FCC ID: VT4-WTRANST01-02

Registration No. DAT-P-207/05

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

- FCC Part 15.249 -

Test Report No. :	**T34482-00-00AA**	17. January 2011 Date of issue

Type / Model Name : JUMO Wtrans T01, JUMO Wtrans T02

Product Description : Temperature probe with wireless data transfer

Applicant **:** JUMO GmbH & Co. KG

Address : Moritz-Juchheim-Straße 1

36039 Fulda, Germany

Manufacturer **:** JUMO GmbH & Co. KG

Address : Moritz-Juchheim-Straße 1

36039 Fulda, Germany

Licence holder **:** JUMO GmbH & Co. KG

Address : Moritz-Juchheim-Straße 1

36039 Fulda, Germany

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

Deutscher Akkreditierungs Rat

DAT-P-207/05-00

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (October, 2009)

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 (October, 2009)

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 15.249	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz
ANSI C63.4: 2009	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI C95.1:1992	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
CISPR 16-4-2: 2003	Uncertainty in EMC measurement
CISPR 22: 2005 EN 55022: 2006	Information technology equipment

2 SUMMARY

GENERAL REMARKS:

The basic type can be equipped with different temperature probes as well as with M12 connection.
In all possible combinations the electronic is identically.
The EuT is transmitting in the 915 MHz band.
The transmit interval can be set by software between 1 s and 3600 s.

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 : 15 July 2010

Testing concluded on : 16 July 2010

Checked by:

Klaus Gegenfurtner
I confirm the correctness and integrity of this document
2011.01.18 08:23:06 +01'00'

Klaus Gegenfurtner
Dipl.-Ing.(FH)
Manager: Radio Group

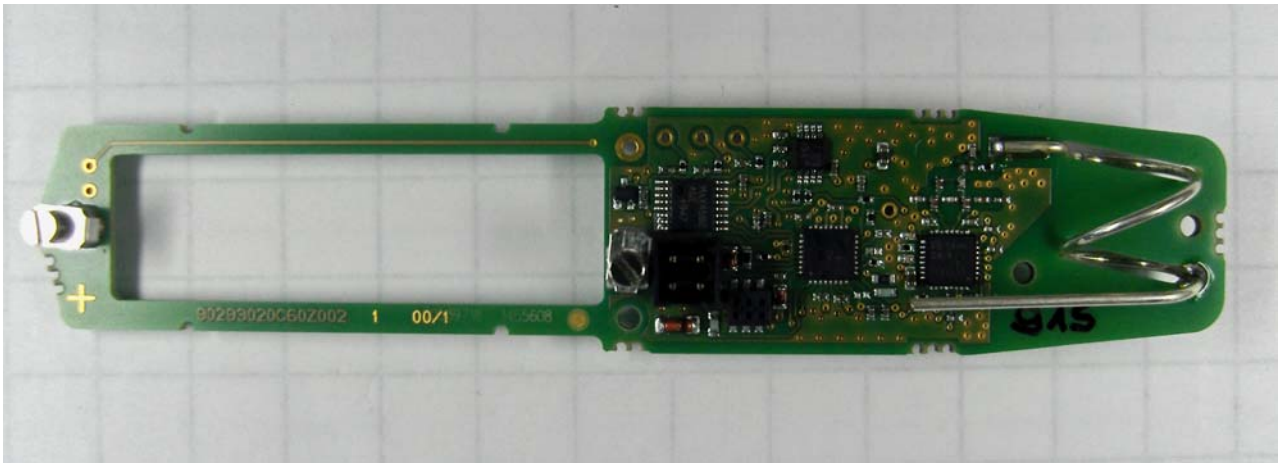
Tested by:

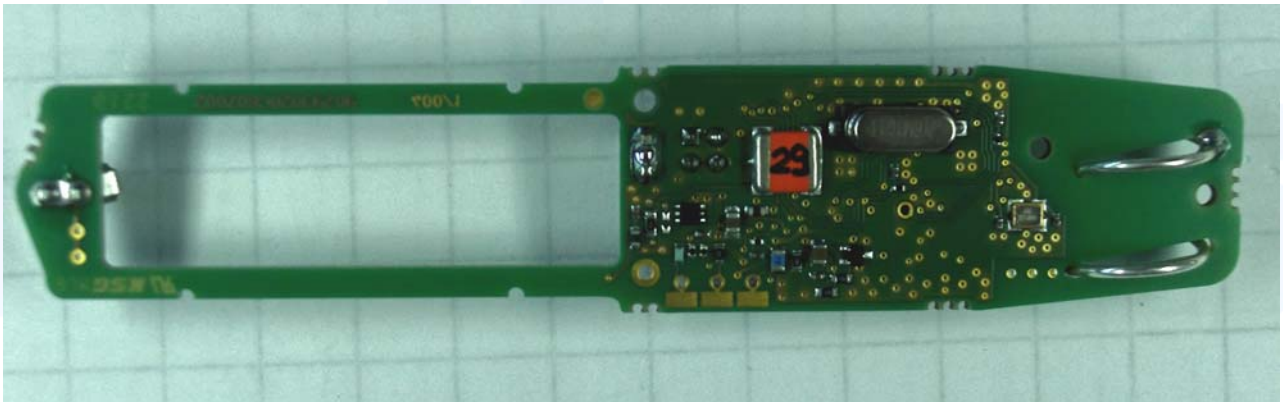
Anton Altmann
I`m the author of this document
2011.01.17 11:36:28 +01'00'

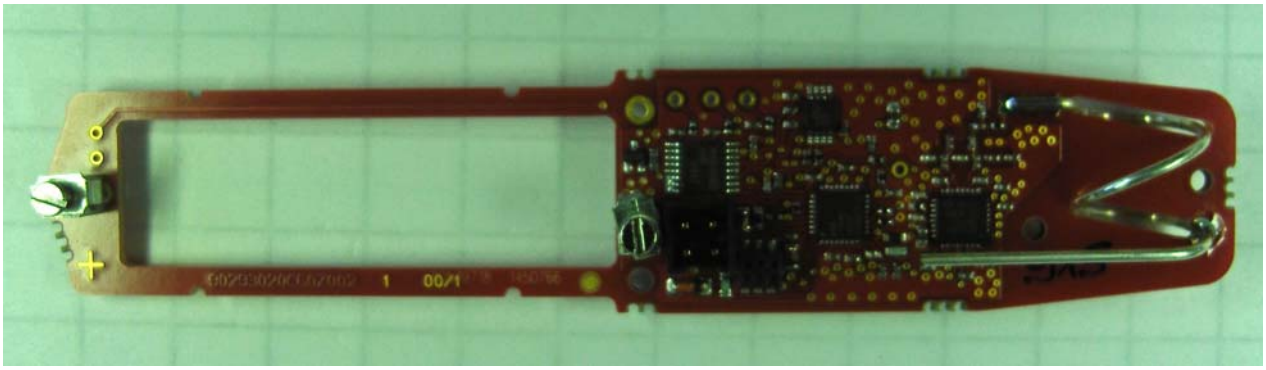
Anton Altmann
Dipl.-Ing.(FH)

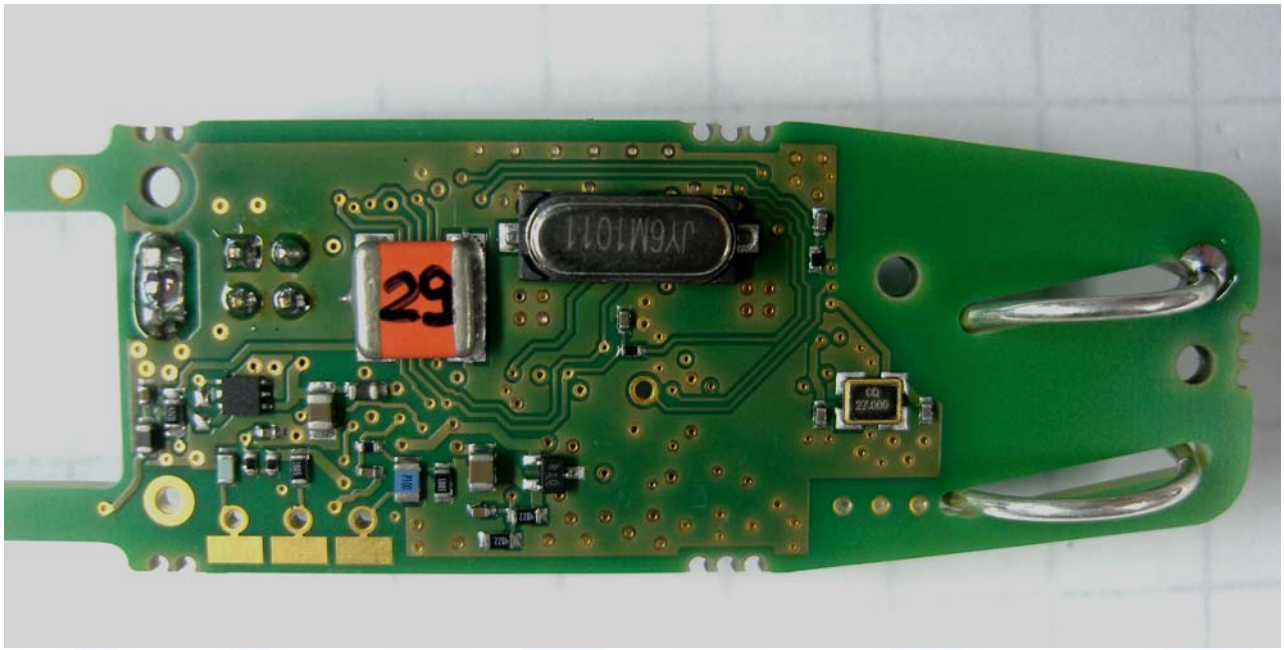
3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT





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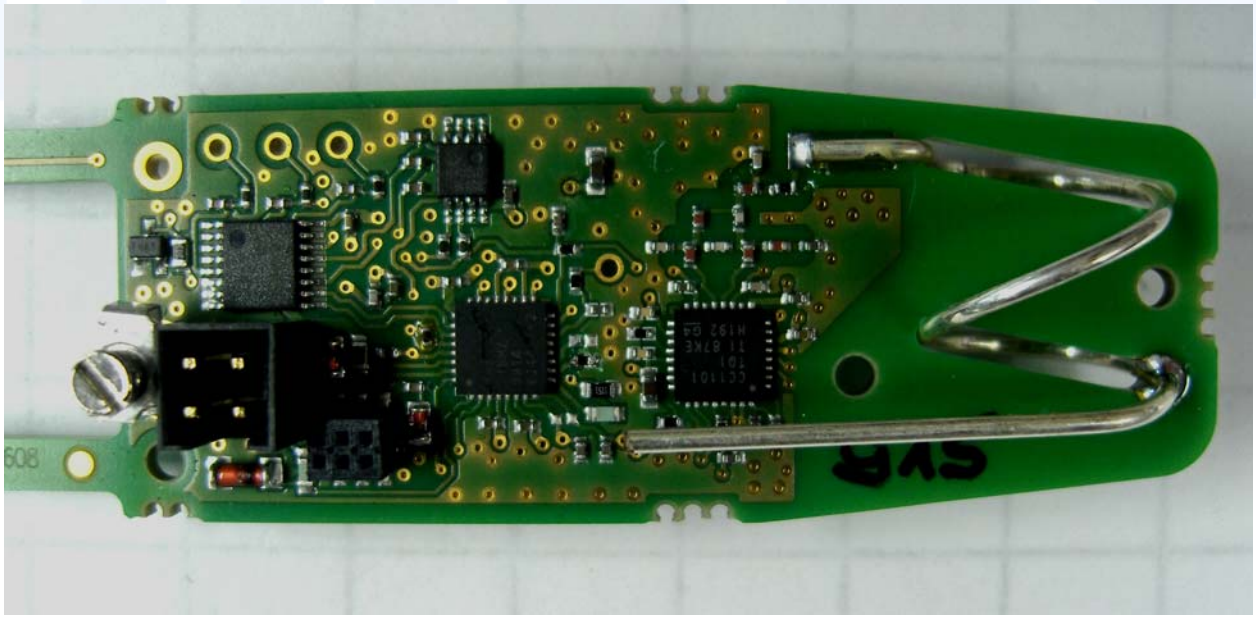

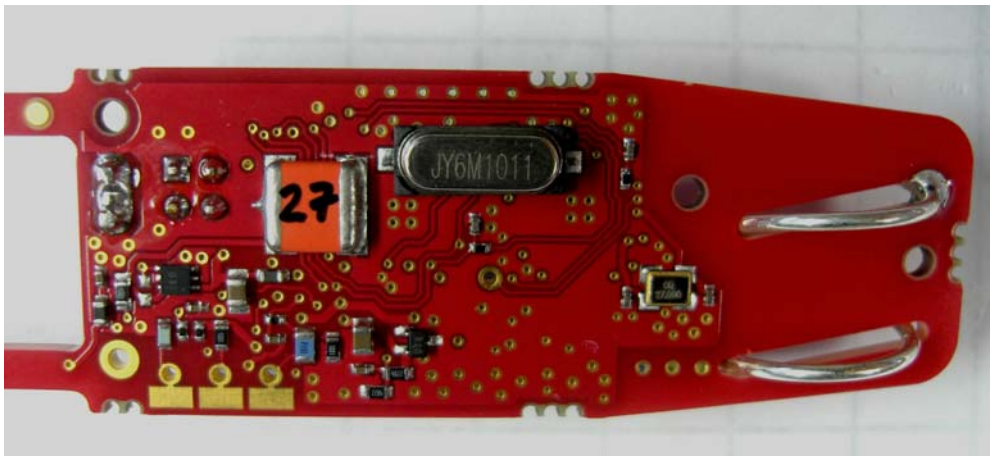
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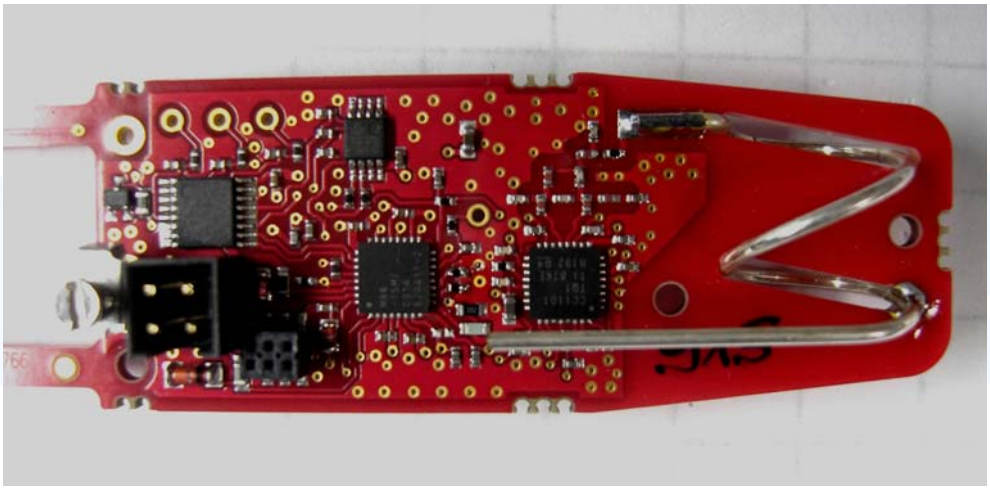
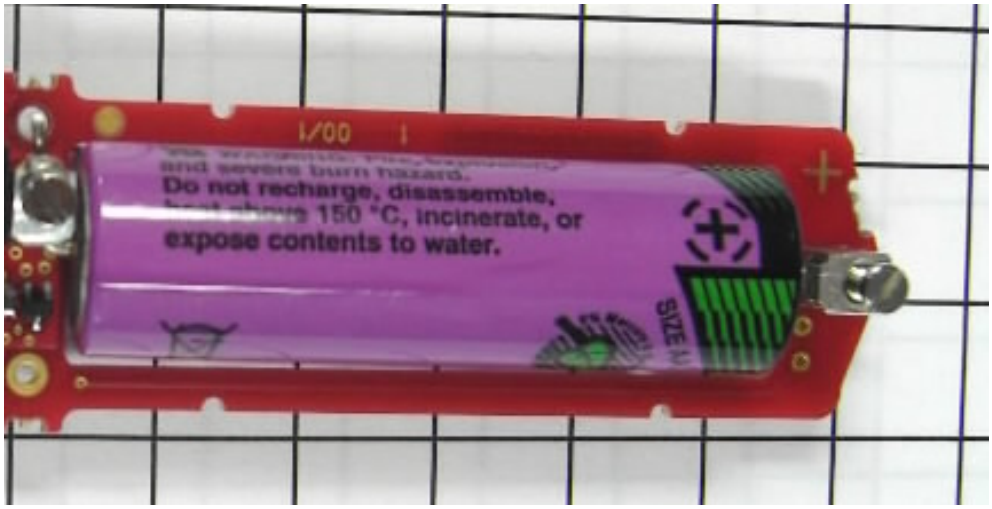



Do not recharge, disassemble,
expose contents to water.

3.2 Power supply system utilised

Power supply voltage : 3.6 V / DC (Lithium battery)

3.3 Short description of the equipment under test (EUT)

The EuT is used in connection with corresponding Wtrans receivers for mobile or stationary temperature measurement within the application range of -30 to 260 ˚C or -200 to 600 ˚C. The ambient handle temperature must be between -30 to 85 ˚C. The measured temperature value is transmitted wireless to the receiver of the Wtrans system, displayed on the system and provided on the Wtrans receiver as a digital RS485 interface and analog outputs and/or relay outputs.

Number of tested samples: 1
Serial number: Prototype

EUT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- TX with internal modulation

EUT configuration:

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

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

- None Model :
- Model :
- Model :
- Model :
- Model :
- Model :

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

mikes-testingpartners gmbh
Ohmstrasse 2-4
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. The reader may notice that tolerances within the calibration of the equipment and facilities may cause additional uncertainty. The measurement uncertainty is calculated for all measurements listed in this test report acc. to CISPR 16-4-2 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurement“ and documented in the mikes-testingpartners gmbh quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, mikes-testingpartners 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 diversity and modifications in production processes may result in additional deviation. If necessary, refer to the test lab for the actual measurement uncertainty for specific tests. The manufacturer has the sole responsibility of continued compliance of the EUT.

4.4 Measurement protocol for FCC, VCCI and AUSTEL

4.4.1 GENERAL INFORMATION

4.4.1.1 Test methodology

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

4.4.1.2 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.

4.4.2 DETAILS OF TEST PROCEDURES

General Standard information

The test methods used comply with CISPR Publication 22, EN 55022 - " Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.4 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". 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 C63.4 and applying the CISPR 22 limits.

4.4.3 Conducted emission

Description of measurement

The final level, expressed in dBµV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC limit or to the CISPR limit.

To convert between dBµV and µV, the following conversions apply:

dBµV = 20*log(µV);
µV = 10^(dBµV/20);

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50Ω/50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin of a peak mode measurement appears to be less than 20 dB, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

4.4.4 Radiated emission (electrical field 30 MHz - 1 GHz)

Description of measurement

Spurious emissions from the EUT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarised antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is established in accordance with ANSI C63.4.The interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so that they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT and is repeated vertically. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters and the EUT is rotated 360 degrees.
The final level in dBµV/m is calculated by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (dB). The FCC or CISPR limit is subtracted from this result in order to provide the limit margin listed in the measurement protocol.

The resolution bandwidth setting:
30 MHz – 1000 MHz: RBW: 120 kHz

Example:

Frequency	Level	+	Factor	=	Level	-	CISPR Limit	=	Delta
(MHz)	(dBµV)		(dB)		(dBµV/m)		(dBµV/m)		(dB)
719.0	75.0	+	32.6	=	107.6	-	110.0	=	-2.4

4.4.5 Radiated emission (electrical field 1 GHz - 40 GHz)

Description of measurement

Radiated emissions from the EUT are measured in the frequency range 1 GHz up to the maximum frequency as specified in 47 CFR Part 15, Subpart A, Section 15.33, using a spectrum analyser and appropriate linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 metre non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The setup of the equipment under test is following set out in ANSI C63.4. The interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. Measurements are made in both the horizontal and vertical polarization planes in a fully anechoic room using a spectrum analyser set to max peak detector function and a resolution 1 MHz and video bandwidth 3 MHz for peak and 10 Hz for average measurement. The conditions determined as worst case will then be used for the final measurements. When the EUT is larger than the beam width of the measuring antenna it will be moved over the surface for the four sides of the equipment. Where appropriate, the test distance may be reduced in order to detect emissions under better uncertainty and are calculated at the specified test distance.

5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

For test instruments and accessories used see section 6 Part.

5.1.1 Description of the test location

Test location: None

5.1.2 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.

Remarks: The measurement is not applicable. The EuT is battery powered.

5.2 Radiated emission of the fundamental wave

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

5.2.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.2.2 Photo documentation of the test set-up

5.2.1 Applicable standard

According to FCC Part 15C, Section 15.249(a):
The field strength of emissions from intentional radiators operated within this frequency band shall comply with the limits defined in Table 1 below.

5.2.2 Description of Measurement

The radiated emission of the fundamental wave from the EUT is measured using a tuned receiver and appropriate linear polarized antennas.
Receiver settings:
RBW: 120 kHz
Detector: Quasi peak

5.2.3 Test result

Frequency (MHz)	Level QP (dBµV)	Correct. factor (dB)	Corrected level dB(µV/m)	Limit dB(µV/m)	Delta (dB)
912.6	64.9	28.5	93.4	93.98	-0.58
915.4	65.2	28.5	93.7	93.98	-0.28
917.4	64.6	28.6	93.2	93.98	-0.78

Note: Correction factor includes cable loss and antenna factor.

Limit according to FCC Section 15.249(a):

Table 1

Frequency	Field strength of fundamental	
(MHz)	(mV/m)	dB(µV/m)
902 - 928	50	93.98

The requirements are **FULFILLED.**

Remarks: _____

5.3 Spurious emissions radiated

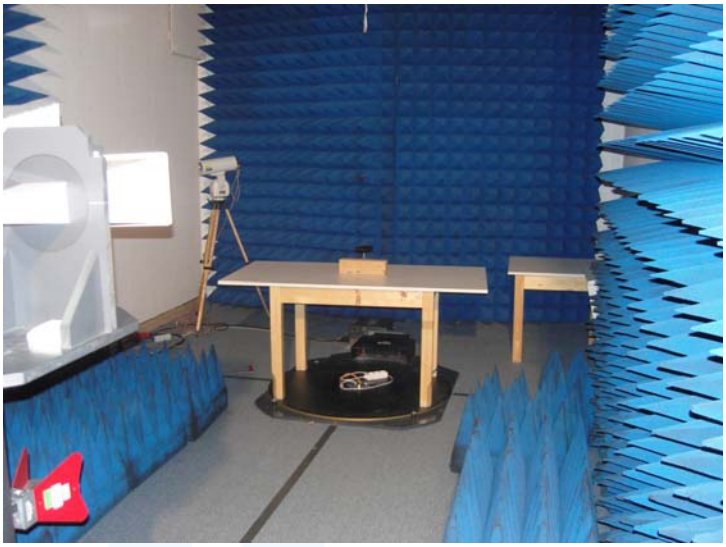
For test instruments and accessories used see section 6 Part **SER 1, SER 2, SER 3**.

5.3.1 Description of the test location

Test location: OATS1
Test location: Anechoic Chamber A2

Test distance: 3 metres

5.3.2 Photo documentation of the test set-up



5.3.3 Applicable standard

According to FCC Part 15C, Section 15.249(d):
Emission radiated outside of the specified frequency bands, except harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limit in §15.209, whichever is the lesser attenuation.

5.3.4 Description of Measurement

The radiated emissions from the EUT are measured in the frequency range of 9 kHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. The set up of the EUT will be in accordance to ANSI C63.4. In the frequency range above 1 GHz a spectrum analyser is used with appropriate linear polarized antennas. If the emission levels in peak mode don't comply with the average limit each of the emission will be measured in average mode again and reported. However, the peak field strength shall not exceed the average limit by more than 20 dB. During the test, the EUT was set into continuous transmitting mode modulated.

Measuring Instrument settings:

9 kHz – 150 kHz	RBW:	200 Hz
150 kHz - 30 MHz	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz
1000 MHz – 40 GHz	RBW = VBW:	1 MHz

5.3.5 Test result f < 1 GHz

Channel 1 (912.6 MHz)

Frequency (MHz)	Reading level QP (dBµV)	Reading level AV (dBµV)	Bandwidth (kHz)	Correction factor (dB)	Corrected level QP dB(µV/m)	Corrected level AV dB(µV/m)	Limit dB(µV/m)	Delta (dB)

Channel 2 (915.4 MHz)

Frequency (MHz)	Reading level QP (dBµV)	Reading level AV (dBµV)	Bandwidth (kHz)	Correction factor (dB)	Corrected level QP dB(µV/m)	Corrected level AV dB(µV/m)	Limit dB(µV/m)	Delta (dB)

Channel 3 (917.4 MHz

Frequency (MHz)	Reading level QP (dBµV)	Reading level AV (dBµV)	Bandwidth (kHz)	Correction factor (dB)	Corrected level QP dB(µV/m)	Corrected level AV dB(µV/m)	Limit dB(µV/m)	Delta (dB)

Note: Correction factor includes cable loss and antenna factor.
Below 1 GHz no unwanted emissions could be measured (Refer to attached plots below).

5.3.6 Test result f > 1 GHz

Channel 1 (912.6 MHz)

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)*)	Correct. Factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Limit PK dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
5476	48.3	---	5.0	53.3	---	74	54	-0.7

Channel 2 (915.4 MHz)

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)*)	Correct. Factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Limit PK dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
1864	54.1	---	-11	43.1	---	74	54	-10.9
5488	47.6	---	5.0	52.6	---	74	54	-1.4

Channel 3 (917.4 MHz)

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)*)	Correct. Factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Limit PK dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
5500	46.8	---	4.9	51.7	---	74	54	-2.3

Note: Correction factor includes cable loss and antenna factor.

Limit according to FCC Part 15C, Section 15.209:

Frequency (MHz)	Limit dB(µV/m)	Measurement distance (m)
0.009 - -0.49	2400/f(kHz)	300
0.49 – 1.705	24000/f(kHz)	30
1.705 – 30.0	30	30
30-88	40	3
88-216	43,5	3
216-960	46	3
Above 960	54	3

The requirements are **FULFILLED.**

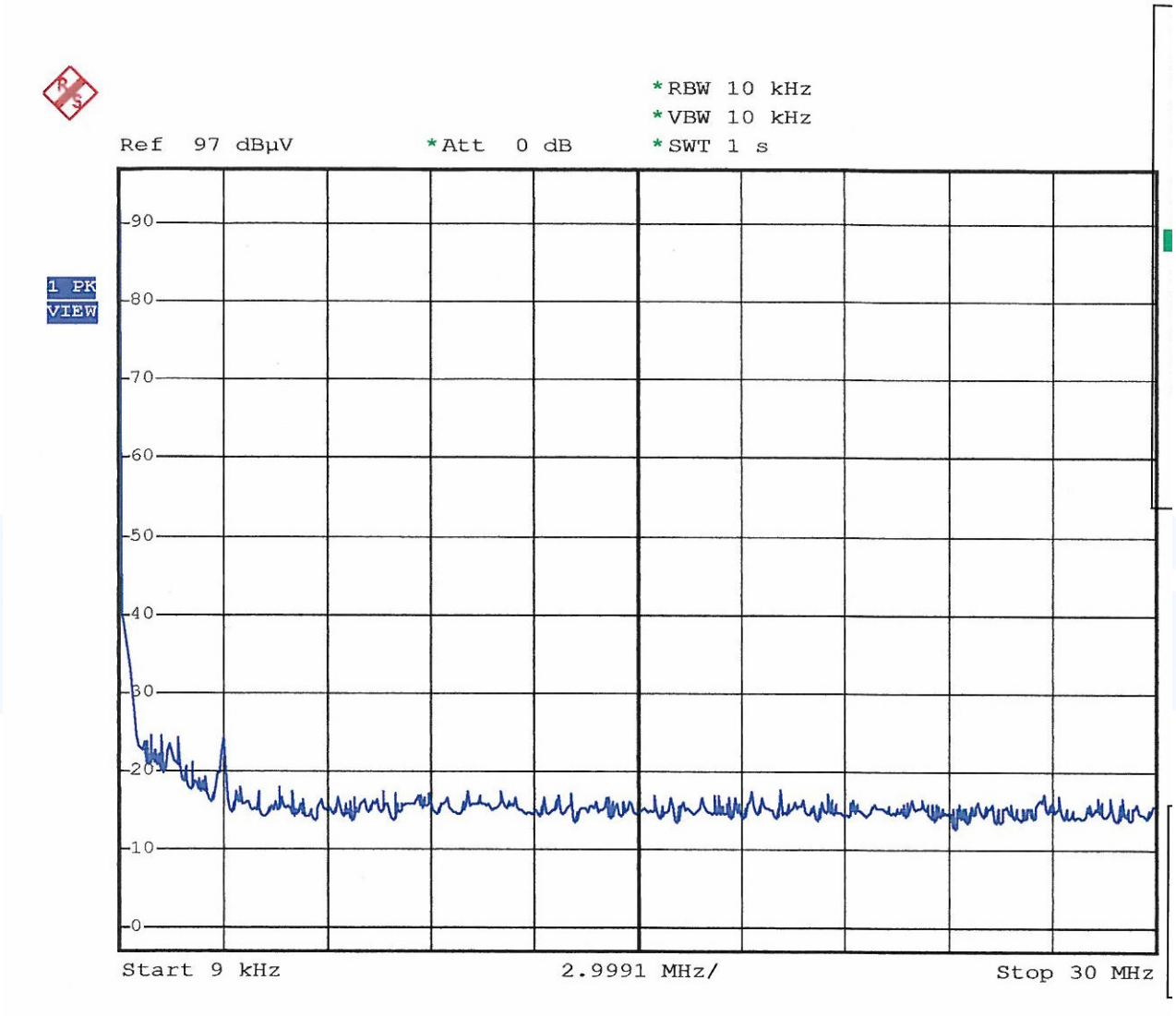
Remarks: The measurement was performed up to the 10th harmonic (10000 MHz).

For detailed results please refer to following plots.

5.3.7 Test protocols

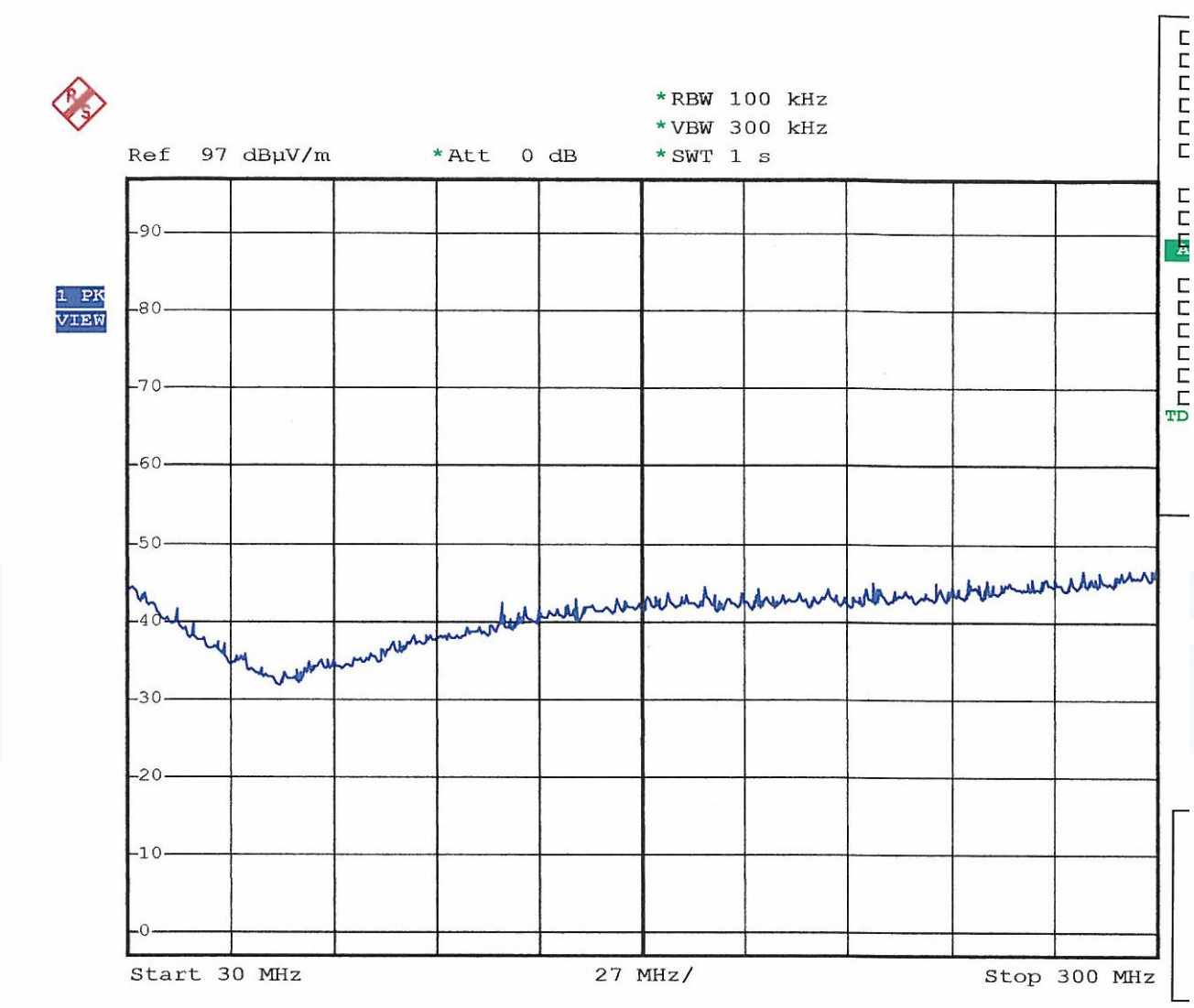
SER 1

Overview in anechoic chamber



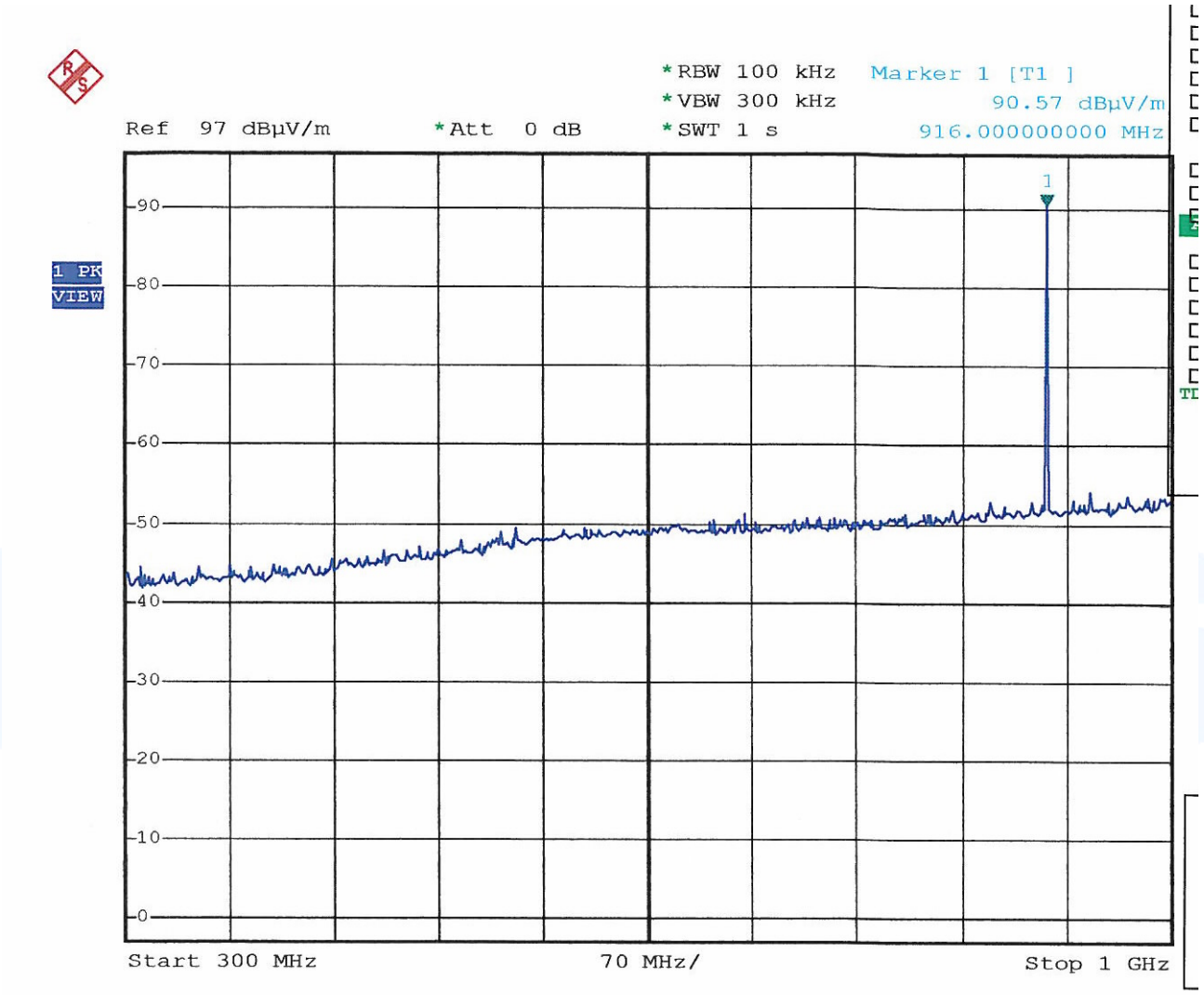
SER 2

Overview in anechoic chamber



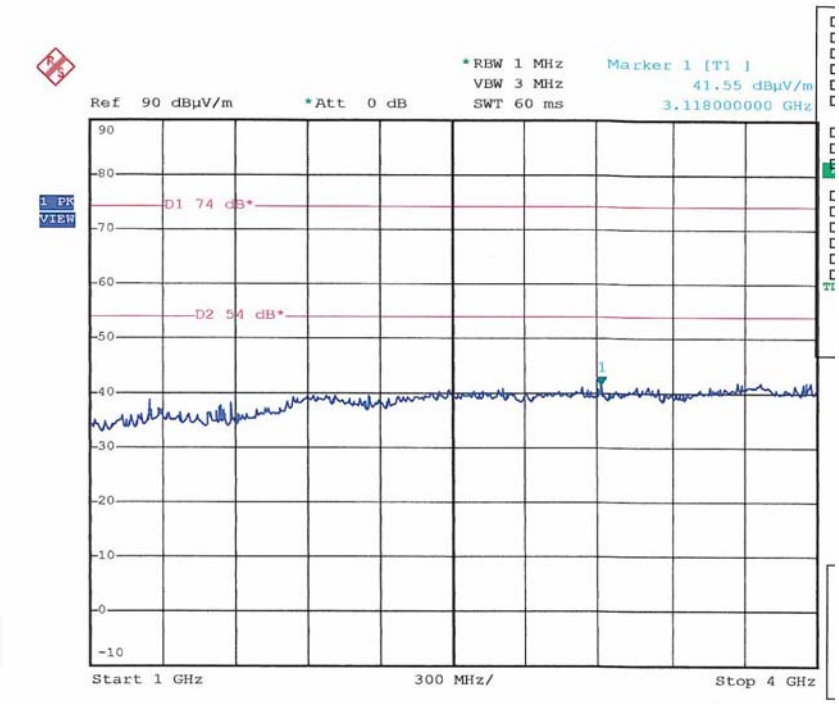
SER 2

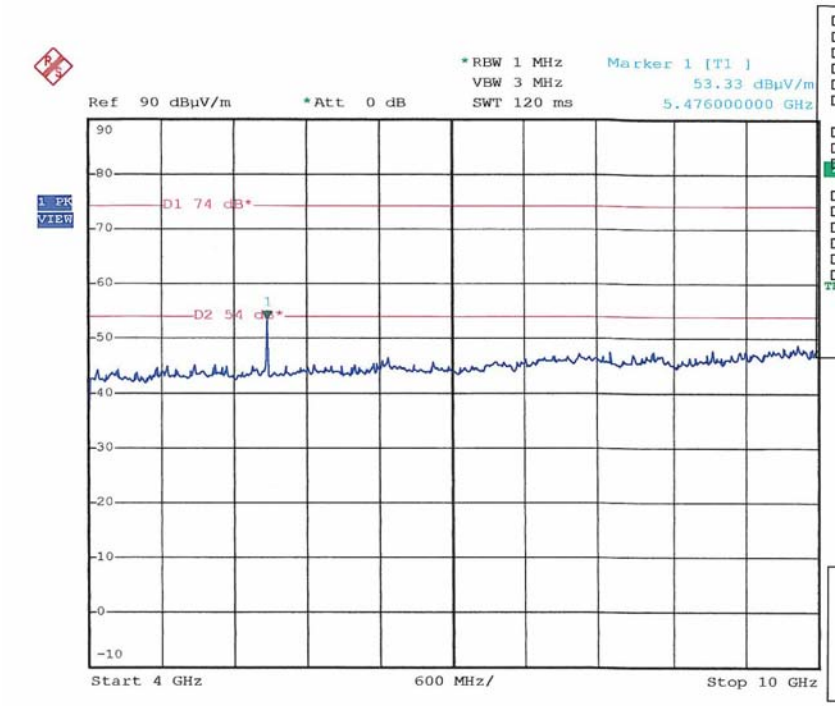
Overview in anechoic chamber



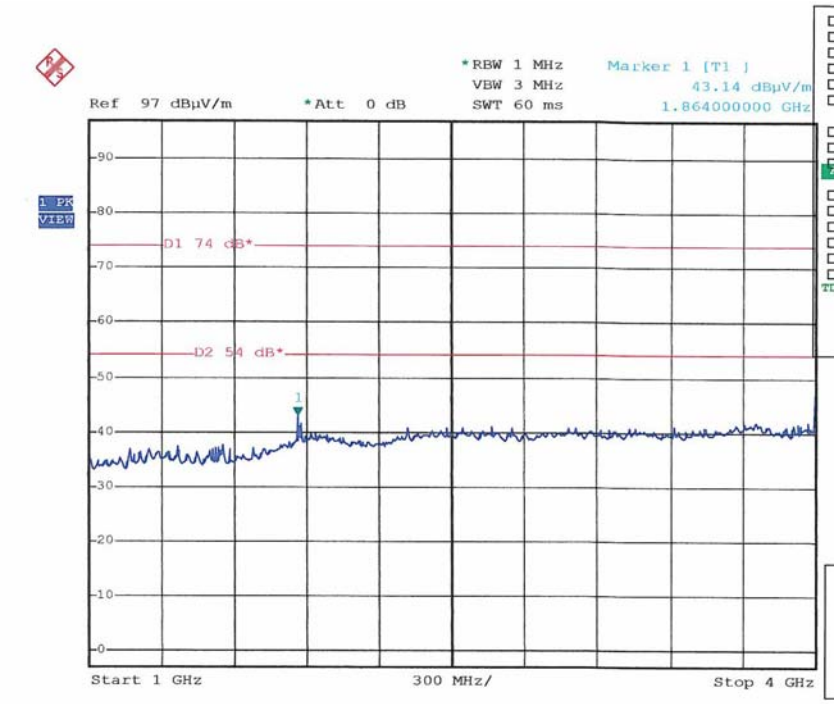
SER 3

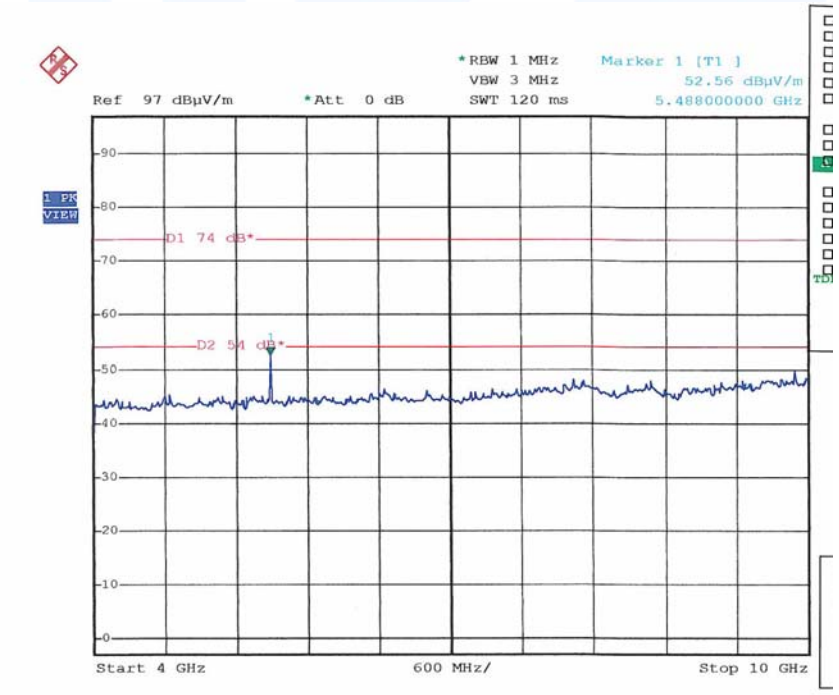
Channel 1 (912.6 MHz)



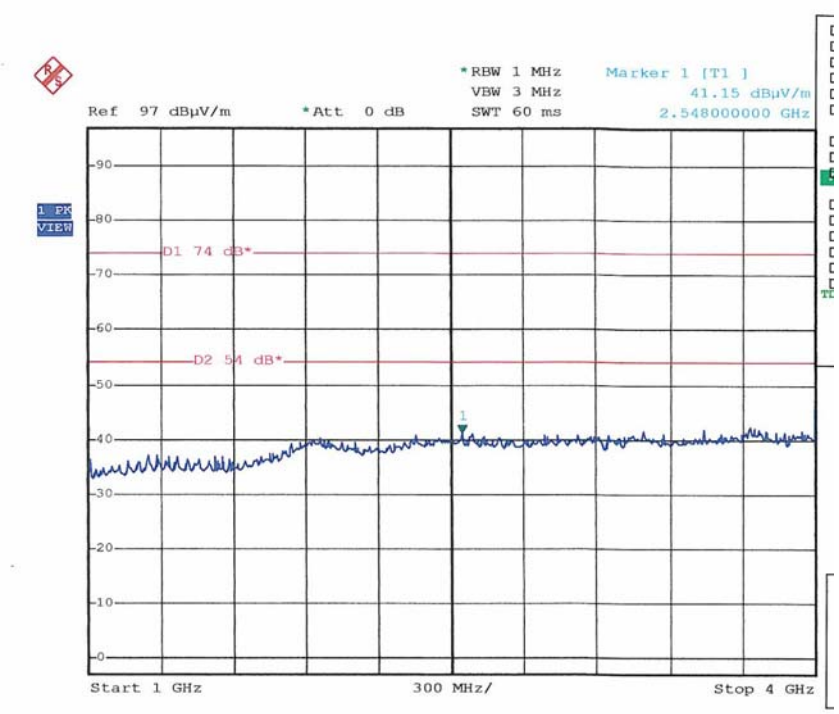


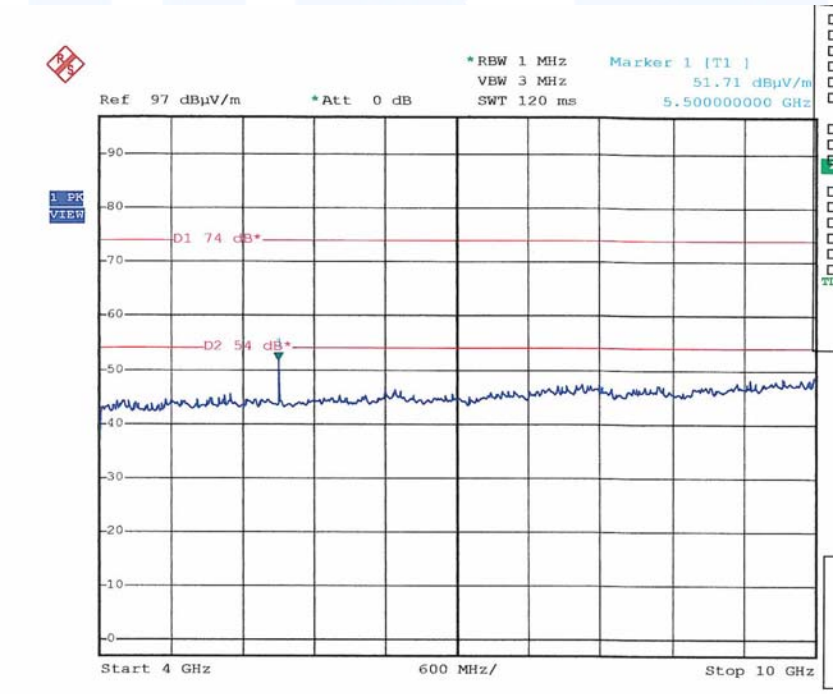
Channel 2 (915.4 MHz)





Channel 3 (917.4 MHz)





5.4 Emission Bandwidth

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

5.4.1 Description of the test location

Test location: AREA4

5.4.2 Applicable standard

According to FCC Part 15, Section 15.215(c):
Intentional radiators operating under the provisions to the general emission limits, as contained in Section 15.217 through Section 15.257, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

5.4.3 Description of Measurement

The bandwidth is measured at an amplitude level reduced from the fundamental level by -20 dB. The upper and lower frequency, where the displayed power envelope of modulation equals the -20 dB level is recorded. The measurement is performed with normal modulation and normal test conditions.

Spectrum analyser settings:
RBW: 3 kHz
VBW: 10 kHz
Span: 1 MHz

5.4.4 Test result

Operating frequency band: 902 to 928 MHz

Frequency (MHz)	f_{low} (MHz)	f_{high} (MHz)	Bandwidth (kHz)
912.6	912.470	912.686	216
915.4	915.272	915.484	212
917.4	917.272	917.484	212

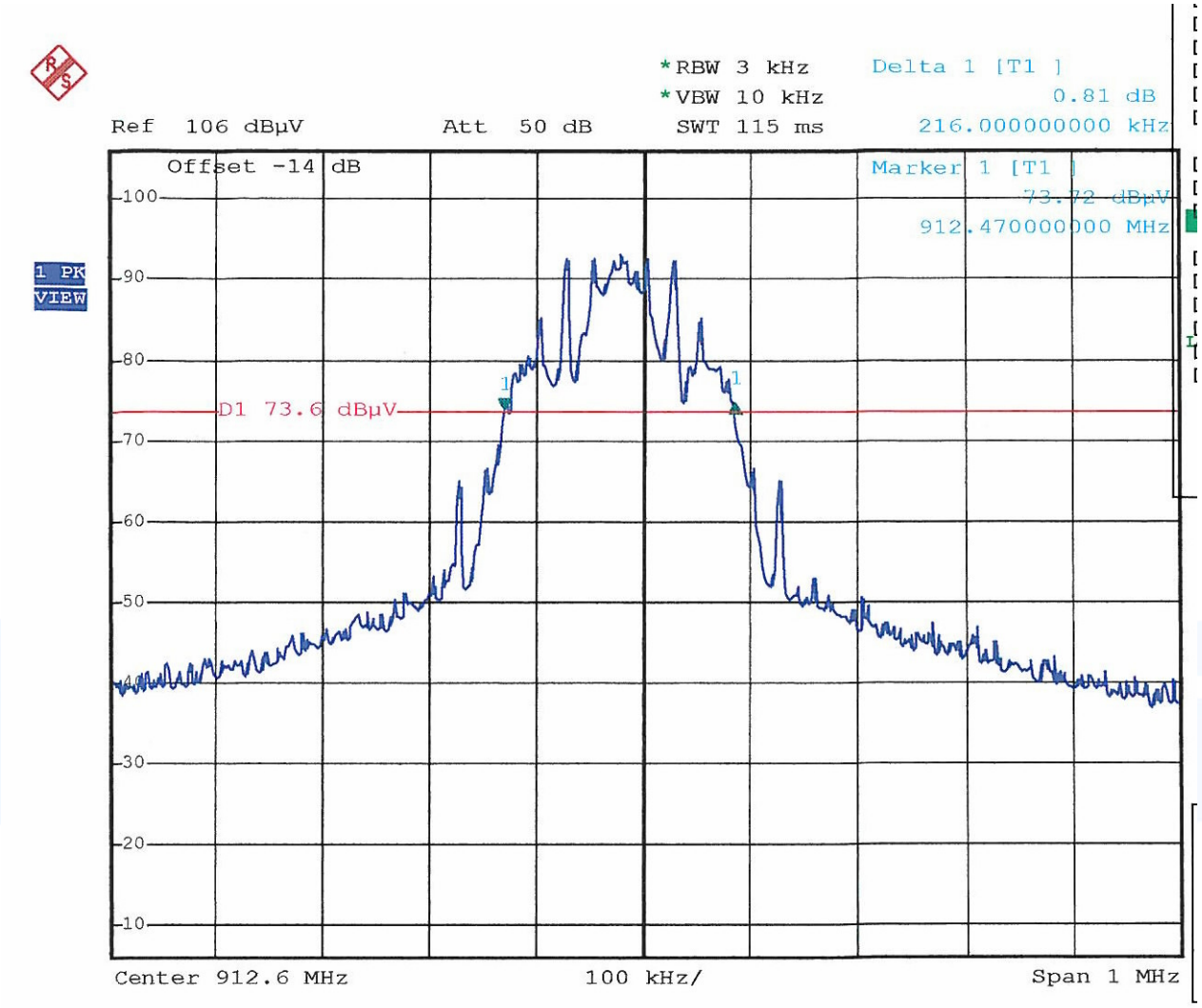
Limit according to FCC Part 15C, Section 15.215(c):
If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

The requirements are **FULFILLED.**

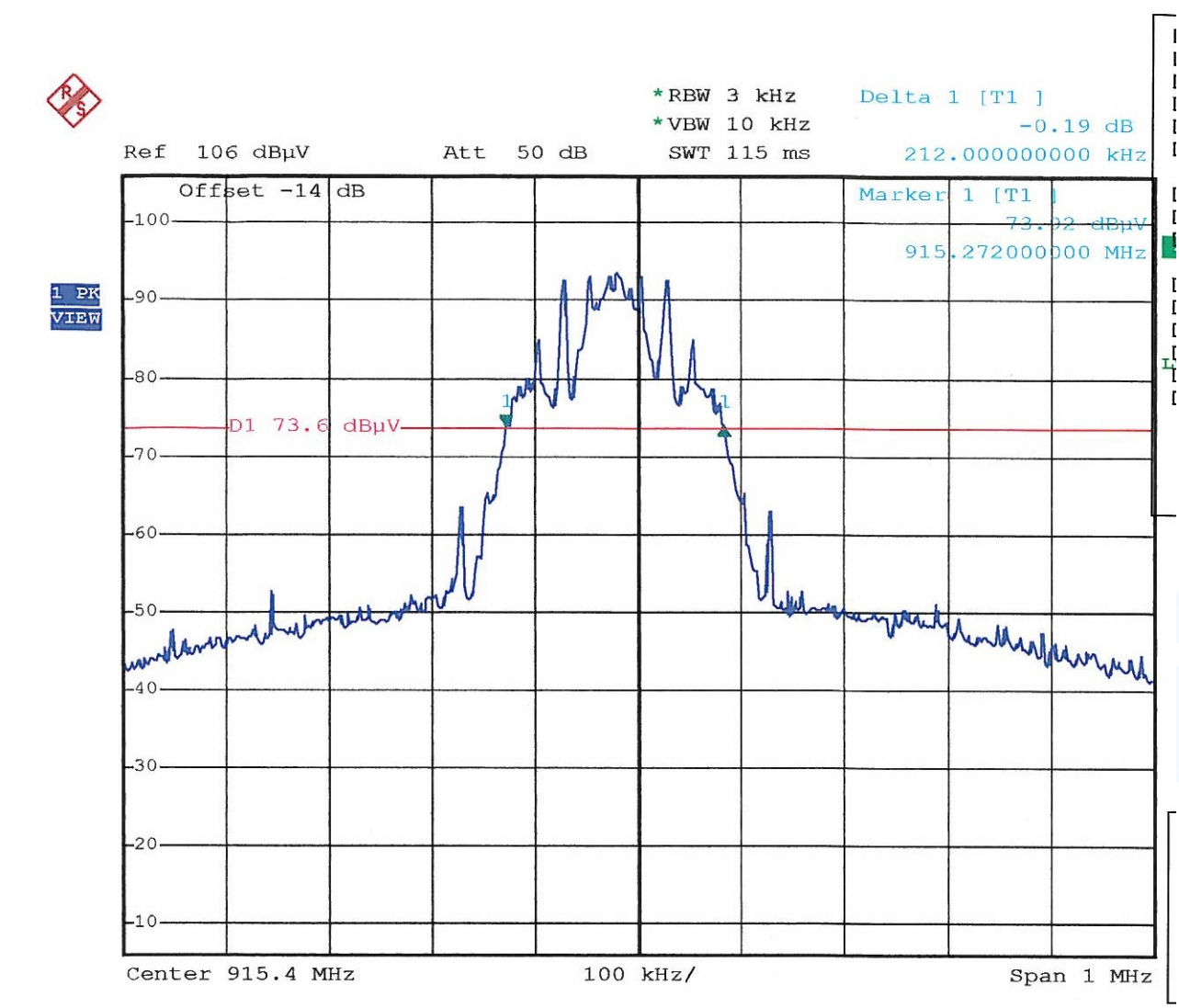
Remarks: The fundamental emissions are inside of the central 80 % of the permitted frequency band.

For detailed results please refer to following plots.

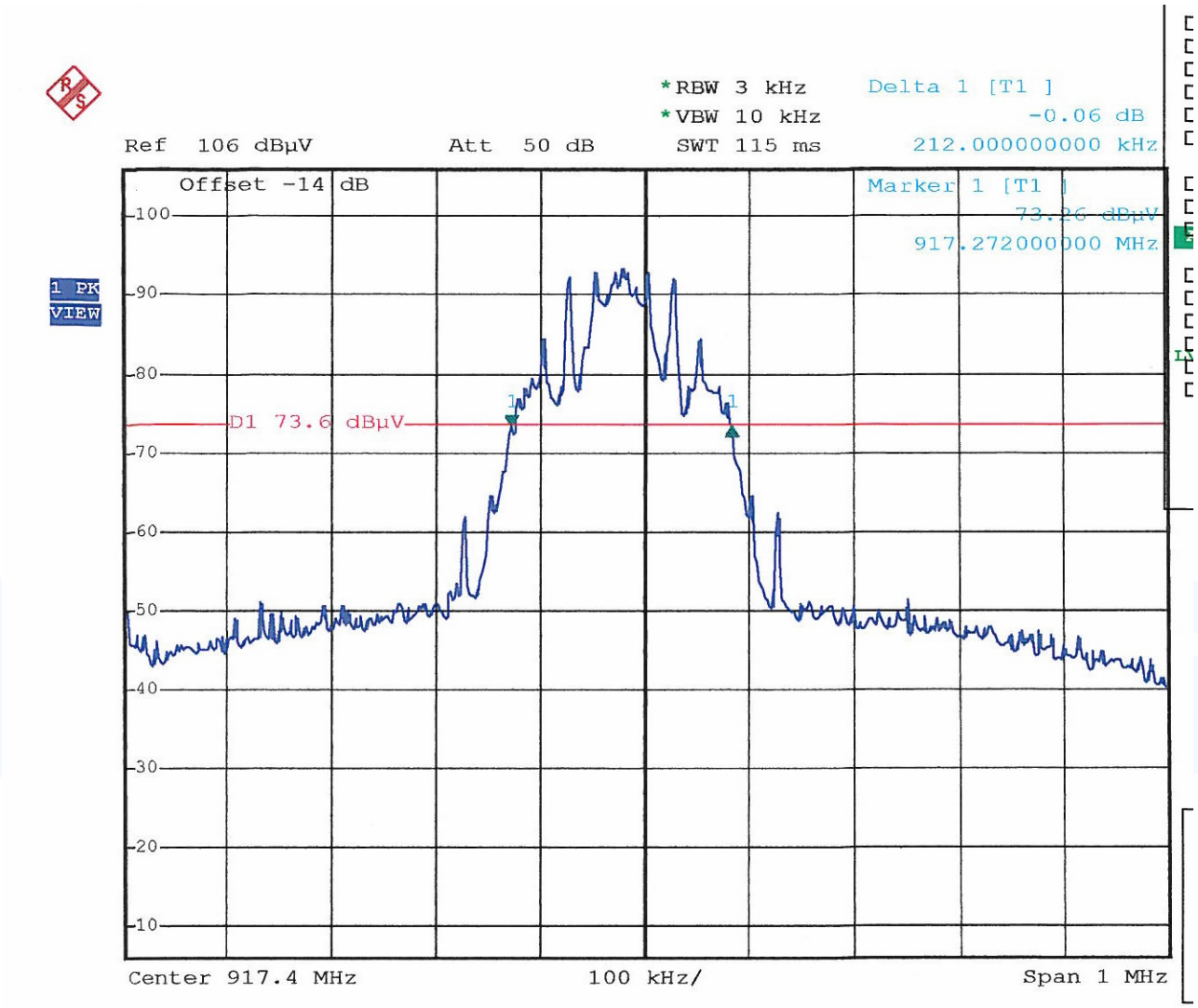
Fundamental of 912.6 MHz



Fundamental of 915.4 MHz



Fundamental of 917.4 MHz



5.5 Correction for pulse operation (duty cycle)

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

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Applicable standard

According to FCC Part 15A, Section 15.35(c):
When the radiated emission limits are expressed in terms of average value and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete puls train, including blanking intervals, as long as the pulse train does not exceed 0.1s. in cases where the puls train exceeds 0.1s, the measured field strength shall be determined from the average absolute voltage during a 0.1s interval during which the field strength is at its maximum. The exact method of calculating the average field strength shall be submitted.

5.5.3 Description of Measurement

The duty cycle factor (D_C) is calculated applying the following formula:

$$D_C = 20 \log (\text{dwell time}/100\ \text{ms})$$

Where:

D_C: pulse operation correction factor (dB)
dwell time: transmit time within 100 ms

5.5.4 Test result

dwell time: 5.9 ms

The calculation of duty cycle results -24.6 dB.

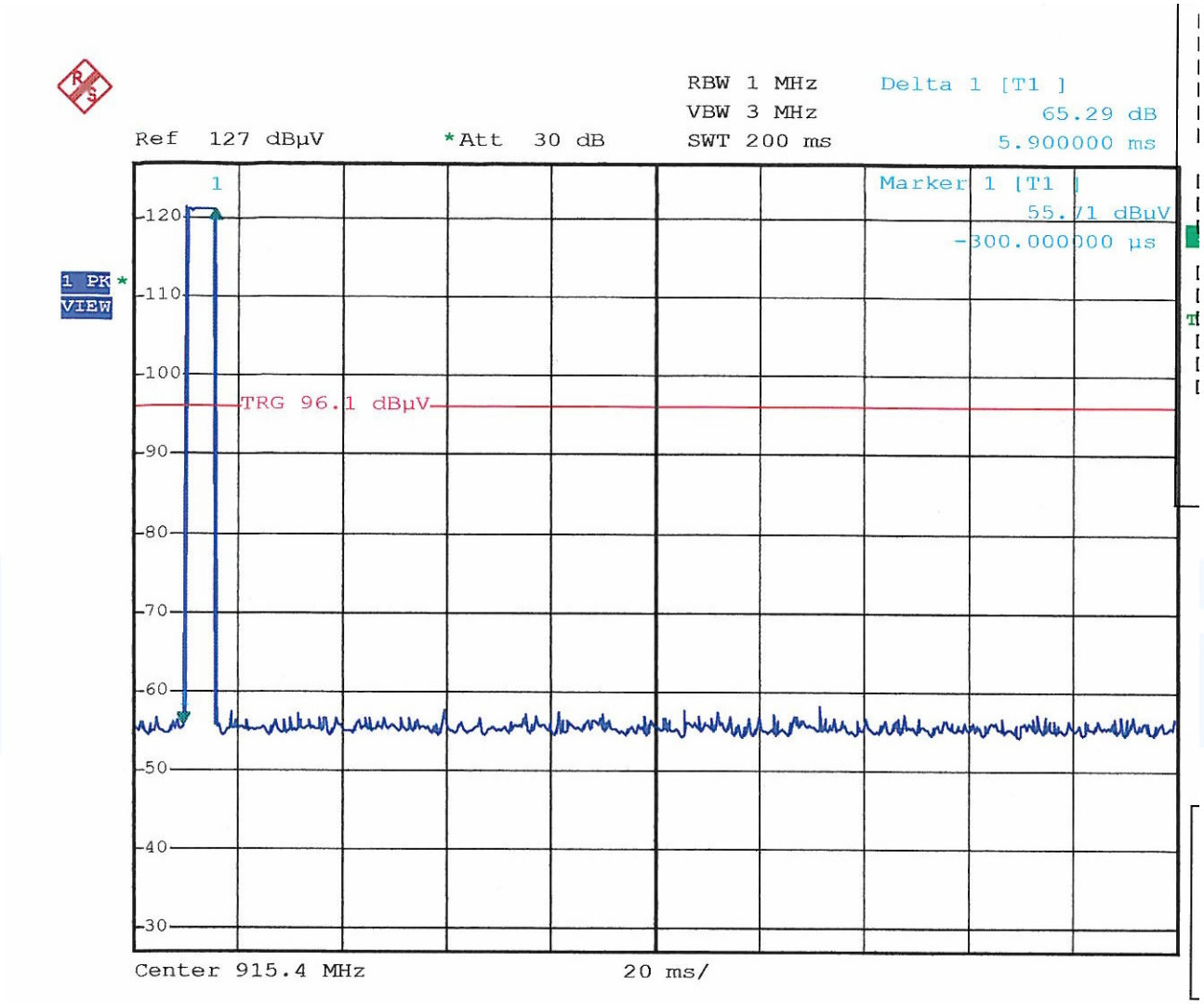
The requirements are **FULFILLED.**

Remarks: Please refer to the duty cycle plot below.

Because of the spurious emission results are below the average limit, it is not necessary to apply the duty cycle correction.

5.5.5 Test protocol

Duty cycle



5.6 Antenna application

5.6.1 Applicable standard

According to FCC Part 15C, Section 15.203(a):
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 EUT's antenna meets the requirement of FCC Part 15 C, Section 15.203 and 15.204.

5.6.2 Result

The EuT consist of an integral antenna and has no additional antenna connector.

The requirements are **FULFILLED.**

Remarks: None.

5.7 Maximum Permissible Exposure (MPE)

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

5.7.1 Description of the test location

Test location: OATS1

5.7.2 Applicable standard

The test methods used comply with ANSI/IEEE C95.1-1992, “IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”.
This test report shows the compliance with the limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in FCC 1.1307(b).

5.7.3 Description of Measurement

The electrical field strength have been measured radiated as described in clause 5.2 of this document. Through the Friis transmission formula, which is a far field assumption, the maximum MPE at a defined distance away from the product, can be calculated.

Friis transmission formula: $P_d = \frac{P_{out} * G}{4 * \Pi * r^2}$

where

P_d =power density in mW/cm^2
P_{out} = output power to antenna in mW
G = gain of antenna (linear scale)
r = distance between antenna and observation point [cm]

5.7.4 Test result

Frequency (MHz)	Max radiated Power (dBm)	(mW)	Antenna gain (dBi)	Power Density (mW/cm^2)	Limit of Power Density (mW/cm^2)
915.4	-3.8	0.429	0	0.00008	0.610

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
(A) Limits for Occupational / Controlled Exposure				
0.3 – 3.0	614	1.63	100	6
3.0 – 30	1842/f	4.89/f	900/f^2	6
30 - 300	61.4	0.163	1.0	6
300-1500	---	---	f/300	6
1500-100000	---	---	5.0	6
(B) Limits for General Population / Uncontrolled Exposure				
0.3 – 3.0	614	1.63	100	30
3.0 – 30	824/f	2.19/f	180/ f^2	30
30 - 300	27.5	0.073	0.2	30
300-1500	**---**	**---**	**f/1500**	**30**
1500-100000	---	---	1.0	30

f = Frequency in MHz

The requirements are **FULFILLED.**

Remarks: Routine SAR evaluation is not required. The max output power is less than 1 mW.

6 USED TEST EQUIPMENT AND ACCESSORIES

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

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 2	ESVS 30	02-02/03-05-006	11/06/2011	11/06/2010		
	VULB 9168	02-02/24-05-005	06/05/2011	06/05/2008	16/03/2011	16/09/2010
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
DC	FSP 30	02-02/11-05-001	04/05/2011	04/05/2010		
	UHALP 9108 A	02-02/24-05-004	12/12/2011	12/12/2008	13/01/2011	13/07/2010
MB	FSP 30	02-02/11-05-001	04/05/2011	04/05/2010		
	UHALP 9108 A	02-02/24-05-004	12/12/2011	12/12/2008	13/01/2011	13/07/2010
SER 1	FMZB 1516	01-02/24-01-018			15/02/2011	15/02/2010
	FSP 30	02-02/11-05-001	04/05/2011	04/05/2010		
SER 2	ESVS 30	02-02/03-05-006	11/06/2011	11/06/2010		
	VULB 9168	02-02/24-05-005	06/05/2011	06/05/2008	16/03/2011	16/09/2010
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
SER 3	FSP 30	02-02/11-05-001	04/05/2011	04/05/2010		
	AFS4-01000400-10-10P-4	02-02/17-05-003				
	AMF-4F-04001200-15-10P	02-02/17-05-004				
	BBHA 9120 E 251	02-02/24-05-006			09/02/2011	09/08/2010
	WBH2-18HN	02-02/24-05-007				
	WHJS 1000-10EE	02-02/50-05-070				
	Sucoflex N-2000-SMA	02-02/50-05-075				
	Multiflex 141-SMA-N-1500	02-02/50-09-015				
	Multiflex 141-SMA-N-1500	02-02/50-09-016				