ..... (Technician)

Signature: ..... (Laboratory-Manager)

Morsbach Bergisch Gladbach 2014.07.22 09:32:30 +02'00'

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

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m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

2. Introduction

This test report consists of:

- Test result summary
- List of contents
- Introduction and further information
- Performance assessment
- Detailed test information

All pages have been numbered consecutively and bear the m. dudde hochfrequenz-technik logo, the test report number, the date, the test specification in its current version as well as the type designation of the EUT. The total number of pages in this report is **30**.

The tests were carried out at:

- m. dudde hochfrequenz-technik, D-51429 Bergisch Gladbach

in a representative assembly and in accordance with the test methods and/or requirements stated in:

FCC Title 47 CFR Part 15 Subpart C & ANSI C63.4-2009

The sample of the product was received on:

- 2013-09-04

The tests were carried out in the following period of time:

- 2013-09-04 - 2013-10-11

3. Testing laboratory

m. dudde hochfrequenz-technik
Rottland 5a, 51429 Bergisch Gladbach, Germany

Phone: +49 - (0) 22 07 / 96 89-0
Fax: +49 - (0) 22 07 / 96 89-20

- FCC Registration Number: **699717**

Accredited by:

DAkkS Deutsche Akkreditierungsstelle GmbH
DAkkS accreditation number: D-PL-12053-01

4. Applicant

Company name	: TEWS Elektronik GmbH & Co. KG
Address	: Sperberhorst 10
	22459 Hamburg
Country	: Germany
Telephone	: +49 (0) 40 55 59 11 53
Fax	: +49 (0) 40 552 57 59
Email	: stephan.eichner@tews-elektronik.com
Date of order	: 2013-08-28
References	: Mr. Stephan Eichner

5. Product and product documentation

Samples of the following apparatus were submitted for testing:

Manufacturer	: TEWS Elektronik GmbH & Co. KG
Trademark	: TEWS
Type designation	: **Microwave Moisture and Density Measuring System MW-T**
Serial number	: ---
Hardware versions	: ---
Variants	: ---
Software release	: ---
Type of equipment	: Indoor UWB System
Power used	: 110 V AC
Frequency band used	: 3100 MHz to 10,600 MHz
Generated or used frequencies	: 3100 MHz to 6000 MHz (carrier)
ITU emission class	: 2G86 F0N
FCC ID	: 2AAX7MWT

For issuing this report the following product documentation was used:

Description	Date	Identifications
External photographs of the **E**quipment **U**nder **T**est (EUT)	2013-11-28	Annex no. 1
Internal photographs of the **E**quipment **U**nder **T**est (EUT)	2013-11-28	Annex no. 2
Channel occupancy / bandwidth	2013-11-28	Annex no. 3
Label sample	2013-11-28	Annex no. 4
Functional description / User manual	2013-11-28	Annex no. 5
Test setup photos	2013-11-28	Annex no. 6
Block diagram	---	Annex no. 7
Operational description	2013-11-28	Annex no. 8
Schematics	---	Annex no. 9
Parts list	2013-11-28	Annex no. 10
Antenna characteristics / Antenna description	2013-11-28	Annex no. 11

6. Conclusions, observations and comments

The test report will be filed at m. dudde hochfrequenz-technik for a period of 10 years following the issue of this report. It may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of m. dudde hochfrequenz-technik.

The results of the tests as stated in this report are exclusively applicable to the EUT as identified in this report. m. dudde hochfrequenz-technik cannot be held liable for properties of the EUT that have not been observed during these tests.

m. dudde hochfrequenz-technik assumes the sample to comply with the requirements of FCC Title 47 CFR Part 15, for the respective test sector, if the test results turn out positive.

Comments: ---

Date	: 2013-11-28	Date	: 2013-11-28
Name	: Ralf Trepper	Name	: Manfried Dudde
Function	: Technician	Function	: Laboratory Manager
Signature	:	Signature	:

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

7. Operational description

7.1 EUT details

The microwave transmission instrument MW-T allows non-contact measuring of core moisture irrespective of product density.

MW-T has connectors for two antennas which mount on either side of the product to be measured. The sending antenna will emit microwaves to go through the product and be picked up by the receiving antenna. The electronic control instrument of MW-T analyzes the signal received and uses it to calculate the moisture and density of the product under analysis.

The microwave transmission instrument MW-T is meant to be used in dry rooms. It must not be used outdoors.

7.2 EUT configuration

The MW-T is designed to be mounted at a wall. In particular, the control cabinet cannot be operated while standing.
If the outer plugs are not plugged in, in any case, while in operation or during storage and transport, the safety caps should be fastened. Only in this way the guaranteed protection for the control cabinet can be maintained, as well as preventing the plugs from becoming dirty. No harsh cleaning products, or those containing solvents, may be used to clean the MW-T.

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

8.1 General requirements

8.1.1 Regulation

(a) Operation under the provisions of this section is limited to UWB transmitters employed solely for indoor operation.

(1) Indoor UWB devices, by the nature of their design, must be capable of operation only indoors. The necessity to operate with a fixed indoor infrastructure, e.g., a transmitter that must be connected to the AC power lines, may be considered sufficient to demonstrate this.

(2) The emissions from equipment operated under this section shall not be intentionally directed outside of the building in which the equipment is located, such as through a window or a doorway, to perform an outside function, such as the detection of persons about to enter a building.

(3) The use of outdoor mounted antennas, e.g., antennas mounted on the outside of a building or on a telephone pole, or any other outdoors infrastructure is prohibited.

(4) Field disturbance sensors installed inside of metal or underground storage tanks are considered to operate indoors provided the emissions are directed towards the ground.

(5) A communications system shall transmit only when the intentional radiator is sending information to an associated receiver.

(b) The UWB bandwidth of a UWB system operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

8.1.2 Result

The equipment meets the requirements	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Annex no. 11

Dedicated antennas

N.t.* See page no. 29

8.2 Conducted limits

8.2.1 Regulation

(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 limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission(MHz)	**Conducted limit (dBµV)**	
	Quasi-peak	**Average**
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 -30	60	50

*Decreases with the logarithm of the frequency

(b) The shown limit in paragraph (a) of this Section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 µV within the frequency band 535-1705 kHz, as measured using a 50 µH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in Section 15.205 and Section 15.209, 15.221, 15.223, 15.225 or 15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

8.1.2 Test equipment

Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
V-LISN 50 ohms//(50 uH+5 ohms)	EMCO (49b)	9512-1227	07/2011	07/2014	Dudde
V-LISN 50 ohms//(50 uH+5 ohms)	RFT NNB 11 (72)	13835240	08/2013	08/2016	Dudde
Protector limiter 9 kHz - 30MHz 10 dB	Rhode & Schwarz ESH 3Z2 (272)	357,881052	02/2013	02/2015	Dudde
Receiver (9 kHz - 30MHz)	Schwarzbeck FMLK 1518 (428)	1518294 9360	09/2013	09/2016	Schwarzbeck
Panorama- Monitor FMLK / VUMA	PAZ1550 (429)	---	---	---	---
RF- cable	Aircell 1.5m [BNC/N]	K30	04/2013	04/2014	Dudde

8.2.3 Test procedures

The EUT and the additional equipment (if required) are connected to the main power through a line impedance stabilization network (LISN). The LISN must be appropriate to ANSI C63.4-2009 Section 7.
Additional equipment must also be connected to a second LISN with the same specifications described in the above sentence (if required).

8.2.4 Result

Tested on the AC power port

Conducted emissions (Section 15.207)						
Tested line	Emission frequency	Receiver bandwidth	Result Quasi-peak	Spec Limit Average	Margin	Remarks
	MHz	kHz	dBµV	dBµV	dB	
L1	0.181	9	≤ -2	55.8	57.8	*[1]
N	0.181	9	≤ -2	55.8	57.8	*[1]
L1	0.301	9	≤ -2	51.7	53.7	*[1]
N	0.301	9	≤ -2	51.7	53.7	*[1]
L1	0.475	9	≤ -2	47	49.0	*[1]
N	0.475	9	≤ -2	47	49.0	*[1]
L1	0.600	9	≤ -2	46	48.0	*[1]
N	0.600	9	≤ -2	46	48.0	*[1]
L1	0.775	9	≤ -2	46	48.0	*[1]
N	0.775	9	≤ -2	46	48.0	*[1]
L1	0.850	9	≤ -2	46	48.0	*[1]
N	0.850	9	≤ -2	46	48.0	*[1]
L1	1.000	9	≤ -2	46	48.0	*[1]
N	1.000	9	≤ -2	46	48.0	*[1]
L1	1.254	9	≤ -2	46	48.0	*[1]
N	1.254	9	≤ -2	46	48.0	*[1]
L1	2.000	9	≤ -2	46	48.0	*[1]
N	2.000	9	≤ -2	46	48.0	*[1]
L1	4.000	9	≤ -2	46	48.0	*[1]
N	4.000	9	≤ -2	46	48.0	*[1]
L1	6.7644	9	≤ -2	50	52.0	*[1]
N	6.7644	9	≤ -2	50	52.0	*[1]
L1	13.5288	9	≤ -2	50	52.0	*[1]
N	13.5288	9	≤ -2	50	52.0	*[1]
Measurement uncertainty: < ± 2 dB						

Remark: *[1] Noise level of the measuring instrument ≤ -2 dBµV (0.009 – 30MHz)
Remark: *[2] Quasi peak measurements lower than "Specified Average Limit"

The equipment passed the conducted tests	**Yes***	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.

*** Tested also on the LAN port and USB port via Notebook HP Compaq NX 6325 S/N: CN46907YN**

N.t.* See page no. 29

8.3 Radiated emissions at or below 960 MHz

8.3.1 Regulation

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

(e) The provisions in §§ 15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

(f) In accordance with Section 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. lf measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in Section 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in Section 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in Section 15.109 that are applicable to the incorporated digital device.

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

8.3.2 Test equipment

Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
Test fixture	Dudde	---	03/2013	03/2014	Dudde
Magnetic loop antenna (9 kHz - 30 MHz)	Schwarzbeck FMZB 1516 (23)	---	05/2013	05/2016	Dudde
OATS	Dudde (104)	---	10/2012	10/2014	Dudde
Pre-amplifier (100kHz - 1.3GHz)	Hewlett Packard 8447 E (166a)	1726A00705	01/2012	01/2014	Dudde
Horn antenna (2.0-14.0 GHz)	Schwarzbeck BBHA 9120 C (169)	305	09/2012	09/2015	Dudde
Mixer WR15 V-Band (50-75 GHz)	OM Labs MA2744A (295a)	V41027-1	03/2013	03/2016	Dudde
Mixer WR22 Q-Band (33-50 GHz)	OM Labs MA2742A (269a)	Q40512-1	03/2013	03/2016	Dudde
Mixer WR10 W-Band (75-110 GHz)	OM Labs MA2746A (296a)	W40706-2	03/2013	03/2016	Dudde
Pre-amplifier (1GHz - 18GHz)	Narda (345)	---	01/2012	01/2014	Dudde
Receiver (9 kHz –40.0 GHz) (40.0 GHz -110 GHz)	Anritsu Spectrum Analyzer MS2668 (359a)	6200163244	05/2011	05/2014	Rohde & Schwarz
Gain Horn antenna (33-50 GHz)	Dorado GH-22-25 (383)	040810	04/2012	04/2015	Dorado
Gain Horn antenna (50-75 GHz)	Dorado GH-15-25 (384)	031003	04/2012	04/2015	Dudde
Gain Horn antenna (75-110 GHz)	Dorado GH-10-25 (385)	040808	04/2012	04/2014	Dudde
Bilog antenna (30- 1000 MHz)	Schwarzbeck VULP 9168 (406)	---	04/2011	04/2014	Schwarzbeck
Logt. Per, Antenne (1- 18 GHz)	Schwarzbeck STLP 9148 (445)	---	09/2012	09/2015	Schwarzbeck
Horn antenna (15.0-40.0 GHz)	Schwarzbeck BBHA 9170 (442)	BBHA9170378	09/2011	09/2014	Schwarzbeck
Harmonic Mixer E-Band 60-90 GHz	Rohde & Schwarz FSZ-90 (501)	100062	03/2013	03/2016	Rohde & Schwarz
Signal Analyzer (9 kHz –30.0 GHz)	Rohde & Schwarz FSV 30 (502)	100932	02/2013	02/2016	Rohde & Schwarz
Harmonic Mixer U-Band (40-60 GHz)	Farran FSZ-60 (515)	100037	03/2013	03/2016	Farran
Gain Horn antenna (40-60 GHz)	Dorado GH-19-20 (518)	070106	03/2013	03/2016	Dudde
RF- cable	Kabelmetal 18m [N]	K1a	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 2m [APC]	K17a	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 2m [APC]	K18a	03/2013	03/2014	Dudde
RF- cable	Aircell 0.5m [BNC]	K40	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 Suhner [N] 1 m	K52	03/2013	03/2014	Dudde
RF- cable	Aircell 1m [BNC/N]	K56	03/2013	03/2014	Dudde
RF- cable	Sucoflex 100 Suhner [N] 1 m	K61	03/2013	03/2014	Dudde
RF- cable	Sucoflex 106 Suhner 6,4m [N]	K74	03/2013	03/2014	Dudde

EUT: Microwave Moisture and Density Measuring System MW-T
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Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
RF- cable	Sucoflex 106 Suhner 6,4m [N]	K75	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 13 m [N]	K144	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K145	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K146	03/2013	03/2014	Dudde

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

8.3.3 Test procedure

The EUT and this peripheral (when additional equipment exists) are placed on a turn table which is 0.8 m above the ground. The turn table would be allowed to rotate 360 degrees to determine the position of the maximum emission level. The test distance between the EUT and the receiving antenna are 3m. To find the maximum emission, the polarization of the receiving antenna is changed in horizontal and vertical polarization; the position of the EUT was changed in different orthogonal determinations.

ANSI C63.4-2009 Section 8 “Radiated Emissions Testing”

Measurement procedures for electric field radiated emissions above 1 GHz are covered in Clause 8 of ANSI C63.4-2009. The ANSI C63.4-2009 measurement procedure consists of both an exploratory test and a final measurement. The exploratory test is critical to determine the frequency of all significant emissions. For each mode of operation required to be tested, the frequency spectrum is monitored. Variations in antenna height, antenna orientation, antenna polarization, EUT azimuth, and cable or wire placement is explored to produce the emission that has the highest amplitude relative to the limit.

The final measurements are made based on the findings in the exploratory testing. When making exploratory and final measurements it is necessary to maximize the measured radiated emission. Subclause 8.3.1.2 of ANSI C63.4-2009 states that the measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” We consider the “cone of radiation” to be the 3 dB beam width of the measurement antenna.

While the “bore-sighting” technique is not explicitly mentioned in ANSI C63.4-2009, it is a useful technique for measurements using a directional antenna, such as a double-ridged waveguide antenna. Several precautions must be observed, including: knowledge of the beam width of the antenna and the resulting illumination area relative to the size of the EUT, estimation for source of the emission and general location within larger EUTS, measuring system sensitivity, etc.

ANSI C63.4-2009 requires that the measurement antenna is kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. That means that if the directional radiation pattern of the EUT results in a maximum emission at an upwards angle from the EUT, when a directional antenna is used to make the measurement it will be necessary for it to be pointed towards the source of the emission within the EUT. This can be done by either pointing the antenna at an angle towards the source of the emission, or by rotating the EUT, in both height and polarization, to maximize the measured emission. The emission must be kept within the illumination area of the 3 dB beamwidth of the antenna so that the maximum emission from the EUT is measured.

Radiated emissions test characteristics	
Frequency range	30 MHz - 4,000 MHz
Test distance	3 m*
Test instrumentation resolution bandwidth	120 kHz (30 MHz - 1,000 MHz)
	1 MHz (1000 MHz - 4,000 MHz)
Receive antenna scan height	1 m - 4 m
Receive antenna polarization	Vertical/horizontal

* According to Section 15.31 (f) (1): At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

8.4.4 Calculation of the field strength

The field strength is calculated by the following calculation:

Corrected Level = Receiver Level + Correction Factor (without the use of a pre-amplifier)

Corrected Level = Receiver Level + Correction Factor – Pre-amplifier (with the use of a pre-amplifier)

Receiver Level : Receiver reading without correction factors
Correction Factor : Antenna factor + cable loss

For example:
The receiver reading is 32.7 dBµV. The antenna factor for the measured frequency is +2.5 dB (1/m) and the cable factor for the measured frequency is 0.71 dB, giving a field strength of 35.91dBµV/m.
The 35.91dBµV/m value can be mathematically converted to its corresponding level in µV/m.

Level in µV/m = Common Antilogarithm (35.91/20) = 39.8

For test distance other than what is specified, but fulfilling the requirements of Section 15.31 (f) (1) the field strength is calculated by adding additionally an extrapolation factor of 20 dB/decade (inverse linear distance for field strength measurements).

8.3.5 Result

Radiated emissions below 30 MHz (Section 15.209)										
f (MHz)	Bandwidth (kHz) Type of detector	Noted receiver level **dBµV**	Test distance **m**	Correction factor **dB**	Distance extrapol. factor **dB**	Level corrected **dBµV/m**	Limit **dBµV/m**	Margin **dBµV/m**	Polarisation EUT / antenna	Antenna height **cm**
0.1200	0.2 / QP	< 4.0	10	20.2	-59.1	-34.90	26.0 @ 300	80.9	H,V 360°/ H,V	100
0.5000	0.2 / QP	< 4.0	10	20.2	-19.1	5.1	33.6 @ 30	28.5	H,V 360°/ H,V	100
1.5000	9 / QP	< 4.0	10	20.2	-19.1	5.1	24.1 @ 30	19.0	H,V 360°/ H,V	100
3.0000	9 / QP	< 4.0	10	20.2	-19.1	5.1	29.5 @ 30	24.4	H,V 360°/ H,V	100
5.0000	9 / QP	< 4.0	10	20.2	-19.1	5.10	29.5 @ 30	24.4	H,V 360°/ H,V	100
8.0000	9 / QP	< 4.0	10	20.2	-19.1	5.10	29.5 @ 30	24.4	H,V 360°/ H,V	100
10.0000	9 / QP	< 4.0	10	20.2	-19.1	5.10	29.5 @ 30	24.4	H,V 360°/ H,V	100
20.0000	9 / QP	< 4.0	10	20.2	-19.1	5.10	29.5 @ 30	24.4	H,V 360°/ H,V	100
30.0000	9 / QP	< 4.0	10	20.2	-19.1	5.10	29.5 @ 30	24.4	H,V 360°/ H,V	100
All emissions are lower than the noise level of the measuring equipment!										
Measurement uncertainty	4 dB									

Remark: *[1] Noise level of the measuring instrument ≤ 4.0dBµV@ 10m distance (0.009 MHz –30 MHz)
Remark: * Peak Limit according to Section 15.35 (b).

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.

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Radiated emissions above 30 MHz (Section 15.209)											
f (MHz)	Bandwidth (kHz) Type of detector	Noted receiver level **dBµV**	Test distance **m**	Correction factor **dB**	Distance extrapo factor **dB**	AV Correction factor **dB**	Level corrected **dBµV/m**	Limit **dBµV/m**	Margin **dBµV/m**	Polaris. EUT / Antenna	Antenna height **cm**
67.150	100 / QP	17.4	3	-10.5*[5]	0	0	6.9	40.0	33.1	H 0° / H	210
67.340	100 / QP	38.0	3	-10.5*[5]	0	0	27.5	40.0	12.5	H 15° / V	103
72.070	100 / QP	16.5	3	-11.1*[5]	0	0	5.4	40.0	34.6	H 0° / H	210
72.200	100 / QP	36.5	3	-11.1*[5]	0	0	25.4	40.0	14.6	H 15° / V	117
155.720	100 / QP	13.6	3	-6.5*[5]	0	0	7.1	43.5	36.4	H 0° / H	104
160.070	100 / QP	26.3	3	-6.9*[5]	0	0	19.4	43.5	24.1	H 15° / V	212
164.240	100 / QP	27.3	3	-6.9*[5]	0	0	20.4	43.5	23.1	H 15° / V	212
164.570	100 / QP	13.9	3	-6.9*[5]	0	0	7.0	43.5	36.5	H 0° / H	104
180.910	100 / QP	25.3	3	-9.5*[5]	0	0	15.8	43.5	27.7	H 15° / V	200
184.250	100 / QP	16.6	3	-9.5*[5]	0	0	7.1	43.5	36.4	H 0° / H	119
184.730	100 / QP	23.8	3	-9.5*[5]	0	0	14.3	43.5	29.2	H 15° / V	200
189.250	100 / QP	23.3	3	-10.0*[5]	0	0	13.3	43.5	30.2	H 15° / V	205
189.670	100 / QP	16.5	3	-10.0*[5]	0	0	6.5	43.5	37.0	H 0° / H	119
228.540	100 / QP	14.5	3	-8.6*[5]	0	0	5.9	46.0	40.1	H 0° / H	253
249.700	100 / QP	14.3	3	-8.3*[5]	0	0	6.0	46.0	40.0	H 0° / H	229
265.930	100 / QP	14.3	3	-8.1*[5]	0	0	6.2	46.0	39.8	H 0° / H	276
Measurement uncertainty						4 dB					

* Bandwidth = the measuring receiver bandwidth
Remark: *[1] noise floor noise level of the measuring instrument ≤ 3.5dBµV @ 3m distance (30 – 1,000 MHz)
Remark: *[2] noise floor noise level of the measuring instrument ≤ 4.5 dBµV @ 3m distance (1,000 – 2,000 MHz)
Remark: *[3] noise floor noise level of the measuring instrument ≤ 10 dBµV @ 3m distance (2,000 – 5,500 MHz)
Remark: *[4] noise floor noise level of the measuring instrument ≤ 14 dBµV @ 3m distance (5,500 – 14,500 MHz)
Remark: *[5] for using a pre-amplifier in the range between 100 kHz and 1,000 MHz

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.

N.t.* See page no. 29

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

8.4 Radiated emissions above 960 MHz

8.4.1 Regulation

The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency in MHz	E.i.r.p. in dBm
960-1610	-75.3
1610-1990	-53.3
1990-3100	-51.3
3100-10600	-41.3
Above 10600	-51.3

In addition to the radiated emission limits specified in the table in paragraph (c) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency in MHz	E.i.r.p. in dBm
1164-1240	-85.3
1559-1610	-85.3

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, fM. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

8.4.2 Test equipment

Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
Test fixture	Dudde	---	03/2013	03/2014	Dudde
Magnetic loop antenna (9 kHz - 30 MHz)	Schwarzbeck FMZB 1516 (23)	---	05/2013	05/2016	Dudde
OATS	Dudde (104)	---	10/2012	10/2014	Dudde
Pre-amplifier (100kHz - 1.3GHz)	Hewlett Packard 8447 E (166a)	1726A00705	01/2012	01/2014	Dudde
Horn antenna (2.0-14.0 GHz)	Schwarzbeck BBHA 9120 C (169)	305	09/2012	09/2015	Dudde
Mixer WR15 V-Band (50-75 GHz)	OM Labs MA2744A (295a)	V41027-1	03/2013	03/2016	Dudde
Mixer WR22 Q-Band (33-50 GHz)	OM Labs MA2742A (269a)	Q40512-1	03/2013	03/2016	Dudde
Mixer WR10 W-Band (75-110 GHz)	OM Labs MA2746A (296a)	W40706-2	03/2013	03/2016	Dudde
Pre-amplifier (1GHz - 18GHz)	Narda (345)	---	01/2012	01/2014	Dudde

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Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
Receiver (9 kHz –40.0 GHz) (40.0 GHz -110 GHz)	Anritsu Spectrum Analyzer MS2668 (359a)	6200163244	05/2011	05/2014	Rohde & Schwarz
Gain Horn antenna (33-50 GHz)	Dorado GH-22-25 (383)	040810	04/2012	04/2015	Dorado
Gain Horn antenna (50-75 GHz)	Dorado GH-15-25 (384)	031003	04/2012	04/2015	Dudde
Gain Horn antenna (75-110 GHz)	Dorado GH-10-25 (385)	040808	04/2012	04/2014	Dudde
Bilog antenna (30- 1000 MHz)	Schwarzbeck VULP 9168 (406)	---	04/2011	04/2014	Schwarzbeck
Logt. Per, Antenne (1- 18 GHz)	Schwarzbeck STLP 9148 (445)	---	09/2012	09/2015	Schwarzbeck
Horn antenna (15.0-40.0 GHz)	Schwarzbeck BBHA 9170 (442)	BBHA9170378	09/2011	09/2014	Schwarzbeck
Harmonic Mixer E-Band 60-90 GHz	Rohde & Schwarz FSZ-90 (501)	100062	03/2013	03/2016	Rohde & Schwarz
Signal Analyzer (9 kHz –30.0 GHz)	Rohde & Schwarz FSV 30 (502)	100932	02/2013	02/2016	Rohde & Schwarz
Harmonic Mixer U-Band (40-60 GHz)	Farran FSZ-60 (515)	100037	03/2013	03/2016	Farran
Gain Horn antenna (40-60 GHz)	Dorado GH-19-20 (518)	070106	03/2013	03/2016	Dudde
RF- cable	Kabelmetal 18m [N]	K1a	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 2m [APC]	K17a	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 2m [APC]	K18a	03/2013	03/2014	Dudde
RF- cable	Aircell 0.5m [BNC]	K40	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 Suhner [N] 1 m	K52	03/2013	03/2014	Dudde
RF- cable	Aircell 1m [BNC/N]	K56	03/2013	03/2014	Dudde
RF- cable	Sucoflex 100 Suhner [N] 1 m	K61	03/2013	03/2014	Dudde
RF- cable	Sucoflex 106 Suhner 6,4m [N]	K74	03/2013	03/2014	Dudde
RF- cable	Sucoflex 106 Suhner 6,4m [N]	K75	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 13 m [N]	K144	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K145	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K146	03/2013	03/2014	Dudde

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8.4.3 Test procedure

The following provisions apply when measuring average and peak transmission power levels from any device using UWB technology:

(a) Measurements of radiated emissions at and below 960 MHz are to be made using a CISPR quasi-peak detector.

(b) Measurements of radiated emissions above 960 MHz are to be made using a root-mean-square(RMS) average detector having a 1 MHz resolution bandwidth.5 The averaging time shall be one millisecond or less.

(c) Peak measurements shall be made in addition to average measurements. Transmissions shall not exceed 0 dBm e.i.r.p. in any 50 MHz bandwidth when the average limit is -41.3 dBm/MHz. This is the equivalent peak limit as calculated by combining the 6 dB peak-to-average conversion with a resolution bandwidth (RBW) scaling factor of 20 log(1 MHz/50 MHz). Only the 50 MHz bandwidth, centred on the frequency fM where the highest power occurs, needs to be measured to satisfy the peak requirements for all frequencies. A different resolution bandwidth and a correspondingly different peak limit may also be used, in which case the RBW may be set anywhere between 1 MHz and 50 MHz. The peak e.i.r.p. limit is then calculated as 20 log(RBW/50) dBm where the RBW is in MHz. This may be converted to a peak field strength level at 3 metres using E(dBuV/m) = P(e.i.r.p.(dBm)) + 95.2. If the RBW is greater than 3 MHz, the application for certification shall contain a detailed description of the test procedure, the calibration of the test set-up and the instrumentation used in the testing.

(d) For a device under test (DUT) with an external modulation connector, the test data used as input into the DUT shall be similar to the data transmitted during normal operation. For UWB communication devices, data patterns for the fixed part of control signals and frame structures shall be used. However, pseudo-random data patterns may be used for the message part of the signal.

(e) If the transmitter uses pulse gating, measurement shall be made with the gating active.

(f) The measurement of average and peak transmission levels for hopped, stepped, sequenced or gated devices shall be repeated over multiple sweeps with the analyzer set for maximum hold until the amplitude stabilizes.

(g) If the UWB device operates using a different number of hopped, stepped or sequenced channels, the device shall comply with the UWB transmission limits under all possible operating conditions.

(h) The highest frequency used to determine the frequency range over which measurements are made (from RSS-Gen provisions for transmitter unwanted emissions) shall be based on the centre frequency (fC). The spectrum shall be investigated from the lowest frequency generated in the UWB transmitter, without going below 9 kHz, to the highest frequency indicated in RSS-Gen or up to fC +3/(pulse width in seconds), whichever is higher.

- If the centre frequency is less than 10 GHz, there is no requirement to measure beyond 40 GHz.
- If the centre frequency is at or above 10 GHz and below 30 GHz, there is no requirement to measure beyond 100 GHz.
- If the centre frequency is at or above 30 GHz, there is no requirement to measure beyond 200 GHz.

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(i) For a measurement procedure below 960 MHz and when the reflection from the ground screen cannot be eliminated, the following procedure is to be used:
- Examine the transmission in small frequency segments such that reflections, gains and losses do not vary significantly over the segment.
- For tabletop-sized devices, place the DUT on a non-conducting surface at a height of 80 cm.
- Use conventional device rotation and elevation searches to maximize reception of the transmission.
- Take a measurement.
- Factor in gains and losses and consider the ground screen contribution if applicable.
- Take sufficient measurements both in azimuth and elevation to ascertain that the maximum transmission value has been recorded.
- Repeat at each frequency of interest.

(j) For a measurement procedure above 960 MHz in a semi-anechoic chamber, the floor between the DUT and the receiving antenna is to be treated with an RF absorber to remove the ground screen influence. A scan of the receiving antenna between 1 and 4 metres shall show a maximum emission near the height at which the DUT has been positioned, if the floor has been properly treated. Note that for a free-space measurement, there is no requirement to maintain a height of 80 cm for the DUT. The DUT may be positioned at any height that minimizes reflections from the floor. A highly directional receiving antenna helps in reducing the effect of the ground screen reflection. The measurement shall be recorded without correction for the ground reflection. For tabletop-sized DUT, the following procedure is to be used:
- Place the DUT on a non-conducting surface at an appropriate height.
- The floor between the receiving antenna and the DUT shall be treated with material to absorb RF energy suitable for the frequency range being measured.
- Vary the height of the receiving antenna to verify that reflections from the floor have been minimized. It may be necessary to alter the height of the DUT to achieve the lowest reflections from the floor. The main lobe of the receiving antenna shall not receive a floor reflection. The receiving antenna height is to remain fixed throughout the measurement.
- Take a measurement.
- Factor in the gains and losses. The addition of absorbers in the reflected path eliminates the ground screen contribution.
- Take sufficient measurements both in azimuth and elevation to ensure that the maximum value has been recorded.
- Repeat for each frequency of interest.

(k) The DUT is to be oriented so as to ensure the reception of the maximum radiated signal. Determining this orientation can be made easier by using a non-conductive turntable or other form of positioning system to systematically search for the orientation that provides the maximum response within the measurement system. Regardless of how the orientation is determined, a sufficient number of radials shall be considered to determine the radial at which the maximum response is captured by the measurement system.

(l) A separation distance of three metres shall be used between the transmitting antenna of the DUT and the receiving antenna. In some cases, it may not be possible to measure UWB transmission levels without amplification and/or reducing the separation between the transmitting antenna and the receiving antenna. In such cases, care shall be exercised to maintain the far field condition.

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(m) Emissions from digital circuitry (used only to enable the operation of the UWB transmitter and that does not control additional functions or capabilities) shall comply with the average and peak power limits applicable to the UWB transmitter. If it can be clearly demonstrated that an emission from a UWB transmitter is due solely to emissions from digital circuitry contained within the transmitter, and that the emission is not intended to be radiated from the transmitter's antenna, the limits for emissions from digital circuitry prescribed in RSS-Gen apply to that emission rather than the UWB limits.

(n) Spurious emissions from an UWB receiver are subject to the requirements prescribed in RSS-Gen.

(o) A device using UWB technology that contains digital circuitry not directly associated with the operation of the transmitter is also subject to the requirements for digital circuits prescribed in RSS-Gen.

8.4.4 Calculation of the radiated power

The field strength is calculated by the following calculation:

Corrected Level = Receiver Level + Correction Factor (without the use of a pre-amplifier)

Corrected Level = Receiver Level + Correction Factor – Pre-amplifier (with the use of a pre-amplifier)

Receiver Level : Receiver reading without correction factors
Correction Factor : Substituted factor for the measured frequency + cable loss

For using a pre-amplifier the substitution will be accomplished in this configuration

Corrected Level = Receiver Level + Correction Factor – Pre-amplifier (with the use of a pre-amplifier)

For example:
The receiver reading @ 3.45 GHz is -75.5 dBm. The correction factor for the measured frequency is +9.2 dB, giving a radiated power of -66.3dBm (e.i.r.p.).

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8.4.5 Result

Radiated emissions above 960 MHz (Section 15.517)									
f (MHz)	Bandwidth (kHz) Type of detector	Noted receiver level **dBm**	Test distance **m**	Correction factor **dB**	Level corrected **dBm**	Limit **dBm**	Margin **dBm**	Polaris. EUT / Antenna	Antenna height **cm**
3108.100	1000 / RMS	-95.5	3	1.3*[5]	-94.2	-41.3	52.9	H 0° / H	117
3108.100	1000 / RMS	-80.0	3	1.3*[5]	-78.7	-41.3	37.4	H 5° / V	157
3202.000	1000 / RMS	-98.0	3	3.5*[5]	-94.5	-41.3	53.2	H 0° / H	166
3202.000	1000 / RMS	-85.0	3	3.5*[5]	-81.5	-41.3	40.2	H 5° / V	162
3299.200	1000 / RMS	-93.0	3	3.6*[5]	-89.4	-41.3	48.1	H 0° / H	211
3299.200	1000 / RMS	-86.1	3	3.6*[5]	-82.5	-41.3	41.2	H 5° / V	165
3399.600	1000 / RMS	-88.1	3	5.5*[5]	-82.6	-41.3	41.3	H 0° / H	197
3399.600	1000 / RMS	-85.9	3	5.5*[5]	-80.4	-41.3	39.1	H 5° / V	176
4497.500	1000 / RMS	-95.1	3	9.1*[5]	-86.0	-41.3	44.7	H 0° / H	105
4497.500	1000 / RMS	-91.0	3	9.1*[5]	-81.9	-41.3	40.6	H 5° / V	211
4601.000	1000 / RMS	-98.1	3	11.7*[5]	-86.4	-41.3	45.1	H 0° / H	100
4601.000	1000 / RMS	-94.4	3	11.7*[5]	-82.7	-41.3	41.4	H 5° / V	215
4899.000	1000 / RMS	-97.5	3	10.8*[5]	-86.7	-41.3	45.4	H 0° / H	214
4899.000	1000 / RMS	-92.9	3	10.8*[5]	-82.1	-41.3	40.8	H 5° / V	221
4998.400	1000 / RMS	-97.3	3	10.7*[5]	-86.6	-41.3	45.3	H 0° / H	223
4998.400	1000 / RMS	-93.1	3	10.7*[5]	-82.4	-41.3	41.1	H 5° / V	105
5197.100	1000 / RMS	-101.5	3	11.4*[5]	-90.1	-41.3	48.8	H 0° / H	132
5197.100	1000 / RMS	-94.2	3	11.4*[5]	-82.8	-41.3	41.5	H 5° / V	214
5600.300	1000 / RMS	-100.8	3	9.6*[5]	-91.2	-41.3	49.9	H 0° / H	205
5600.300	1000 / RMS	-96.0	3	9.6*[5]	-86.4	-41.3	45.1	H 5° / V	122
5799.000	1000 / RMS	-99.7	3	9.7*[5]	-90.0	-41.3	52.9	H 0° / H	128
5799.000	1000 / RMS	-96.0	3	9.7*[5]	-86.3	-41.3	37.4	H 5° / V	197
All other emissions are lower than the noise level of the measuring equipment!									
Measurement uncertainty	4 dB								

* Bandwidth = the measuring receiver bandwidth
Remark: *[1] noise floor noise level of the measuring instrument ≤ 3.5dBµV @ 3m distance (30 – 1,000 MHz)
Remark: *[2] noise floor noise level of the measuring instrument ≤ 4.5 dBµV @ 3m distance (1,000 – 2,000 MHz)
Remark: *[3] noise floor noise level of the measuring instrument ≤ 10 dBµV @ 3m distance (2,000 – 5,500 MHz)
Remark: *[4] noise floor noise level of the measuring instrument ≤ 14 dBµV @ 3m distance (5,500 – 14,500 MHz)
Remark: *[5] for using a pre-amplifier in the range between 1.0 GHz and 18.0 GHz

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	~~Yes~~	**No**	Page no.

N.t.* See page no. 29

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Radiated emissions above 960 MHz (Section 15.517)									
f (MHz)	Bandwidth (kHz) Type of detector	Noted receiver level **dBm**	Test distance **m**	Correction factor **dB**	Level corrected **dBm**	Limit **dBm**	Margin **dBm**	Polaris. EUT / Antenna	Antenna height **cm**
1164-1240	1 / RMS	≤ -105.1	3	0.3	≤ -104.8	-85.3	≥ 19.5	V 5°/ V	165
1559-1610	1 / RMS	≤ -104.2	3	1.4	≤ -102.8	-85.3	≥ 17.5	V 5°/ V	172
All emissions are lower than the noise level of the measuring equipment!									
Measurement uncertainty	4 dB								

Radiated emissions above 960 MHz (Section 15.517)										
f (GHz)	Bandwidth (kHz) Type of detector	Noted receiver level **dBm**	Test distance **m**	Correction factor **dB**	50 MHz RBW correction **dB**	Level corrected **dBm**	Limit **dBm**	Margin **dBm**	Polaris. EUT / Antenna	Antenna height **cm**
4.8427	3000 / PK	-13.0	3	9.1	-24.4	-28.3	0	28.2	V 5°/ V	214
4.8427	3000 / PK	-19.2	3	9.1	-24.4	-34.5	0	34.5	V 0°/H	107
Measurement uncertainty	4 dB									

* Bandwidth = the measuring receiver bandwidth
Remark: *[1] noise floor noise level of the measuring instrument ≤ 3.5dBµV @ 3m distance (30 – 1,000 MHz)
Remark: *[2] noise floor noise level of the measuring instrument ≤ 4.5 dBµV @ 3m distance (1,000 – 2,000 MHz)
Remark: *[3] noise floor noise level of the measuring instrument ≤ 10 dBµV @ 3m distance (2,000 – 5,500 MHz)
Remark: *[4] noise floor noise level of the measuring instrument ≤ 14 dBµV @ 3m distance (5,500 – 14,500 MHz)
Remark: *[5] for using a pre-amplifier in the range between 1.0 GHz and 18.0 GHz

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Annex no. 3

N.t.* See page no. 29

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8.5 Bandwidth (-10 dB)

8.5.1 Regulation

For the purpose of this subpart, the UWB bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna. The upper boundary is designated fH and the lower boundary is designated fL. The frequency at which the highest radiated emission occurs is designated fM.

8.5.2 Test equipment

Type	Manufacturer/ Model no.	Serial no.	Last calibration	Next calibration	Calibration executed by
Test fixture	Dudde	---	03/2013	03/2014	Dudde
Low noise signal generator (10kHz – 5.4GHz)	Marconi Instruments 2042 (6)	119347/003	01/2012	01/2014	Dudde
Frequency counter (10MHz -26.5GHz)	Hewlett & Packard 5351A Microwave frequency counter (130)	2432A00054	09/2011	09/2014	Rohde & Schwarz
Receiver (9 kHz –18.0 GHz)	Rohde & Schwarz Spectrum Analyzer FSL 18 (171a)	100.117	09/2012	09/2014	Rohde & Schwarz
Signal Analyzer (9 kHz –30.0 GHz)	Rohde & Schwarz FSV 30 (502)	100932	02/2013	02/2016	Rohde & Schwarz
RF- cable	Sucoflex 104 P Suhner 2,13m [APC 3.5]	K17a	03/2013	03/2014	Dudde
RF- cable	Sucoflex 104 P Suhner 2,13m [APC 3.5]	K18a	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K145	03/2013	03/2014	Dudde
RF- cable	Sucoflex Suhner 8m [SMA]	K146	03/2013	03/2014	Dudde

8.5.3 Test procedure

When occupied bandwidth measurements on an intentional radiator are required, the following procedures of this subclause should be used.

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from 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. Once the reference level is established, the equipment is conditioned with typical modulating signals to produce the worst-case (i.e., the widest) bandwidth. If no bandwidth requirement is specified by the procuring or regulatory agency, measure the bandwidth at –26 dB with respect to the reference level.
In order to measure the modulated signal properly, a resolution bandwidth that is small compared with the bandwidth required by the procuring or regulatory agency shall be used on the measuring instrument. However, the resolution bandwidth of the measuring instrument shall be set to a value within 1% to 5% of the signal bandwidth requirements

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

8.5.4 Result

The maximum measured -10 dB bandwidth is: **2.8636 GHz**

The equipment passed the conducted tests	**Yes**	~~No~~	~~N.t.~~

Further test results are attached	**Yes**	~~No~~	Annex no. 3

N.t.* See page no. 29

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920

9. Additional information to the test report

Remarks

N.t.[1] Not tested, because not applicable to the EUT

N.t.[2] Not tested, because not ordered

End of test report

m. dudde hochfrequenz-technik Rottland 5a D-51429 Bergisch Gladbach/ Germany Tel: +49 2207-96890 Fax +49 2207-968920