



## EMI - T E S T R E P O R T

- FCC Part 15.247, RSS247 -

**Type / Model Name** : EBI 10-System (EBI 10, EBI 100)

**Product Description** : Wireless data logger system

**Applicant** : Xylem Analytics Germany GmbH

Address : Dr.-Karl-Slevogt-Strasse 1  
82362 WEILHEIM, GERMANY

**Manufacturer** : Xylem Analytics Germany GmbH

Address : Dr.-Karl-Slevogt-Strasse 1  
82362 WEILHEIM, GERMANY

**Licence holder** : Xylem Analytics Germany GmbH

Address : Dr.-Karl-Slevogt-Strasse 1  
82362 WEILHEIM, GERMANY

**Test Result** according to the standards listed in clause 1 test standards:

**POSITIVE**

**Test Report No. :**

**T40058-00-11HS**

22. August 2016

Date of issue



Deutsche  
Akkreditierungsstelle  
D-PL-12030-01-01  
D-PL-12030-01-02

The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test results  
without the written permission of the test laboratory.

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## 1 TEST STANDARDS

The tests were performed according to following standards:

**FCC Rules and Regulations Part 15, Subpart A - General (September 2015)**

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

**FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September 2015)**

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.247	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz
ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
ETSI TR 100 028 V1.3.1: 2001-03,	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2
KDB 558074 D01 v03r05	Guidance for performing compliance measurements on DTS operating under §15.247, April 8, 2016.

**FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969**

Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 1, Subpart 2, Section 2.1093	Radiofrequency radiation exposure evaluation: portable device

**OET Bulletin 65, 65A, 65B Edition 97-01, August 1997 – Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.**

KDB 447498 D01 v05r02	Mobile and portable devices RF Exposure procedures and equipment authorisation policies, February 7, 2014.
KDB 865664 D01	SAR Measurement Requirements for 100 MHz to 6 GHz, February 7, 2014.
ANSI C95.1: 2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
ETSI TR 100 028 V1.3.1: 2001-03,	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2

## 2 EQUIPMENT UNDER TEST

### 2.1 Photo documentation of the EUT – Detailed photos see ATTACHMENT A

### 2.2 General

The logger is fully tested and approved against FCC Part 15.247 with the test report T32050-00-12HS by mikes testing partners, it has been changed in design. The data logger has a new designed RFID-antenna, but RFID is used only for receiving. The data logger has some changes in PCB and a metal cap. The RF-parts and layout are identical to the old version. The EBI 100 variants are added. This is the reason for re-measurement.

### 2.3 Equipment type

ZigBee

### 2.4 Short description of the equipment under test (EUT)

Data logger for temperature, pressure and humidity. Up to 4 mobile data logger (EBI10 Series, EBI100 Series) can be used by one interface. The interface identifies a logger in the programming slot via 13.56 MHz RFID-Transceiver. In the mobile data logger is a RFID-Tag only. A 2.4 GHz "ZigBee" port (Chipset according IEEE 802.15.4) is used for data exchange, communication and programming the data logger, if the logger is enabled for communication via 13.56 MHz signal. This enable signal is necessary to the logger to activate the 2.4 GHz interface, otherwise no communication is possible.

Number of tested samples: 1  
Serial number, Logger: 15000003, Firmware number: 3.08.2

#### EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

### 2.5 Variants of the EUT

The EUT has following variants:

Variant	Device-Name	Comment	Antenna
T01	EBI 10-Txxx	temperature	integrated
T02	EBI 10-THxxx	humidity sensor	integrated
T03	EBI 10-TPxxx	pressure sensor	integrated
T04	EBI 100-Txxx	temperature	integrated
T05	EBI 100-THxxx	humidity sensor	integrated
T06	EBI 100-TPxxx	pressure sensor	integrated

Note: The logger EBI 10 TPxxx is as worst case selected for test.

### 2.6 Operation frequency and channel plan

The operating frequency is 2400 MHz to 2483.5 MHz.

Channel plan:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

Note: The marked frequencies are determined for final testing.

## 2.7 Transmit operating modes

The EUT allows the user to switch the transmission on or off. There are no further operating modes.  
The EUT use O-QPSK modulation and may provide following data rate:

- 250 kbps (kbps = kilobits per second)

## 2.8 Antenna

The following antennas shall be used with the EUT:

Number	Type	Certification name	Plug	Gain
1	Omni	PCB meander (logger)	-	5.0

## 2.9 Power supply system utilised

Power supply voltage range: : 3.6 VDC, li battery

## 2.10 Peripheral devices and interface cables

The following peripheral devices and interface cables are connected during the measurements:

- \_\_\_\_\_ Model : \_\_\_\_\_
- \_\_\_\_\_ Model : \_\_\_\_\_
- \_\_\_\_\_ Model : \_\_\_\_\_

## 2.11 Determination of worst case conditions for final measurement

As worst case, the following channels and test modes are selected for the final test:

The EUT is tested as system, normal transmission is initiated.

IEEE Standard	Available channel	Tested channels	Power setting	Modulation	Modulation type	Data rate
802.15.4	11 to 26	11, 18, 26	Pmax	DSSS	O-QPSK	250 kbps

Note: The 802.15.4 is only used physically. No other common device is able connect to.

## 2.12 Test jig

No special test jig is used for testing.

## 2.13 Test software

For testing, the base station and the logger are set in TX-continuous mode. The test software is available for testing only.

### **3 TEST RESULT SUMMARY**

Operating in the 2400 MHz – 2483.5 MHz:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS-Gen, 8.8	AC power line conducted emissions	not applicable
15.247(a)(2)	RSS247, 5.2(1)	-6 dB EBW	passed
15.247(b)(3)	RSS247, 5.4(4)	Maximum peak conducted output power	passed
15.247(b)(4)	RSS247, 5.4(4)	Defacto limit	not applicable
15.247(d)	RSS-Gen, 8.9	Spurious emissions radiated	passed
15.247(e)	RSS247, 5.2(2)	PSD	Not tested
15.35(c)	RSS-Gen, 6.10	Pulsed operation	Not tested
15.203	-	Antenna requirement	Not tested
-	RSS-Gen, 6.11	Transmitter frequency stability	Not tested
-	RSS-Gen, 6.6	99 % Bandwidth	passed

The mentioned new RSS Rule Parts in the above table are related to:

RSS Gen, Issue 4, November 2014

RSS 247, Issue 1, May 2015

#### **3.1 Final assessment**

The equipment under test fulfills the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 24 May 2016

Testing concluded on : 22 June 2016

Checked by: Tested by:

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Klaus Gegenfurtner  
Teamleader Radio

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Hermann Smetana  
Radio Team

## 4 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

**CSA Group Bayern GmbH**  
Ohmstrasse 1-4  
94342 STRASSKIRCHEN  
GERMANY

### 4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 °C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

### 4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor  $k = 2$ . The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

<b>Measurement uncertainty table</b>	
Measurement output power, conducted	$\pm 1.5$ dB
Measurement output power, radiated	$\pm 3.0$ dB
Measurement PSD, conducted	$\pm 1.5$ dB
Measurement PSD, radiated	$\pm 3.0$ dB
Measurement spurious emissions, conducted	$\pm 3.0$ dB
Measurement spurious emissions, radiated	$\pm 6.0$ dB
Measurement frequency	$\pm 1 \times 10^{-8}$

#### 4.4 Measurement protocol for FCC and ISED

##### 4.4.1 General information

The Open Area test site is a listed Open Site under the Canadian Test-Sites File-No:

**IC 3009A-1**

The Anechoic chamber is a listed test site under the Canadian Test-Sites File-No:

**IC 3009A-2**

In compliance with RSS 247 testing for RSS compliance may be achieved by following the procedures set out in ANSI C63.10 and applying the CISPR 22 limits.

###### 4.4.1.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

###### 4.4.1.2 Details of test procedures

In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.10 and applying the CISPR 22 limits.

## 5 TEST CONDITIONS AND RESULTS

### 5.1 AC power line conducted emissions

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

#### 5.1.1 Description of the test location

Test location:                   NONE

Remarks:       Not applicable, the EUT is battery powered.

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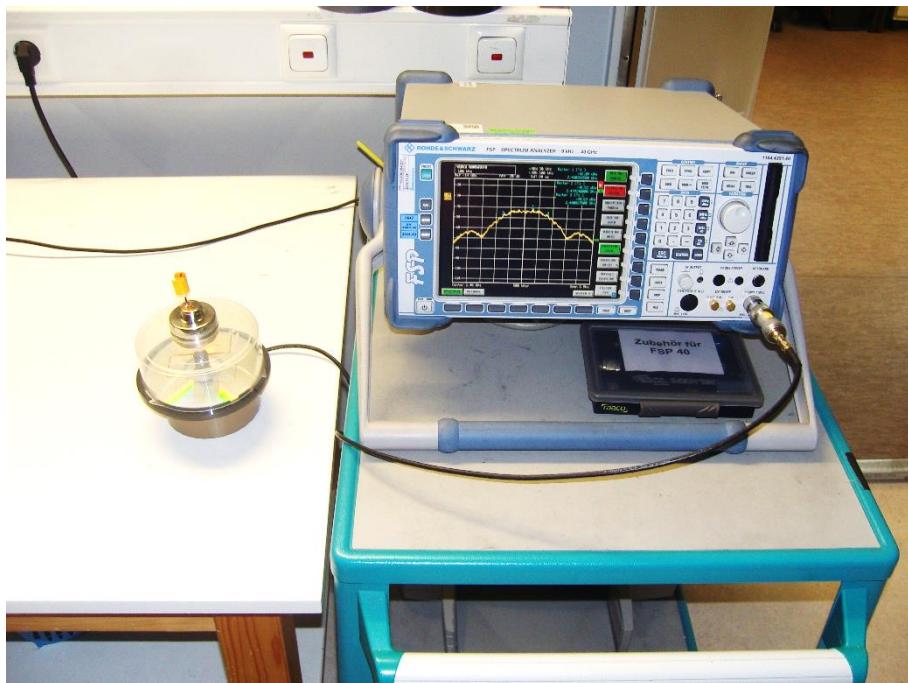
## 5.2 EBW and OBW

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

### 5.2.1 Description of the test location

Test location: AREA4

### 5.2.2 Photo documentation of the test set-up



### 5.2.3 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.

### 5.2.4 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;

FCC ID: VQ5-EBI10

IC: 7412A-EBI10

## 5.2.5 Test result

Channel	Centre frequency (MHz)	6 dB bandwidth (MHz)	Minimum limit (MHz)
11	2405	1.581	0.5
18	2440	1.584	0.5
26	2480	1.588	0.5

Channel	Centre frequency (MHz)	99 % bandwidth (MHz)
11	2405	2.513
18	2440	2.517
26	2480	2.545

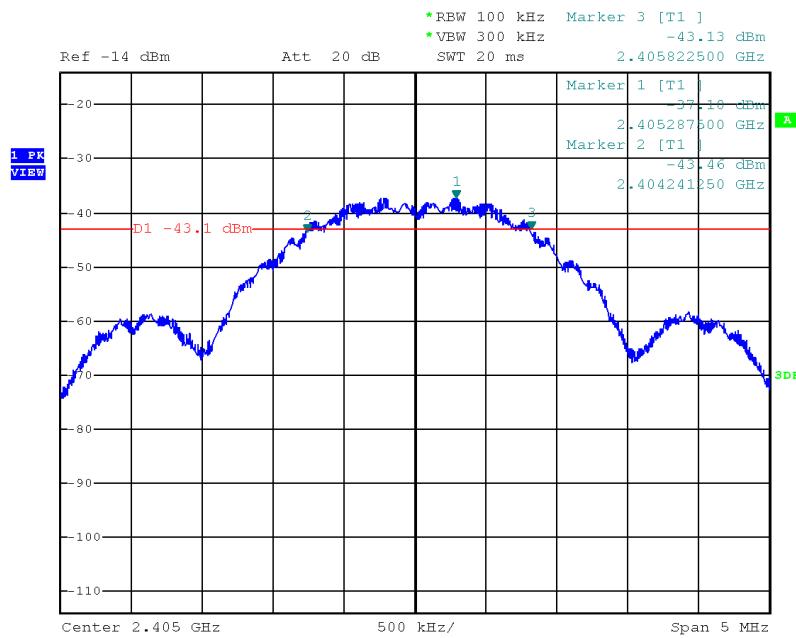
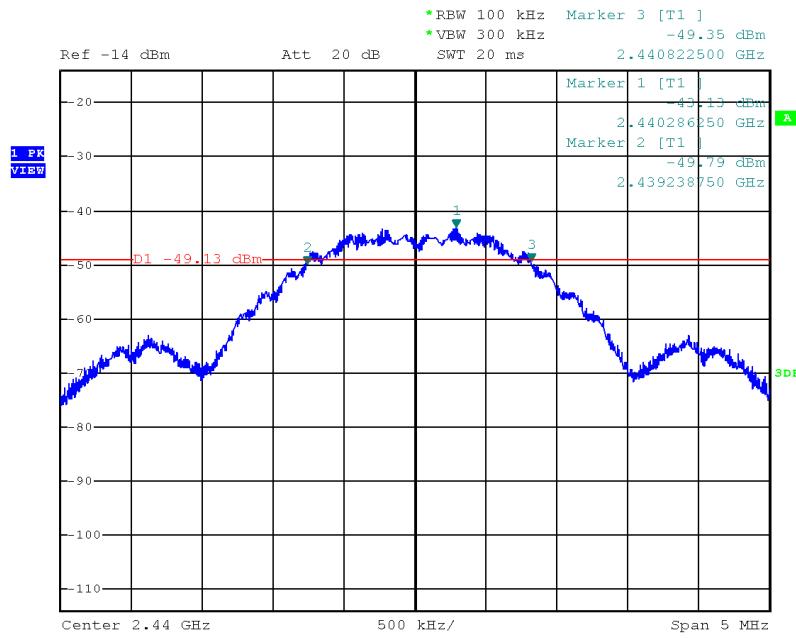
Limit according to FCC Part 15, Section 15.247(b)(2):  
The minimum 6 dB bandwidth shall be at least 500 kHz.

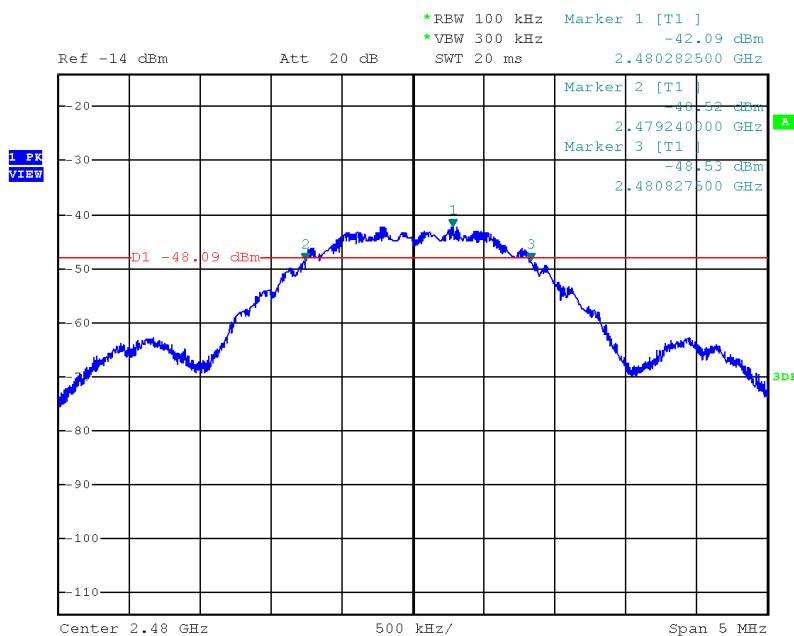
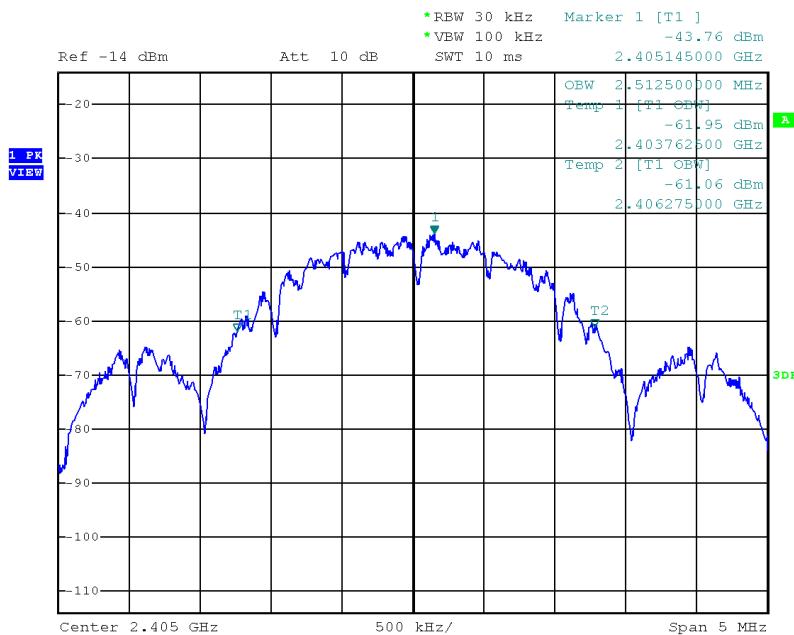
The requirements are **FULFILLED**.

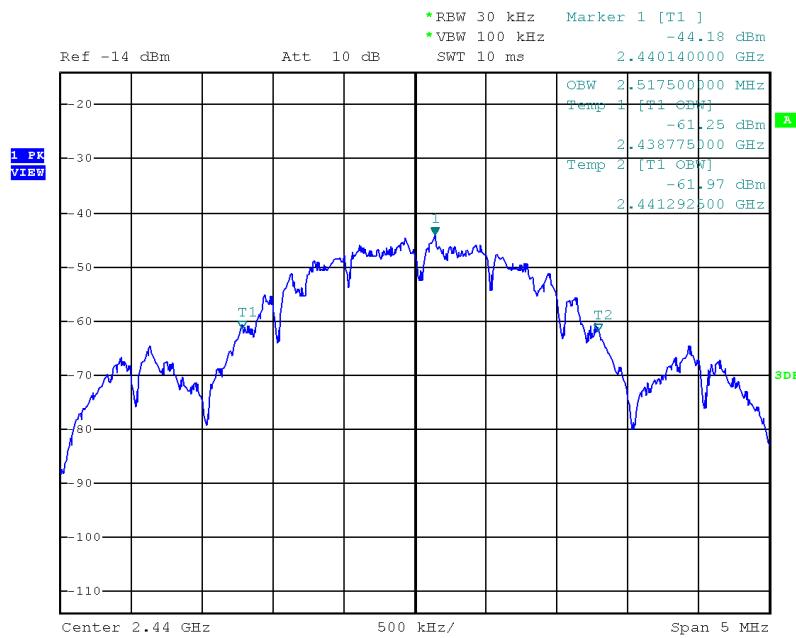
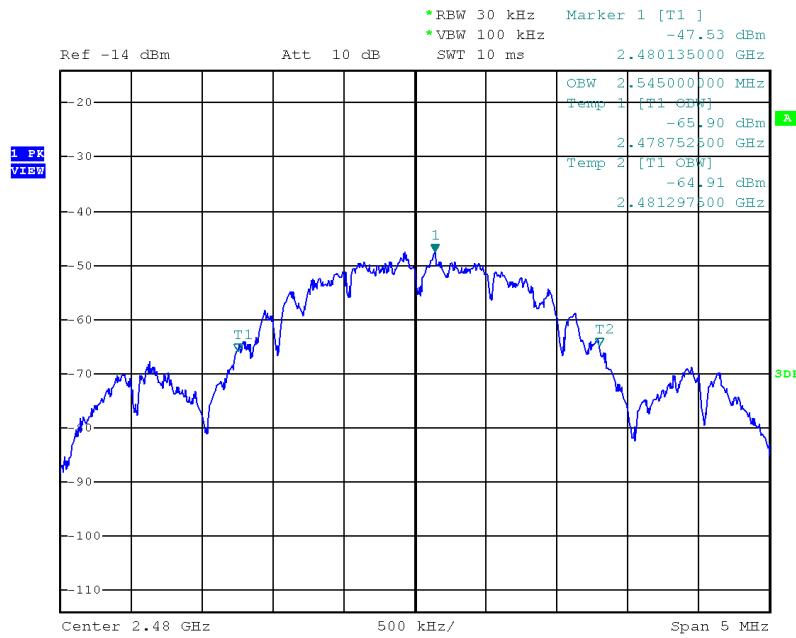
**Remarks:** For detailed test result please see the following test protocols.

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**5.2.6 Test protocols EBW**
**Channel 11 (2402 MHz)**

**Channel 18 (2440 MHz)**


**Channel 26 (2480 MHz)**

**5.2.7 Test protocols OBW**
**Channel 11 (2402 MHz)**


**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**
**Channel 18 (2440 MHz)**

**Channel 26 (2480 MHz)**


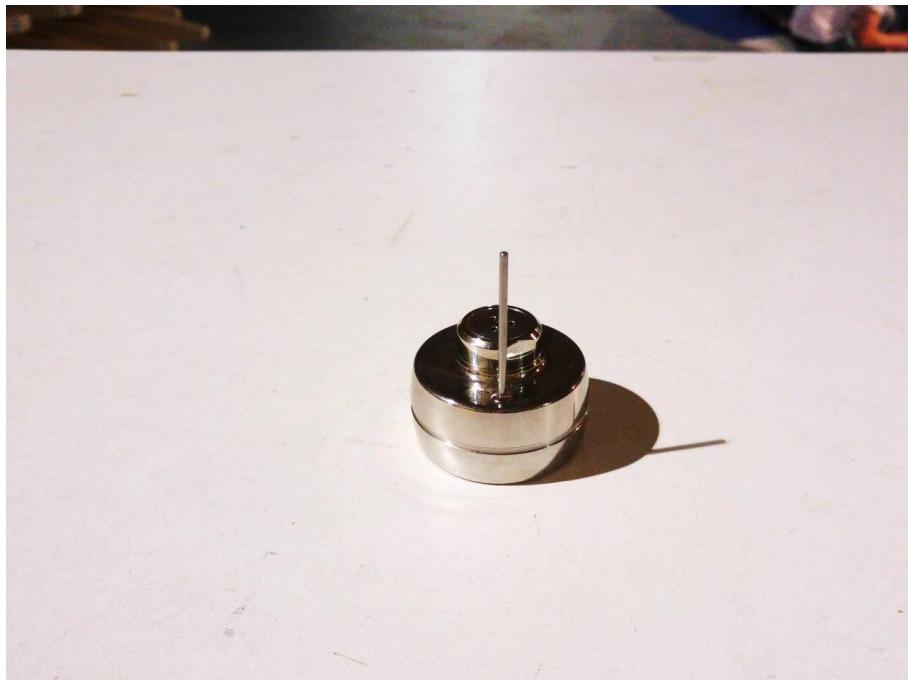
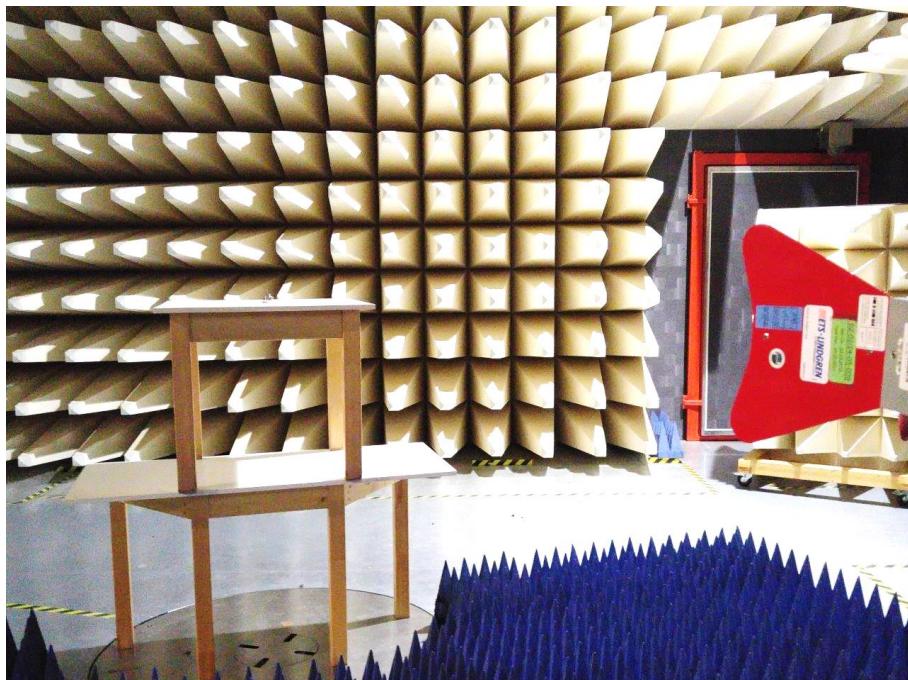
### 5.3 Maximum peak radiated output power

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

#### 5.3.1 Description of the test location

Test location: Anechoic chamber 1

#### 5.3.2 Photo documentation of the test set-up



### 5.3.3 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.

### 5.3.4 Description of Measurement

The maximum peak radiated 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 advertising mode while measuring. The radiated measurement was performed in a fieldstrength measurement. Therefore the formula set out in KDB 558074, item 12.2.2 e) is changed into the following term:

$$E = EIRP - (20 \cdot \log_{10} 3) + 104.8$$

### 5.3.5 Test result

802.15.4, 250 kbps, TX		Test results radiated			
		Fieldstrength E (dB $\mu$ V/m)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
Lowest frequency: CH11					
$T_{\text{nom}}$	$V_{\text{nom}}$	79.02	-16.2	36.0	-52.2
Middle frequency: CH18					
$T_{\text{nom}}$	$V_{\text{nom}}$	76.61	-18.6	36.0	-54.6
Highest frequency: CH26					
$T_{\text{nom}}$	$V_{\text{nom}}$	74.08	-21.2	36.0	-57.2

Note: The Fieldstrength of the EUT is measured.

802.15.4, 250 kbps, TX		Test results conducted				
		EIRP (dBm)	A (dBm)	Antenna Gain (dBi)	Conducted Limit (dBm)	Margin (dB)
Lowest frequency: CH11						
$T_{\text{nom}}$	$V_{\text{nom}}$	-16.2	-21.2	5.0	30.0	-51.2
Middle frequency: CH18						
$T_{\text{nom}}$	$V_{\text{nom}}$	-18.6	-23.6	5.0	30.0	-53.6
Highest frequency: CH26						
$T_{\text{nom}}$	$V_{\text{nom}}$	-21.2	-26.2	5.0	30.0	-56.2

Note: The conducted output power is calculated using the above mentioned formula.

Peak Power Limit according to FCC Part 15, Section 15.247(b)(3):

Frequency (MHz)	Peak Power Limit	
	(dBm)	(W)
902-928	30	1.0
<b>2400-2483.5</b>	<b>30</b>	<b>1.0</b>
5725-5850	30	1.0

The requirements are **FULFILLED**.

**Remarks:** \_\_\_\_\_

## 5.4 EIRP, Defacto limit

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

### 5.4.1 Description of the test location

Test location:                    NONE

Remarks:                    Not applicable, the antenna gain is less 6 dBi.

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## 5.5 Power spectral density

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

### 5.5.1 Description of the test location

Test location:                    NONE

Remarks:                    Not tested.

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## 5.6 Spurious emissions radiated

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

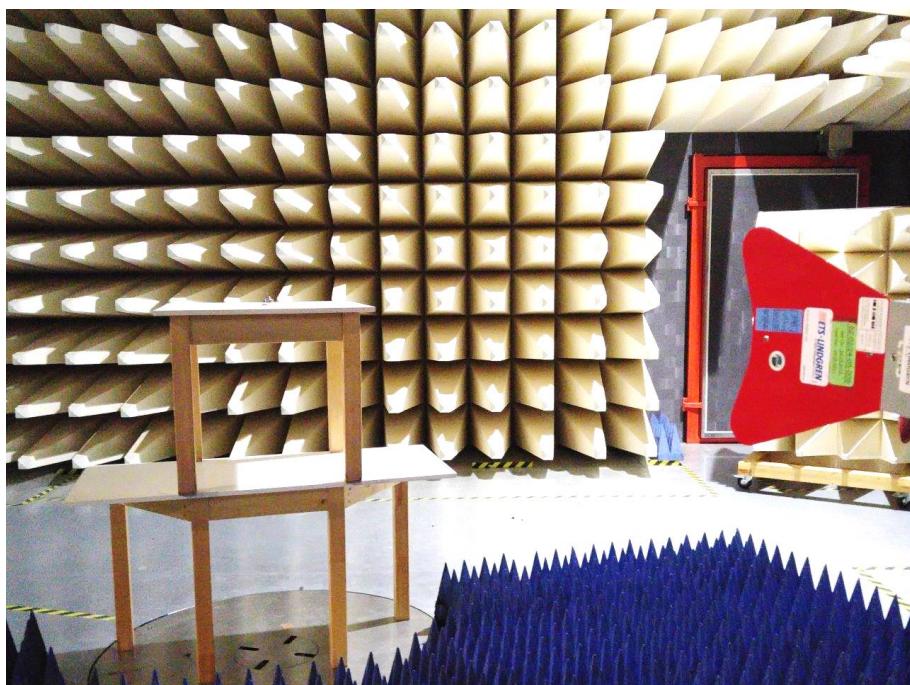
### 5.6.1 Description of the test location

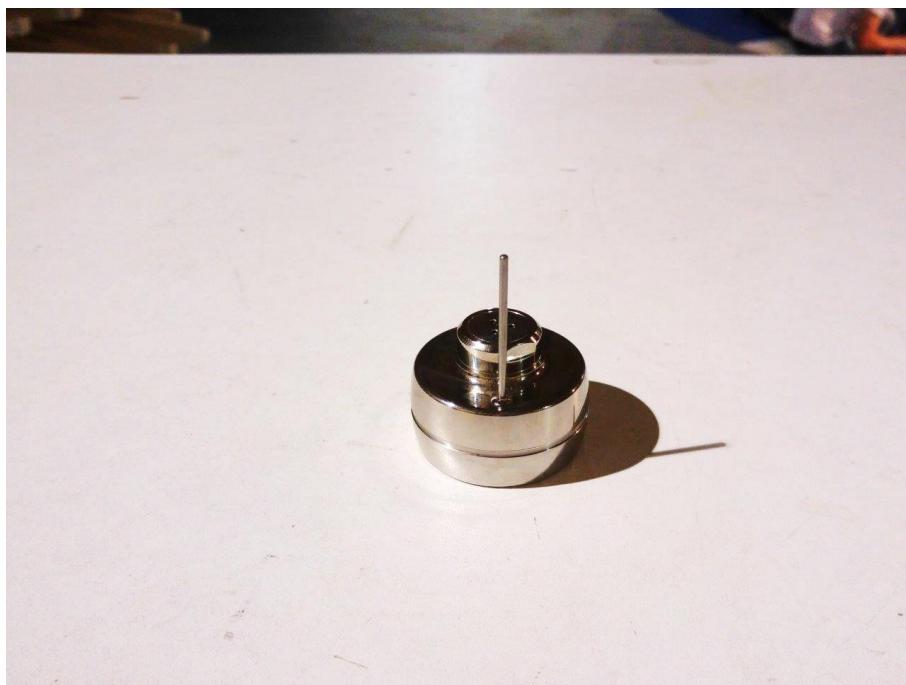
Test location:                    OATS 1

Test location:                    Anechoic Chamber 1

Test distance:                    3 m

### 5.6.2 Photo documentation of the test set-up





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).

### 5.6.3 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.

Test receiver settings for SER2:

RBW: 120 MHz, Detector: Quasi peak, Mes. Time: 1 s,

Spectrum analyser settings for SER3:

RBW: 1 MHz, VBW: 3 MHz, Detector: Max. peak, Trace: Max. hold, Sweep: Auto

Due to the small output power the spurious emissions are measured > 1 GHz RBW 1 MHz and against the general limit.

### 5.6.1 Test result

#### Emissions 30 MHz – 1000 MHz, SER2

**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**

Test conditions: TX continuous						
CH11, Pre-scan			Test results			
Start <i>f</i> (MHz)	Stop <i>f</i> (MHz)	RBW (kHz)	Maximum emission (MHz)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
30	88	120	70.9	28.3	40.0	-11.7
88	216	120	159.0	19.2	43.5	-24.3
216	960	120	655.0	31.1	46.0	-14.9
960	1000	120	998.0	36.5	54.0	-17.5
Measurement uncertainty			$\pm 6$ dB			

Test conditions: TX continuous						
CH18, Pre-scan			Test results			
Start <i>f</i> (MHz)	Stop <i>f</i> (MHz)	RBW (kHz)	Maximum emission (MHz)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
30	88	120	70.9	24.0	40.0	-16.0
88	216	120	159.0	19.7	43.5	-23.8
216	960	120	655.0	30.9	46.0	-15.1
960	1000	120	998.0	37.2	54.0	-16.8
Measurement uncertainty			$\pm 6$ dB			

Test conditions: TX continuous						
CH26, Peak pre-scan			Test results			
Start <i>f</i> (MHz)	Stop <i>f</i> (MHz)	RBW (kHz)	Maximum emission (MHz)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
30	88	120	70.9	23.8	40.0	-16.2
88	216	120	159.0	19.5	43.5	-24.0
216	960	120	655.0	31.3	46.0	-14.7
960	1000	120	998.0	36.9	54.0	-17.1
Measurement uncertainty			$\pm 6$ dB			

**Emissions 1 GHz – 25 GHz**

Test conditions: TX continuous							
CH11, Peak pre-scan and AV			Test results				
Start f (MHz)	Stop f (MHz)	RBW (kHz)	Maximum emission (MHz)	AVLimit (dB $\mu$ V/m)	Margin (dB)	Detector	
1000	2400	1000	1594	31.2	54.0		
2483.5	4000	1000	3866	40.5	54.0	-13.5	Pk
4000	12000	1000	11676	48.4	54.0	-5.6	Pk
12000	18000	1000	17893	57.1	54.0	3.1	Pk
12000	18000	1000	17893	53.4	54.0	-0.6	AV
18000	25000	1000	24365	49.6	54.0	-4.4	Pk
Measurement uncertainty			$\pm 6$ dB				

Test conditions: TX continuous							
CH18, Peak pre-scan and AV			Test results				
Start f (MHz)	Stop f (MHz)	RBW (kHz)	Maximum emission (MHz)	AVLimit (dB $\mu$ V/m)	Margin (dB)	Detector	
1000	2400	1000	2048	35.8	54.0	-18.2	Pk
2483.5	4000	1000	3869	40.6	54.0	-13.4	Pk
4000	8000	1000	4880	45.6	54.0	-8.4	Pk
8000	12000	1000	11860	48.2	54.0	-5.8	Pk
12000	18000	1000	17964	58.2	54.0	4.2	Pk
12000	18000	1000	17964	53.8	54.0	-0.2	AV
18000	25000	1000	24619	49.1	54.0	-4.9	Pk
Measurement uncertainty			$\pm 6$ dB				

Test conditions: TX continuous							
CH26, Peak pre-scan and AV			Test results				
Start f (MHz)	Stop f (MHz)	RBW (kHz)	Maximum emission (MHz)	AVLimit (dB $\mu$ V/m)	Margin (dB)	Detector	
1000	2400	1000	2378	37.2	54.0	-16.8	Pk
2483.5	4000	1000	3958	40.8	54.0	-13.2	Pk
4000	12000	1000	11576	48.4	54.0	-5.6	Pk
12000	18000	1000	17941	57.5	54.0	3.5	Pk
12000	18000	1000	17941	53.5	54.0	-0.5	AV
18000	25000	1000	24956	49.8	54.0	-4.2	Pk
Measurement uncertainty			$\pm 6$ dB				

**Note:** Measurements were performed in the frequency range from 1 GHz up to 25 GHz with the analyser settings for restricted band measurements to show compliance for emissions falling into restricted bands, else the band edge compliance is fulfilled. In the frequency ranges from 9 kHz up to 30 MHz and from 18 GHz up to 25 GHz only noise could be detected.

**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**

Radiated limits according to FCC Part 15 Section 15.209(a) for spurious emissions which fall in restricted bands:

Frequency (MHz)	Field strength of spurious emissions ( $\mu$ V/m)	dB( $\mu$ V/m)	Measurement distance (metres)
0.009-0.490	2400/F (kHz)		300 30 30 3 3 3 3
0.490-1.705	24000/F (kHz)		
1.705-30	30	29.5	
30-88	100	40	
88-216	150	43.5	
216-960	200	46	
Above 960	500	54	

**Restricted bands of operation:**

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209

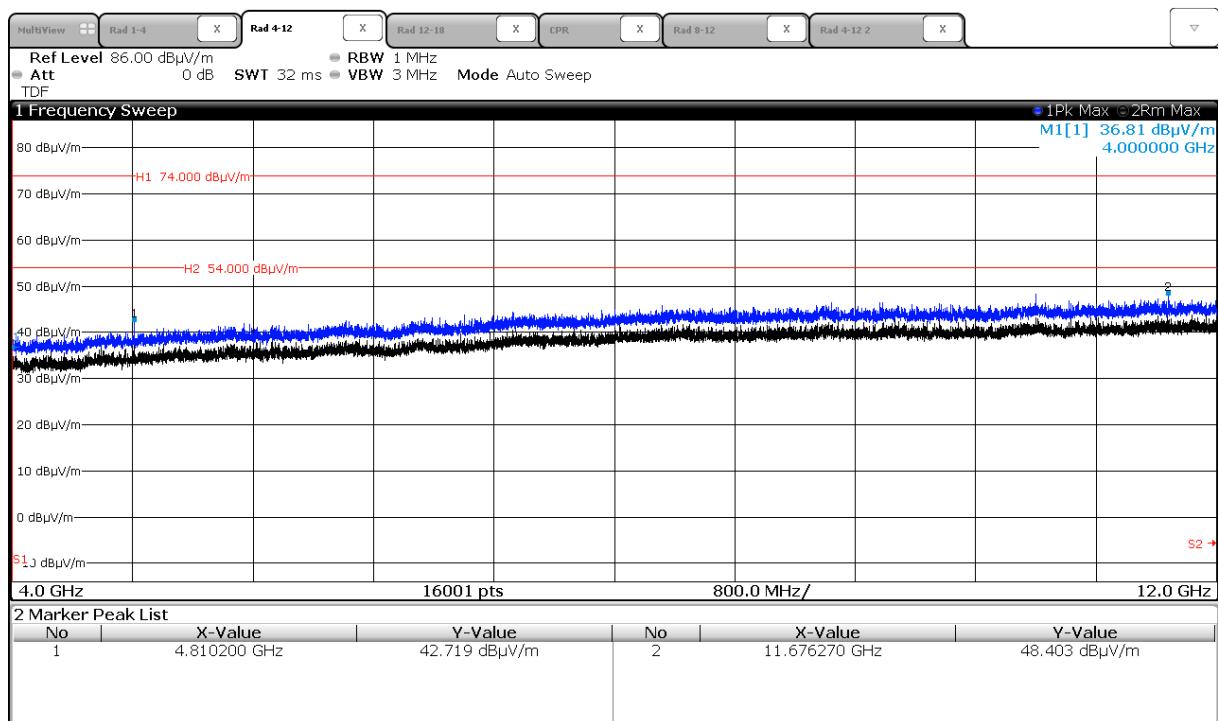
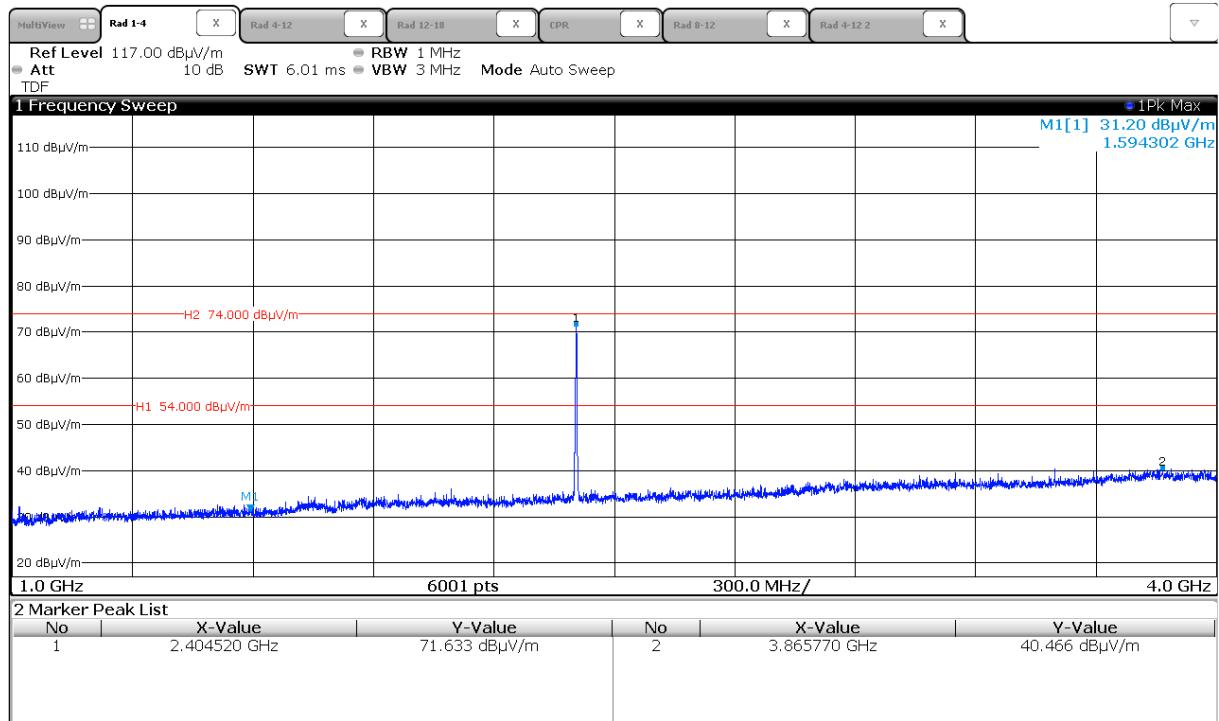
MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.41425 – 8.41475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	Above 38.6

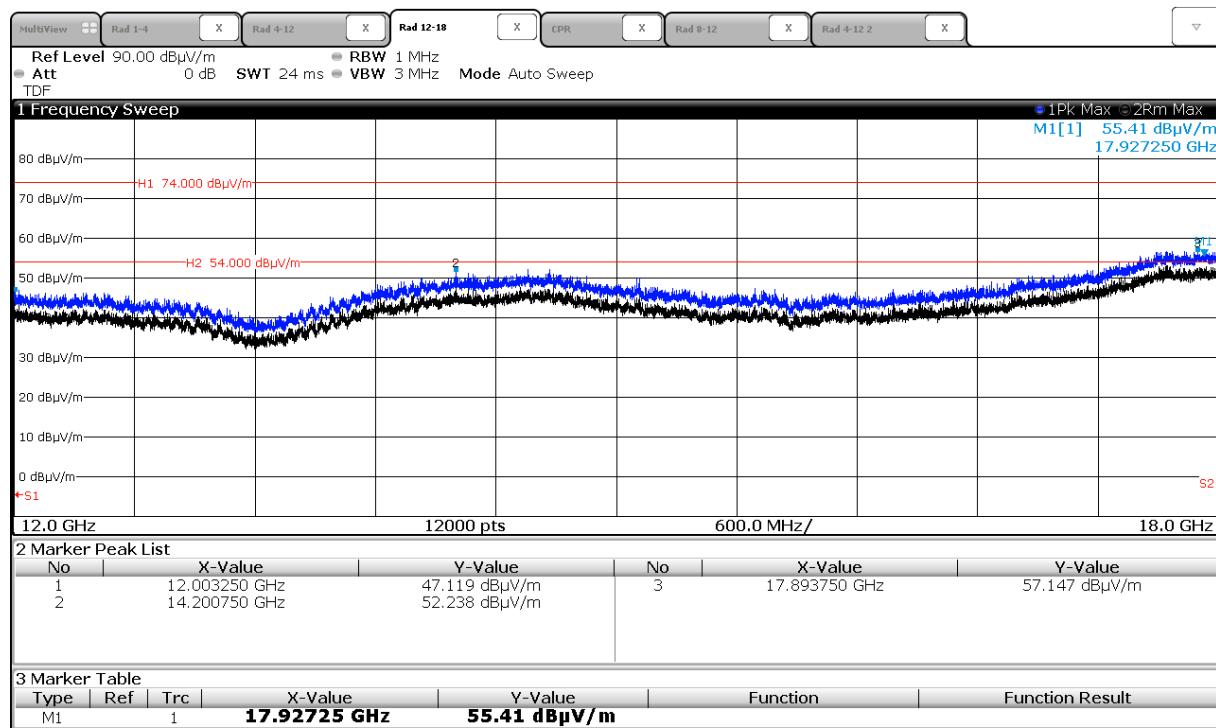
The requirements are **FULFILLED**.

**Remarks:** The measurement was performed up to the 10<sup>th</sup> harmonic. For detailed test results please see the following test protocols.

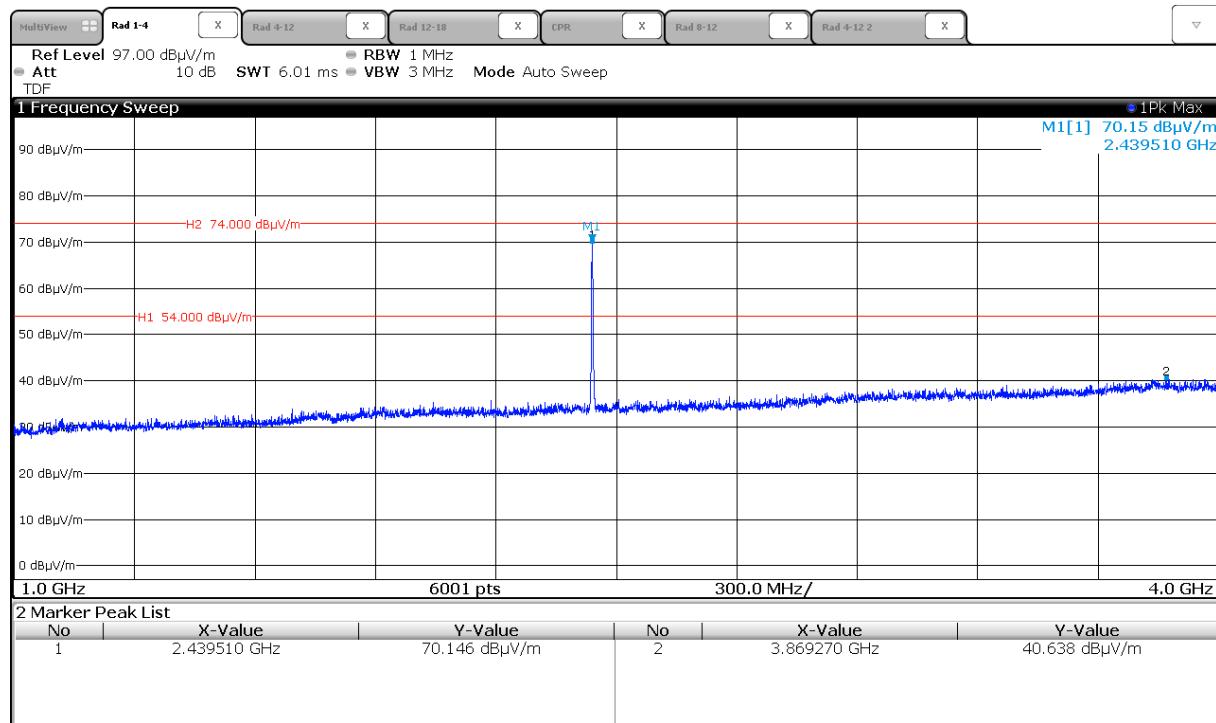
### 5.6.2 Test protocols radiated emissions SER3

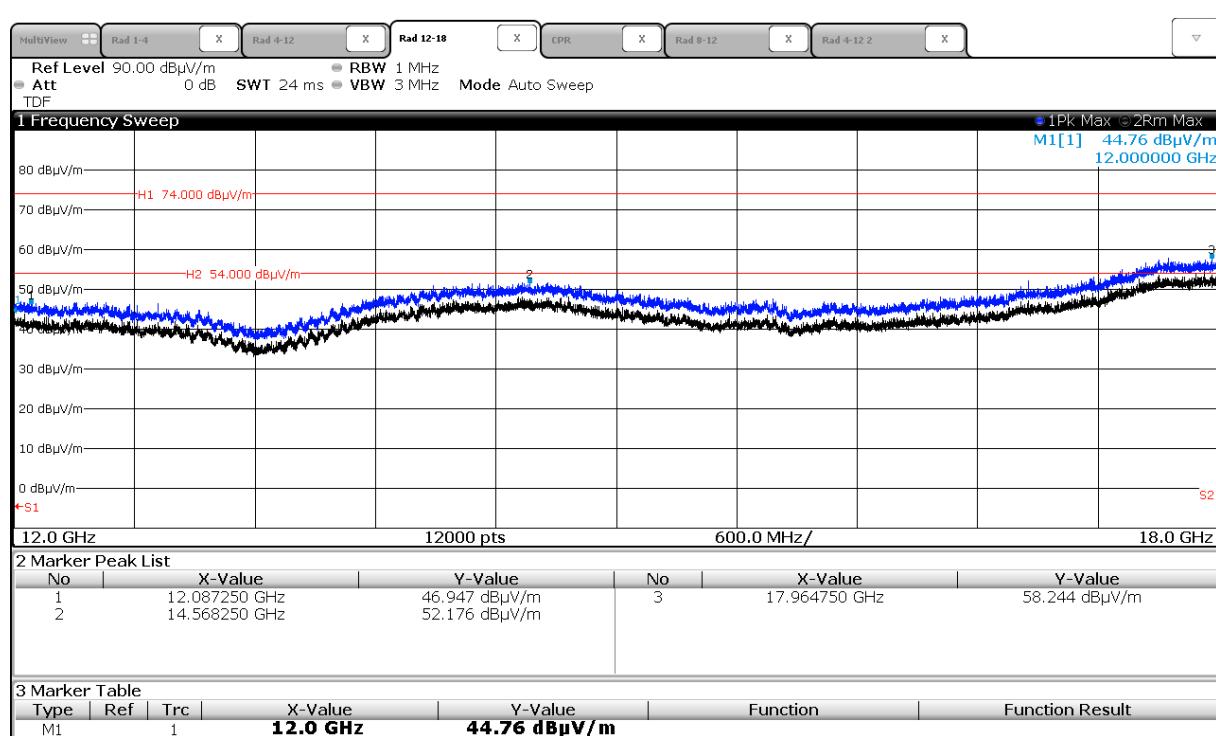
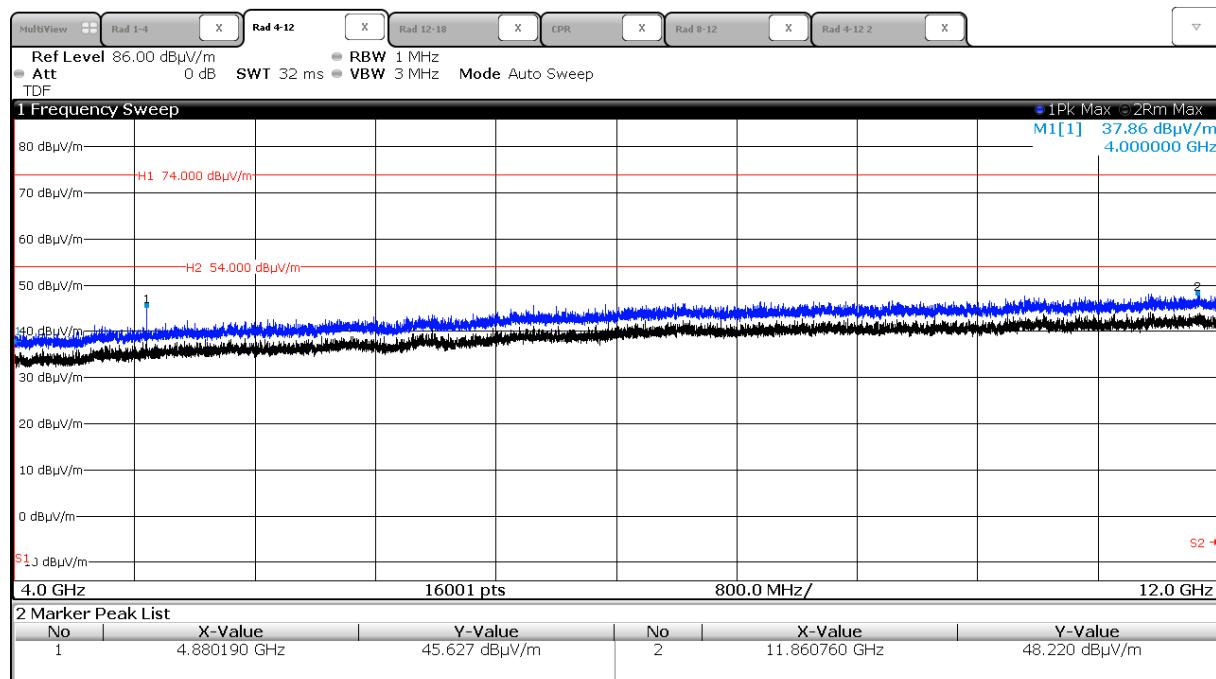
#### Channel 11

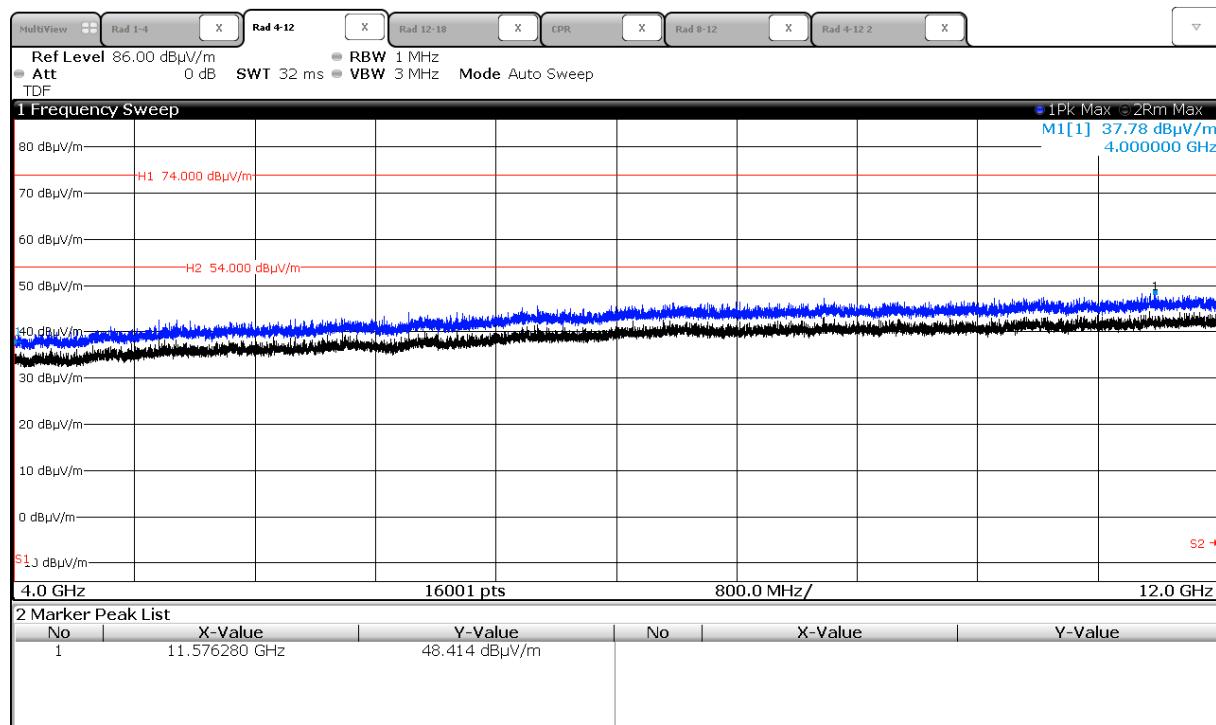
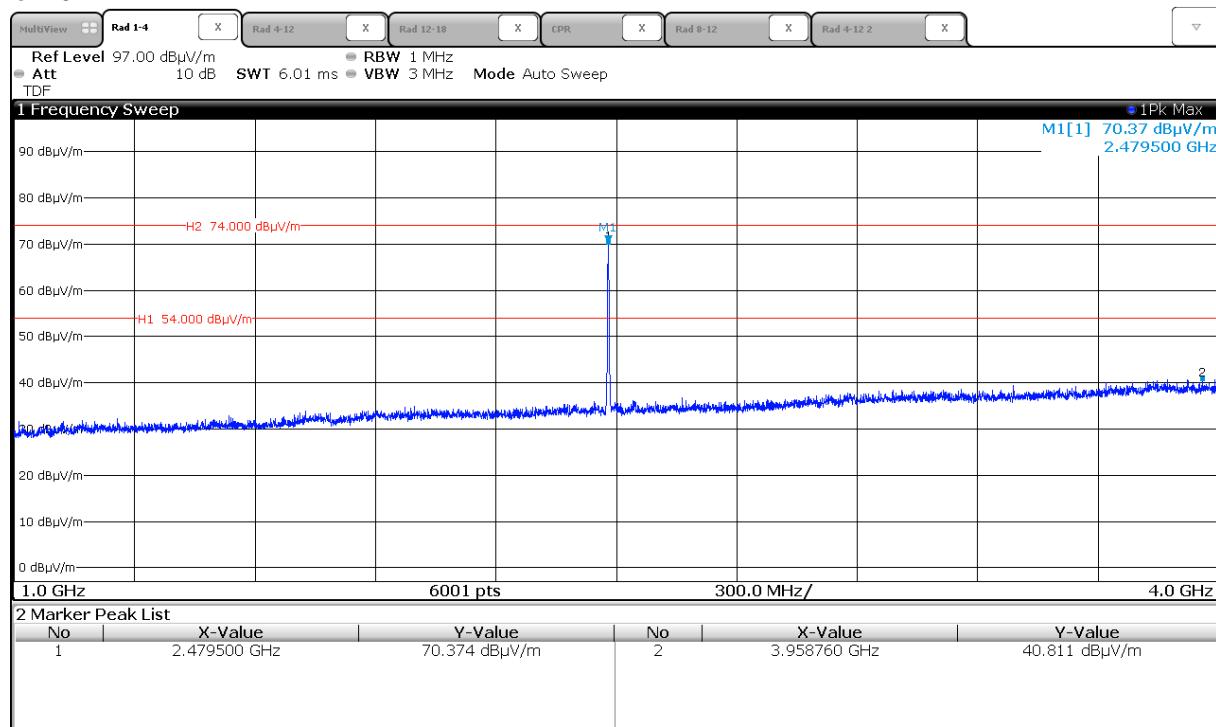


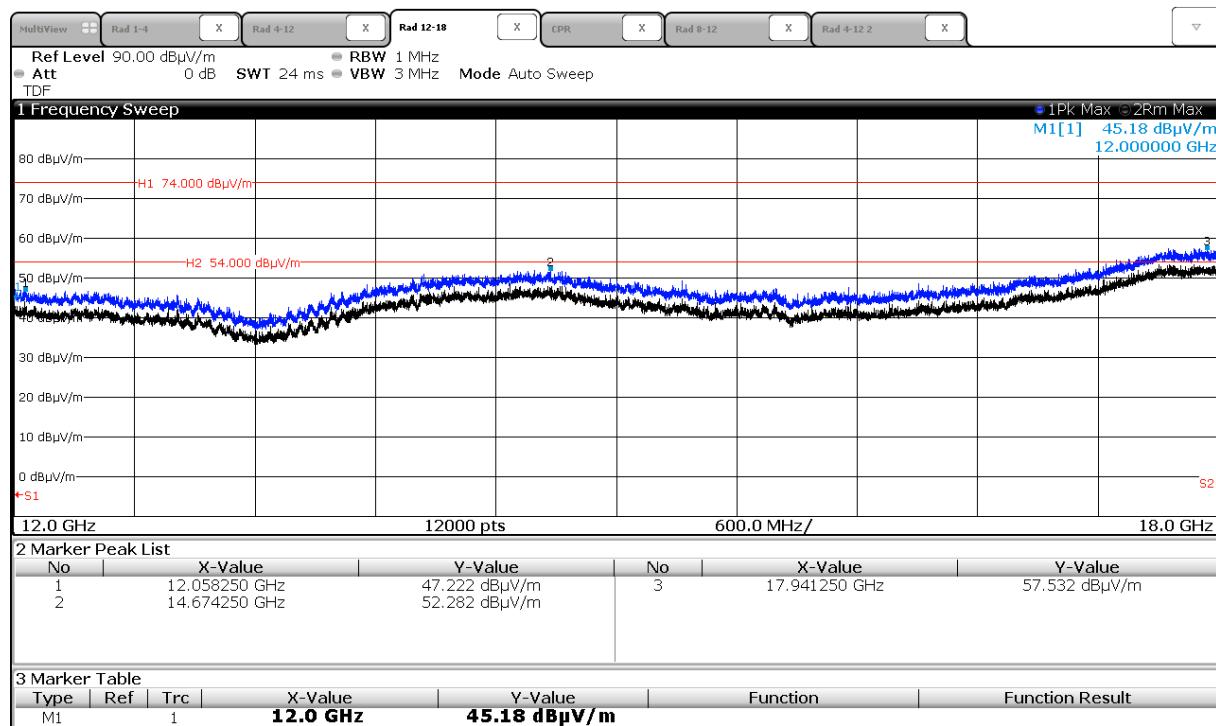
**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**


### Channel 18



**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**


**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**
**Channel 26**


**FCC ID: VQ5-EBI10**
**IC: 7412A-EBI10**


## 5.7 Antenna application

For test instruments and accessories used see section 6 Part **CPC3** .

### 5.7.1 Description of the test location

Test location:                   NONE

### 5.7.2 Applicable standard

According to FCC Part 15C, Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit that broken antennas can be replaced by the user, but the use of a standard antenna jack is prohibited.

The EUT has an integrated antenna. No other antenna can be used with the device. Additional to that a conducted output power measurement was performed.

The supplied antenna meets the requirements of part 15.203 and 15.204.

**Remarks:**

## **6 USED TEST EQUIPMENT AND ACCESSORIES**

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

<b>Test ID</b>	<b>Model Type</b>	<b>Equipment No.</b>	<b>Next Calib.</b>	<b>Last Calib.</b>	<b>Next Verif.</b>	<b>Last Verif.</b>
CPR 3	FSW43	02-02/11-15-001	05/08/2016	05/08/2015		
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	AFS4-01000400-10-10P-4	02-02/17-13-002				
	AMF-4F-04001200-15-10P	02-02/17-13-003				
	3117	02-02/24-05-009	24/05/2017	24/05/2016		
	Sucoflex N-2000-SMA	02-02/50-05-075				
	SF104/11N/11N/1500MM	02-02/50-13-015				
MB	FSW43	02-02/11-15-001	05/08/2016	05/08/2015		
SER 2	ESVS 30	02-02/03-05-003	09/07/2016	09/07/2015		
	VULB 9168	02-02/24-05-005	20/04/2017	20/04/2016	20/10/2016	20/04/2016
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
SER 3	FSW43	02-02/11-15-001	05/08/2016	05/08/2015		
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	AFS4-01000400-10-10P-4	02-02/17-13-002				
	AMF-4F-04001200-15-10P	02-02/17-13-003				
	3117	02-02/24-05-009	24/05/2017	24/05/2016		
	Sucoflex N-2000-SMA	02-02/50-05-075				
	SF104/11N/11N/1500MM	02-02/50-13-015				