



FCC ID: V9X-LMD400R

Registration No. DAT-P-207/05

## EMI -- TEST REPORT

- FCC Part 90.217 -

|                          |                       |                                   |
|--------------------------|-----------------------|-----------------------------------|
| <b>Test Report No. :</b> | <b>T33730-00-00AA</b> | 19. October 2009<br>Date of issue |
|--------------------------|-----------------------|-----------------------------------|

**Type / Model Name** : LMD-400-R

**Product Description** : UHF Narrow Band Multi Channel Transceiver

**Applicant** : Circuit Design Inc.

**Address** : 7557-1, Hotaka Azumino-city  
Nagano 399-8303, Japan

**Manufacturer** : Circuit Design Inc.

**Address** : 7557-1, Hotaka Azumino-city  
Nagano 399-8303, Japan

**Licence holder** : Circuit Design Inc.

**Address** : 7557-1, Hotaka Azumino-city  
Nagano 399-8303, Japan

|  |                 |
|--|-----------------|
| <b>Test Result</b> according to the standards listed in clause 1 test standards: | <b>POSITIVE</b> |
|--|-----------------|



DAT-P-207/05-00

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 90, Subpart A - General Information (10-1-07 Edition)**

## **FCC Rules and Regulations Part 90, Subpart I – General Technical Standards (10-1-07 Edition)**

Part 90, Subpart I, Section 90.213 Frequency stability

Part 90, Subpart I, Section 90.217 Exemption from technical standards

## **ANSI/TIA/EIA-603-C-2004**

**Test Requirements acc. to 47 CFR Parts 2.1046 – 2.1055**

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

ANSI C63.4: 2003

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

## 2 SUMMARY

### GENERAL REMARKS:

The EuT is working in the frequency range from 458.0 to 462.5 MHz.  
The maximum output power is less than 10 mW.  
Channel space 12.5 kHz.  
The allowed channels (Frequencies) can be selected external by DIP switches.

**DoC statement:** The EuT can be switched into receive mode. Therefore class B of DoC has to be followed. This EuT has been verified according to 47 CFR part 15 B and fulfils all requirements.

### 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 : 03. September 2009

Testing concluded on : 29. September 2009

Checked by:

Tested by:

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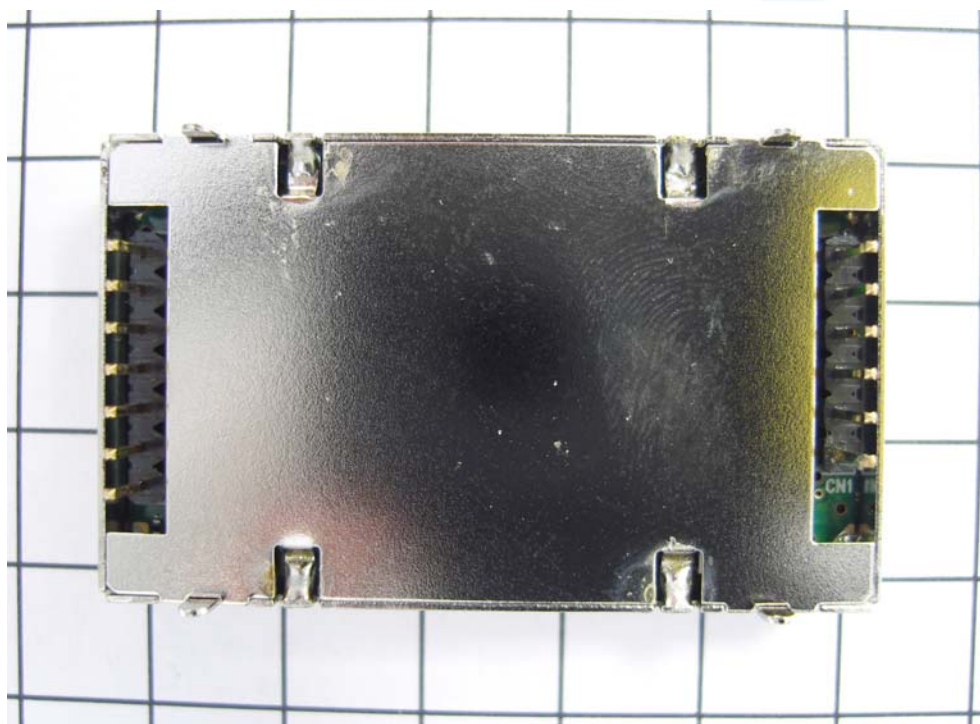
Thomas Weise  
Dipl.-Ing.(FH)  
Laboratory Manager

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Anton Altmann  
Dipl.-Ing.(FH)

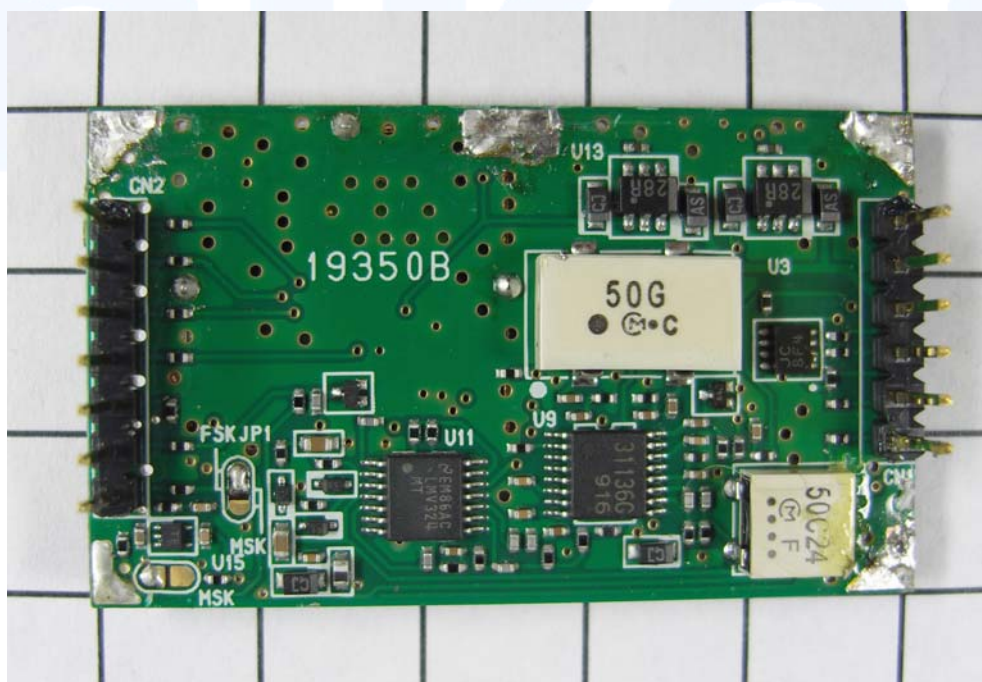
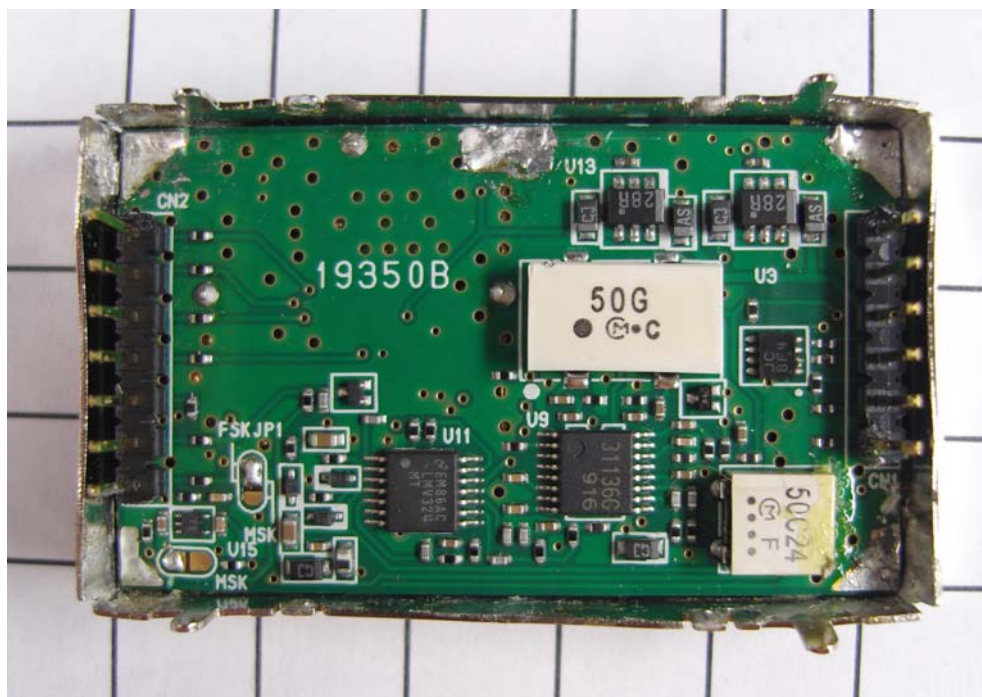
### 3 EQUIPMENT UNDER TEST

#### 3.1 Photo documentation of the EUT – See attachment A

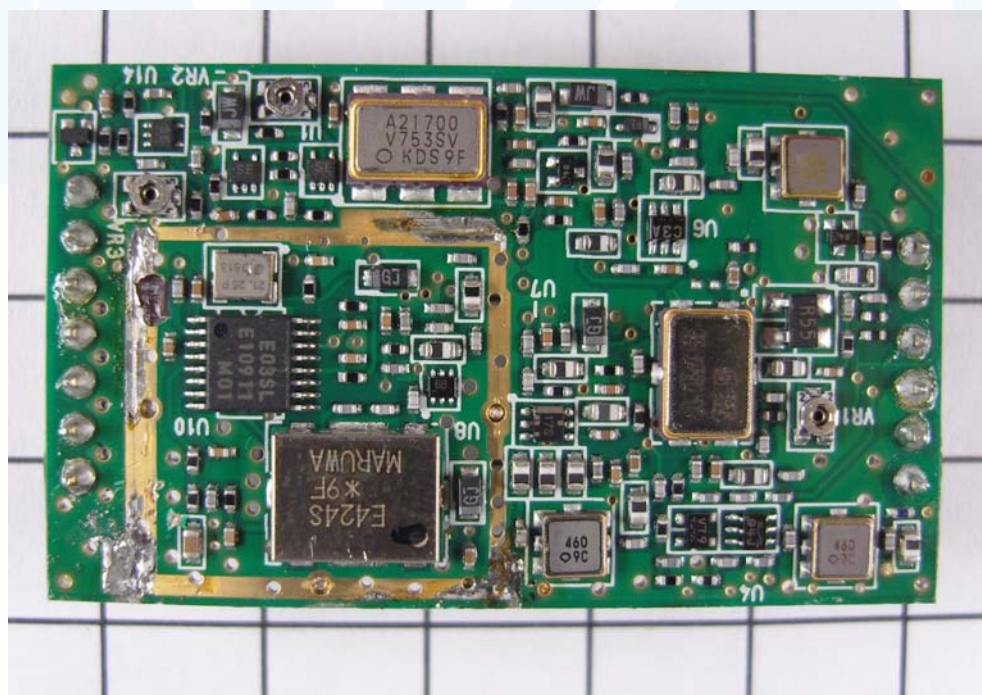
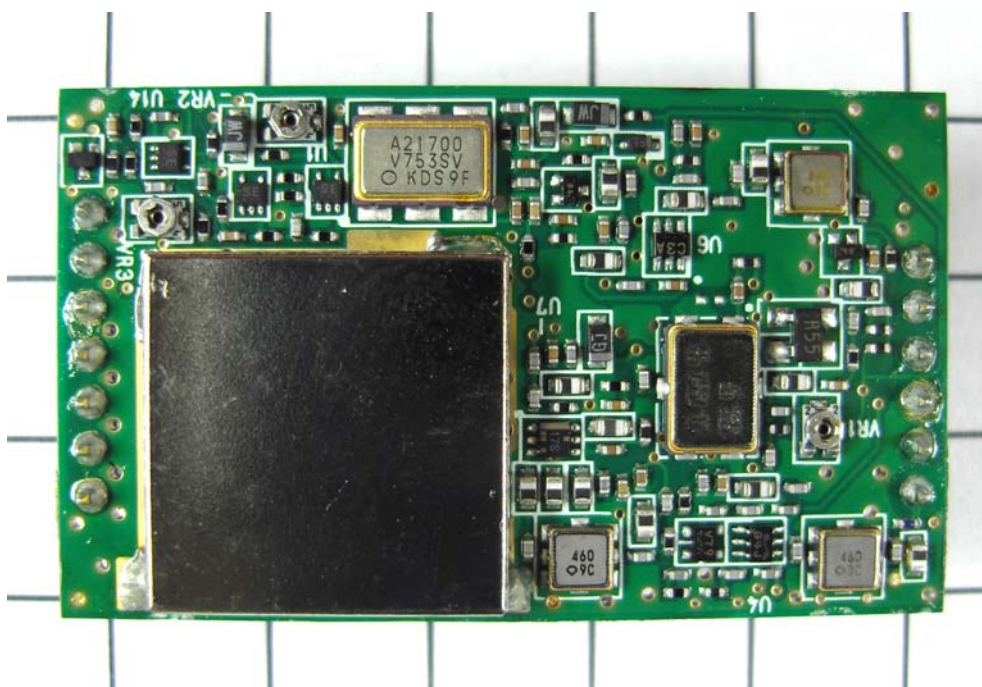




FCC ID: V9X-LMD400R



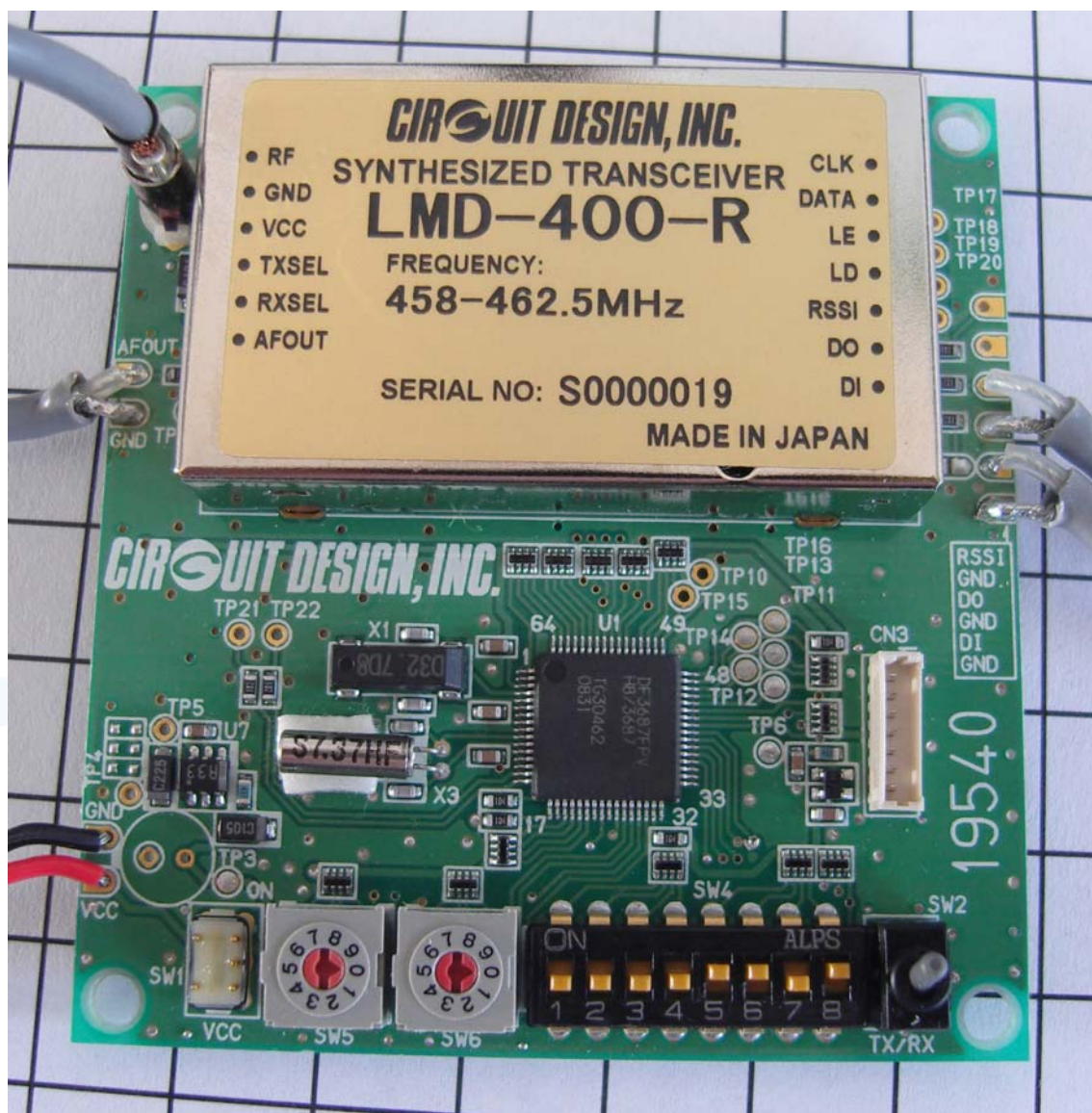
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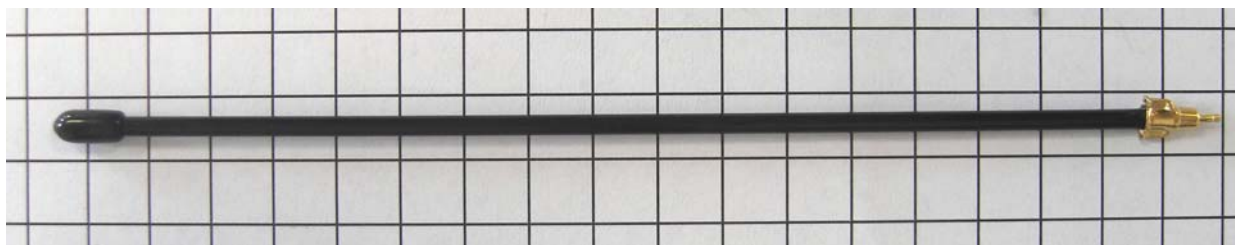


FCC ID: V9X-LMD400R

### Test PCB



### Reference Antenna





### 3.2 Power supply system utilised

Power supply voltage : 3 to 5.5 VDC

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

The EuT LMD-400-R is a synthesized multi channel transceiver module. The small, highly integrated and fully shielded module is designed for embedding in user equipment. The module is suitable for various low power industrial telecontrol and telemetry applications.

Number of tested samples: 1  
Serial number: S0000019

#### EUT operation mode:

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

- TX CW (unmodulated)

- TX modulated

- Receive mode

#### 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:

|                     |  |
|---------------------|--|
| - Test PCB          | Model : 19540 supplied by Circuit Design |
| - Reference Antenna | Model : 1/4 lambda coaxial antenna       |
| -                   | 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.

### 4.1 Measurement Protocol for FCC, VCCI and AUSTEL

#### 4.1.1 GENERAL INFORMATION

##### 4.1.1.1 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.

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.

#### 4.1.1.2 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.

mikes

## 5 TEST CONDITIONS AND RESULTS

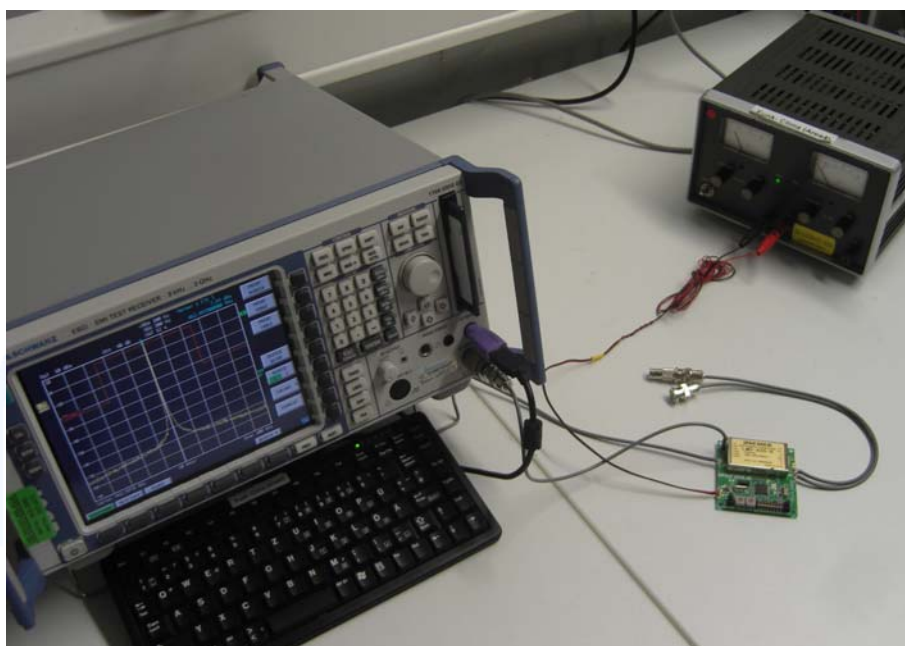
### 5.1 Maximum output power

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

#### 5.1.1 Description of the test location

Test location: AREA4

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



#### 5.1.3 Applicable standard

According to FCC Part 90, Section 90.217 and Part 2, Section 2.1046:

Except as noted herein, transmitters used at stations licensed below 800 MHz on any frequency listed in subparts B and C of this part or licensed on a business category channel above 800 MHz which have an output power not exceeding 120 mW are exempt from the technical requirements set out in this subpart.

#### 5.1.4 Description of Measurement

The transmitter output was connected to the spectrum analyzer through an attenuator. The center frequency of the spectrum analyzer is set to the fundamental frequency. The span of the spectrum analyzer should be larger than the emission bandwidth (EBW). The cable loss or other external attenuation was taken into account and expressed in a correction factor. The absolute maximum peak output power is calculated by adding the reading of the analyzer plus correction and compared with the limit.

Spectrum analyzer settings:

RBW 120 kHz

Detector Peak



### 5.1.5 Test result

| Channel | Frequency (MHz) | Measured power (mW) | Power limit (mW) | Delta (mW) |
|---------|-----------------|---------------------|------------------|------------|
| 1       | 458.0           | 8.5                 | 120              | -111.5     |
| 360     | 462.5           | 7.4                 | 120              | -112.6     |

Power Limit according to FCC Part 90, Section 90.217:

| Frequency (MHz) | Power Limit (mW) |
|-----------------|------------------|
| <800            | 120              |

The requirements are **FULFILLED**.

Remarks:

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## 5.2 Maximum permissible exposure (MPE)

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

### 5.2.1 Description of the test location

Test location: AREA4

### 5.2.2 Applicable standard

The test methods used comply with ANSI/IEEE C95.1, "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 Part 1, Section 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in FCC Part 1, Section 1.1307(b).

### 5.2.3 Description of Measurement

The maximum total power input to the antenna has been measured conducted as described in clause 5.1 of this document. Through the Friis transmission formula, the known maximum gain of the antenna, the maximum power and the limit of MPE, we can calculate the distance, away from the product, where the limit of MPE is reached.

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

where

$P_d$ =power density (mW/cm<sup>2</sup>)

$P_{out}$  = output power to antenna (mW)

$G$  = gain of antenna (linear scale)

$r$  = distance between antenna and observation point (cm)

## 5.2.4 Test result

For the calculation of the MPE, a reference antenna with a gain of 2.14 dBi has been assumed.

| Channel No. | Frequency | Max power output to antenna |      | Antenna gain | Power density at 20 cm | Limit                 |
|-------------|-----------|-----------------------------|------|--------------|------------------------|-----------------------|
|             | (MHz)     | (dBm)                       | (mW) | (dBi)        | (mW/cm <sup>2</sup> )  | (mW/cm <sup>2</sup> ) |
| 1           | 458.0     | 9.3                         | 8.5  | 2.14         | 0.003                  | 0.305                 |
| 360         | 462.5     | 8.7                         | 7.4  | 2.14         | 0.002                  | 0.305                 |

## Prediction

The maximum allowable MPE value of 0.305 mW/cm<sup>2</sup> will be reached in a distance of 20 cm in case that an antenna gain less than 22 dBi will be used.

Limits for maximum permissible exposure (MPE) according to FCC 1.1307(b):

| Frequency range (MHz)  | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(B) Limits for General Population / Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3 – 3.0  | 614                           | 1.63                          | 100                                 | 30                       |
| 3.0 – 30   | 824/ <i>f</i>                 | 2.19/ <i>f</i>                | 180/ <i>f</i> <sup>2</sup>          | 30                       |
| 30 - 300   | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| <b>300-1500</b>  | ---                           | ---                           | <b>#1500</b>                        | <b>30</b>                |
| 1500-100000  | ---                           | ---                           | 1.0                                 | 30                       |

*f* = Frequency in MHz

The requirements are **FULFILLED**.

## Remarks:

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### 5.3 Frequency stability

For test instruments and accessories used see section 6 Part FE.

#### 5.3.1 Description of the test location

Test location: AREA4

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



#### 5.3.3 Applicable standard

According to FCC Part 90, Section 90.213 and Part 2, Section 2.1055:

The frequency tolerance of the carrier signal shall be maintained within  $\pm 1.5$  ppm for mobile equipment over a temperature range of  $-20$  °C to  $+60$  °C while the supply voltage is varied from 3.0 to 5.5 Volt.

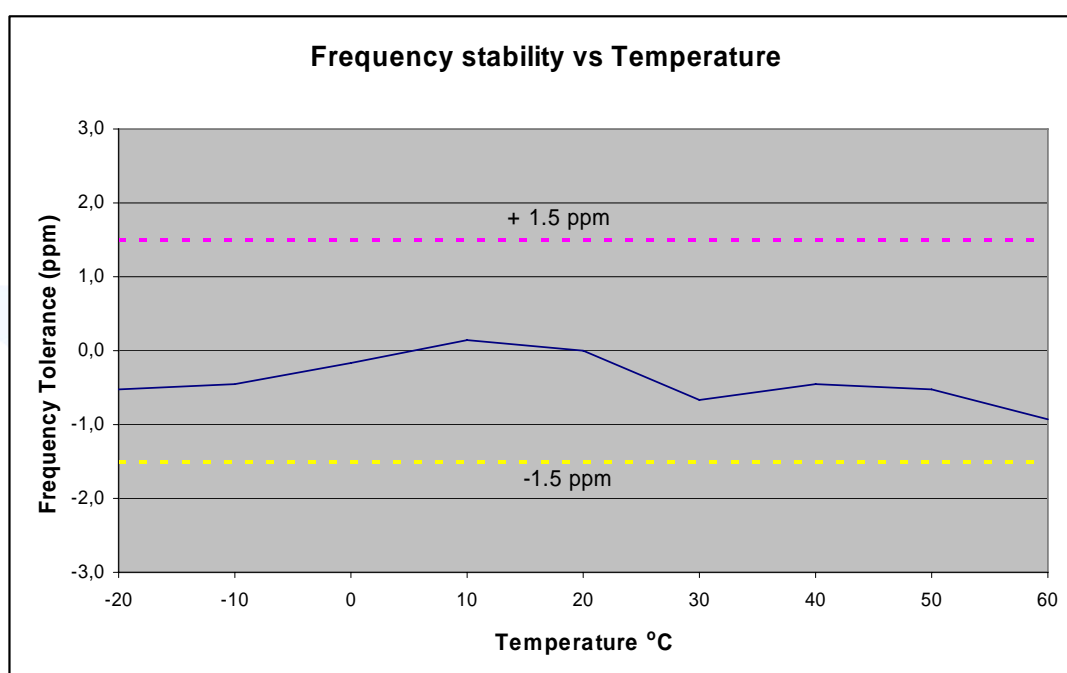
#### 5.3.4 Description of Measurement

The frequency tolerance is measured using a spectrum analyzer. The test signal is unmodulated. The RBW is set small enough to get a suitable frequency resolution. The measurement was performed conducted. The frequency was measured at normal condition and at combinations of extreme temperature and voltage conditions in  $10$  °C increments.



### 5.3.5 Test result

| Test conditions         |                   | Frequency $f_e$ (MHz) |                  |
|-------------------------|-------------------|-----------------------|------------------|
| Temperature             | Voltage           | Ch1 (458.0 MHz)       | Ch 360(462.5MHz) |
| 20 °C                   | $V_{nom}$ (3.3 V) | 457.99783             | 462.49776        |
| 60 °C                   | $V_{min}$ (3.0 V) | 457.99743             | 462.49743        |
|                         | $V_{max}$ (5.5 V) | 457.99741             | 462.49741        |
| -20 °C                  | $V_{min}$ (3.0 V) | 457.99761             | 462.49755        |
|                         | $V_{max}$ (5.5 V) | 457.99759             | 462.49754        |
| Measurement uncertainty |                   | $\pm 100$ Hz          |                  |



Maximum frequency drift:  $f - f_e = 457.99783 \text{ MHz} - 457.99741 \text{ MHz} = -420 \text{ Hz} = -0.9 \text{ ppm}$   
 Calculated limit at 458.0 MHz  $\pm 1.5 \text{ ppm} = \pm 687 \text{ Hz}$

The requirements are **FULFILLED**.

Remarks:

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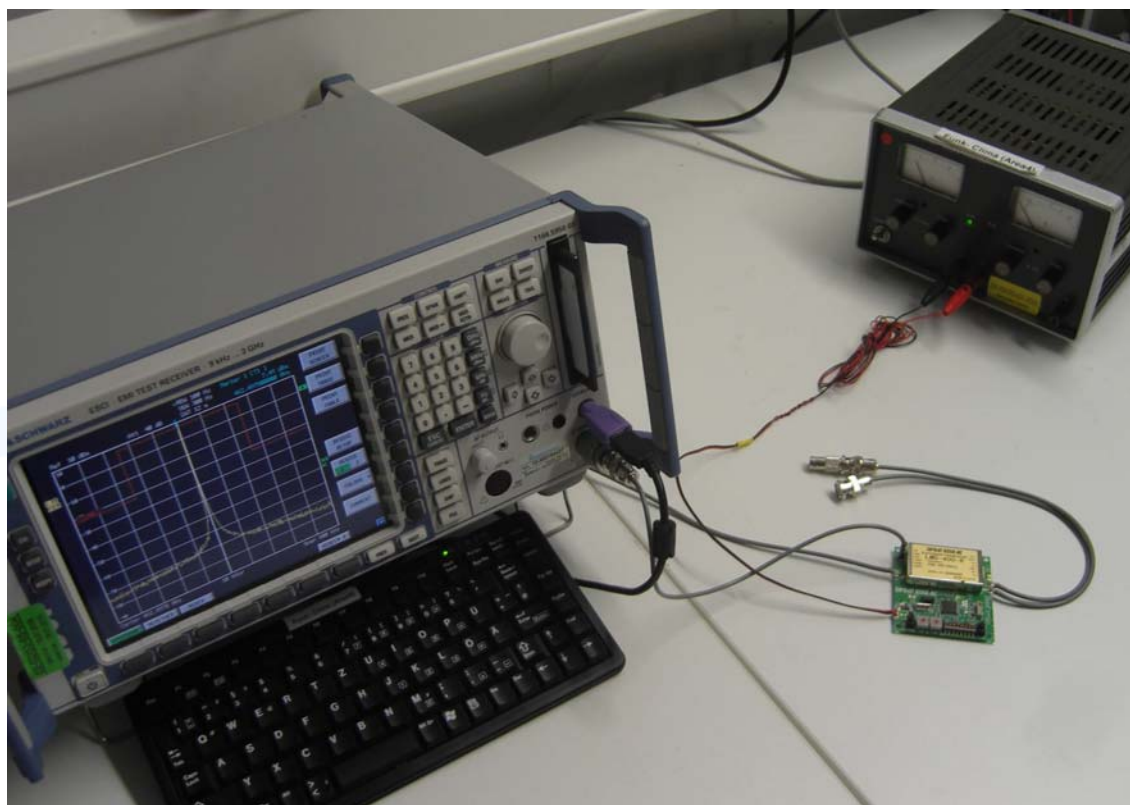
## 5.4 Transmitter sideband spectrum

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 Photo documentation of the test set-up



### 5.4.3 Applicable standard

According to FCC Part 90, Section 90.217(b) and Part 2, Section 2.1049:

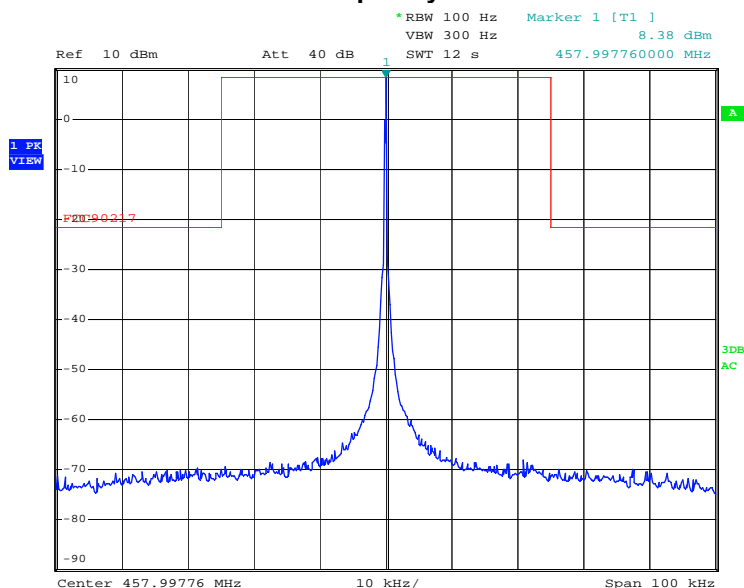
For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

### 5.4.4 Description of Measurement

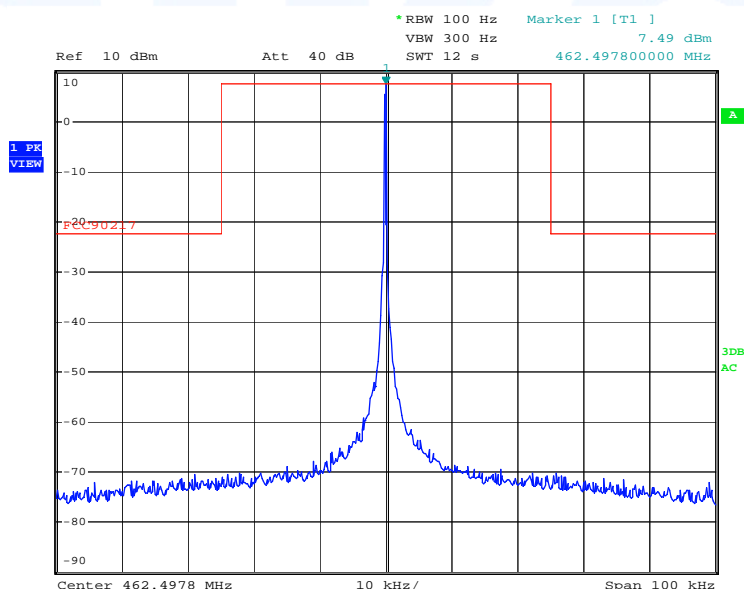
The transmitter outside spectrum is measured using a spectrum analyser. The RBW is set small enough to capture all associated emissions. The measurement was performed conducted. The test signal is unmodulated as intended. The limit line is adjusted to the maximum output power.

## 5.4.5 Test result

### Carrier frequency: 458.0 MHz



### Carrier frequency: 462.5 MHz



The requirements are **FULFILLED**.

Remarks:

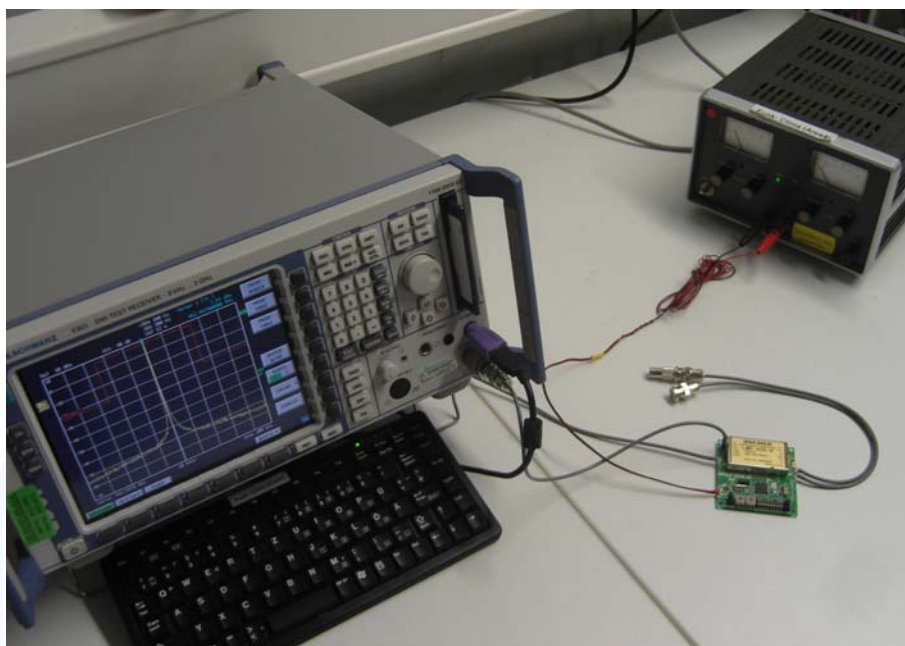
## 5.5 Transmitter spurious emissions conducted

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

### 5.5.1 Description of the test location

Test location: AREA4

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



### 5.5.3 Applicable standard

According to FCC Part 90, Section 90.217(b) and Part 2, Section 2.1051:

For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

### 5.5.4 Description of measurement

The spurious emissions have been measured conducted using a spectrum analyser. The measurement has been made while the transmitter was set to the lowest operating frequency (Ch1) and to the highest operating frequency (Ch 360). In the frequency above 1 GHz a highpass filter has been used. The measurement has been performed at normal test conditions in unmodulated TX continuous mode.

The resolution bandwidth was set as follows:

|                   |             |
|-------------------|-------------|
| 9 kHz – 150 kHz:  | RBW=200 Hz  |
| 150 kHz – 30 MHz: | RBW=9 kHz   |
| 30 MHz – 1 GHz:   | RBW=120 kHz |
| Above 1 GHz:      | RBW=1 MHz   |



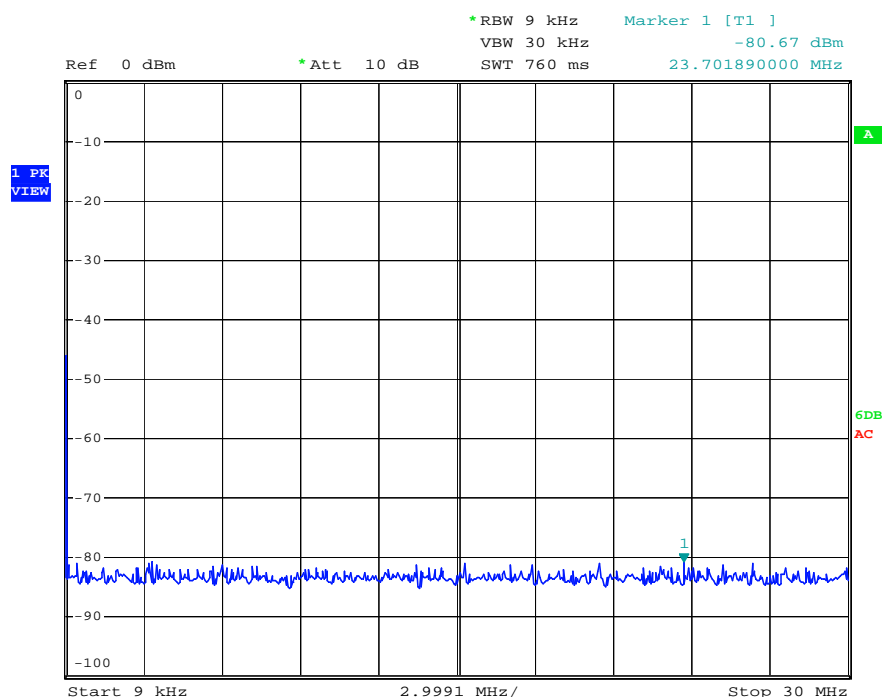
### 5.5.5 Test result

| Ch 1 (458.0 MHz)        |                |             | Ch 360 (462.5 MHz) |                |             |
|-------------------------|----------------|-------------|--------------------|----------------|-------------|
| f (MHz)                 | Level PK (dBm) | Limit (dBm) | f (MHz)            | Level PK (dBm) | Limit (dBm) |
| 0.009-30                | <-65           | -20.0       | 0.009-30           | <-65           | -20.0       |
| 916.6                   | -47.3          | -20.0       | 30-1000            | <-65           | -20.0       |
| 1364                    | -58.2          | -20.0       | 1000-8000          | <-60           | -20.0       |
| 2750                    | -55.5          | -20.0       |                    |                |             |
| 3212                    | -57.5          | -20.0       |                    |                |             |
| 3674                    | -56.4          | -20.0       |                    |                |             |
|                         |                |             |                    |                |             |
|                         |                |             |                    |                |             |
| Measurement uncertainty |                |             | ± 3 dB             |                |             |

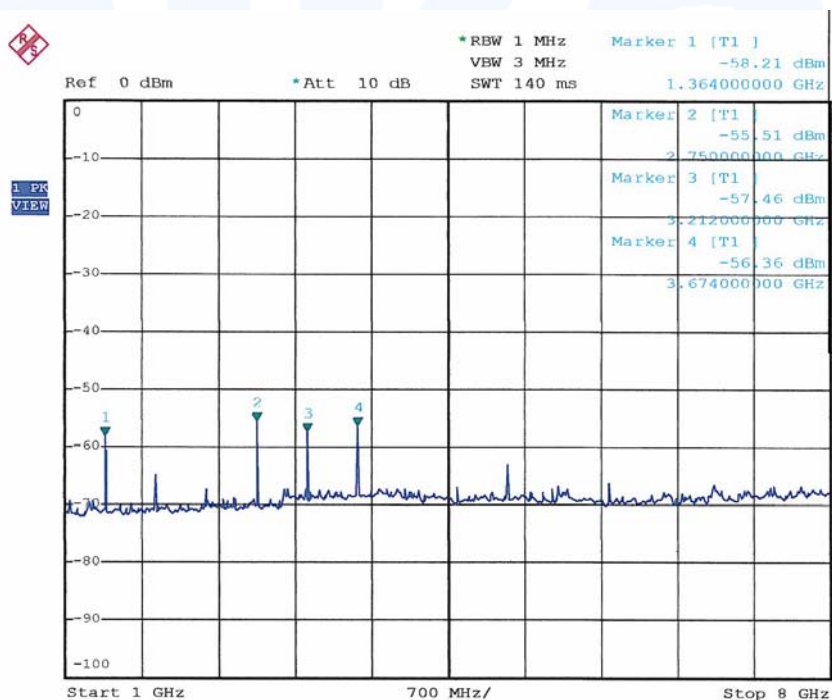
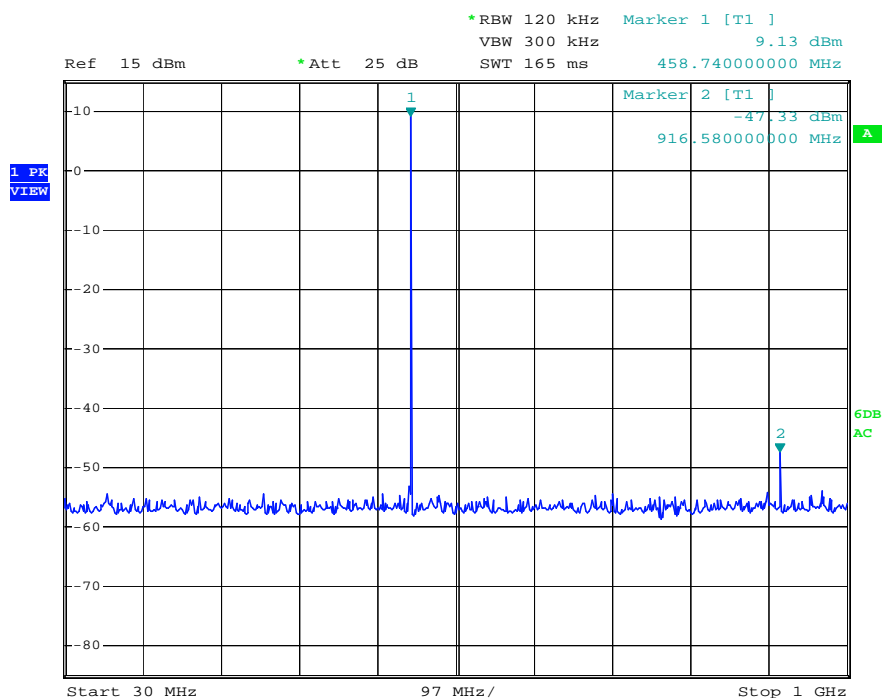
The requirements are **FULFILLED**.

**Remarks:** All emissions not reported are more than 30 dB below the specified limit.

For detailed results please refer to following plots.



FCC ID: V9X-LMD400R



## 5.6 Radiated spurious emissions (transmit and receive mode)

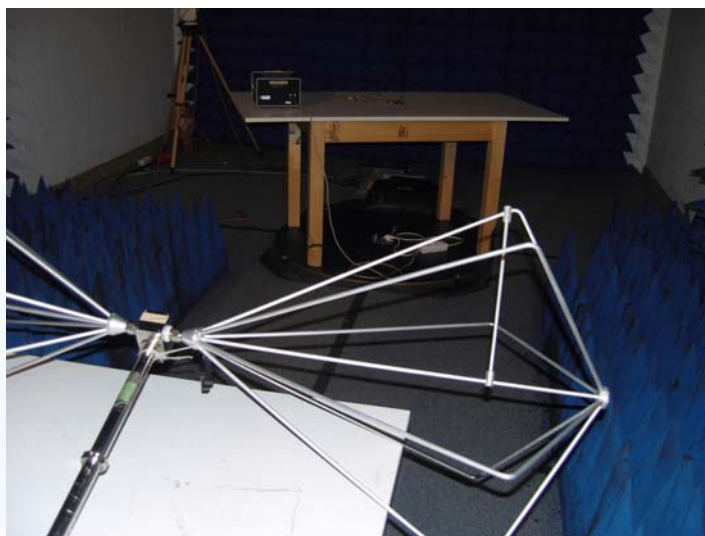
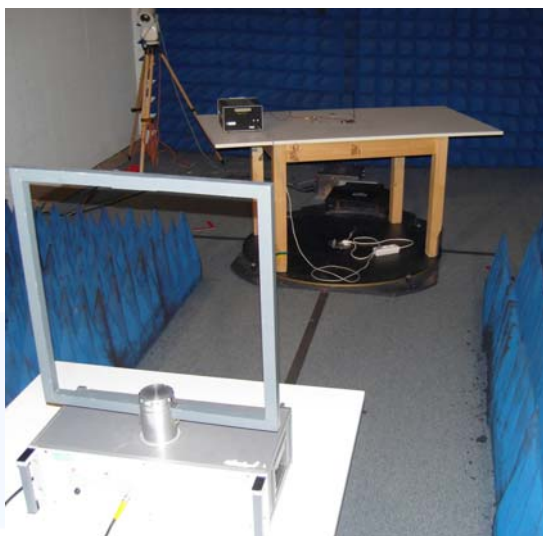
For test instruments and accessories used see section 6 Part **SER1**, **SER 2**, **SER 3**.

### 5.6.1 Description of the test location

Test location: Anechoic Chamber A2

Test distance: 3 metres

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



### 5.6.3 Applicable standard

According to FCC Part 90, Section 90.217(b) and Part 2, Section 2.1053:

For equipment designed to operate with a 12.5 kHz channel bandwidth, the sum of the bandwidth occupied by the emitted signal plus the bandwidth required for frequency stability shall be adjusted so that any emission appearing on a frequency 25 kHz or more removed from the assigned frequency is attenuated at least 30 dB below the unmodulated carrier.

### 5.6.4 Description of Measurement

The spurious emissions of the EUT have been measured in the frequency range from 9 kHz to 8 GHz using a Spectrum Analyzer. In the frequency range from 9 kHz to 30 MHz a magnetic coil antenna have been used.

The EUT is placed on a 1.0 X 1.5 m non-conducting table 80 cm above the ground plane. The set up of the equipment under test will be in accordance to ANSI C63.4. To locate maximum emissions the EUT was rotated 360 degrees. The measurement scan is made in horizontal and vertical polarization of the antenna.

The resolution bandwidth was set as follows:

9 kHz – 150 kHz: RBW=200 Hz  
 150 kHz – 30 MHz: RBW=9 kHz  
 30 MHz – 1 GHz: RBW=120 kHz  
 Above 1 GHz: RBW=1 MHz

### 5.6.5 Test result

| Ch 1 (458.0 MHz)        |                      |                   | Ch 360 (462.5 MHz) |                      |                   |
|-------------------------|----------------------|-------------------|--------------------|----------------------|-------------------|
| f<br>(MHz)              | Level PK<br>(dBμV/m) | Limit<br>(dBμV/m) | f<br>(MHz)         | Level PK<br>(dBμV/m) | Limit<br>(dBμV/m) |
| 0.009-30                | <40                  | 70                | 0.009-30           | <40                  | 70                |
| 30-1000                 | <40                  | 70                | 30-1000            | <40                  | 70                |
| 1888                    | 44.4                 | 70                | 2776               | 45.2                 | 70                |
| 2746                    | 46.5                 | 70                | 3238               | 43.3                 | 70                |
|                         |                      |                   |                    |                      |                   |
|                         |                      |                   |                    |                      |                   |
|                         |                      |                   |                    |                      |                   |
|                         |                      |                   |                    |                      |                   |
| Measurement uncertainty |                      |                   | ± 6 dB             |                      |                   |

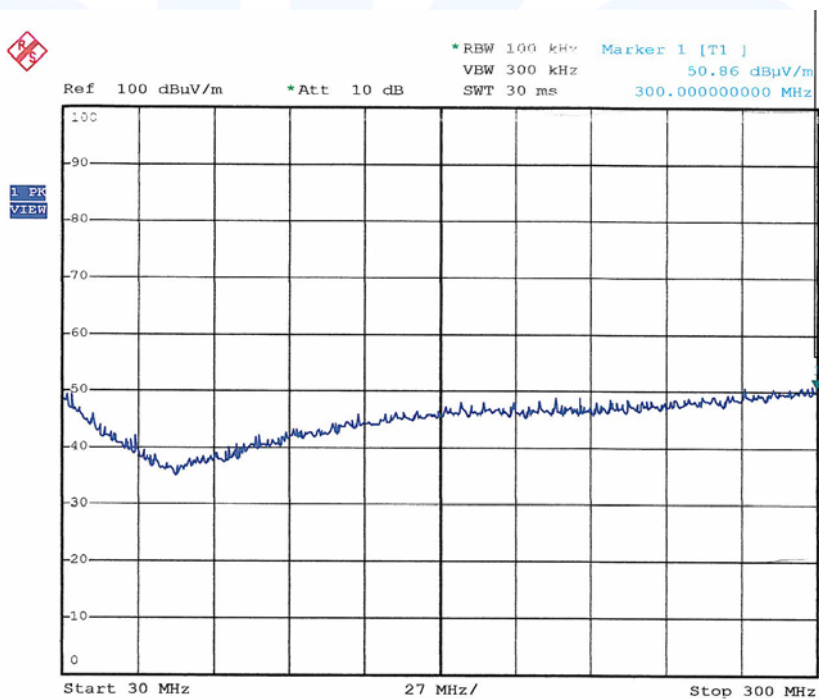
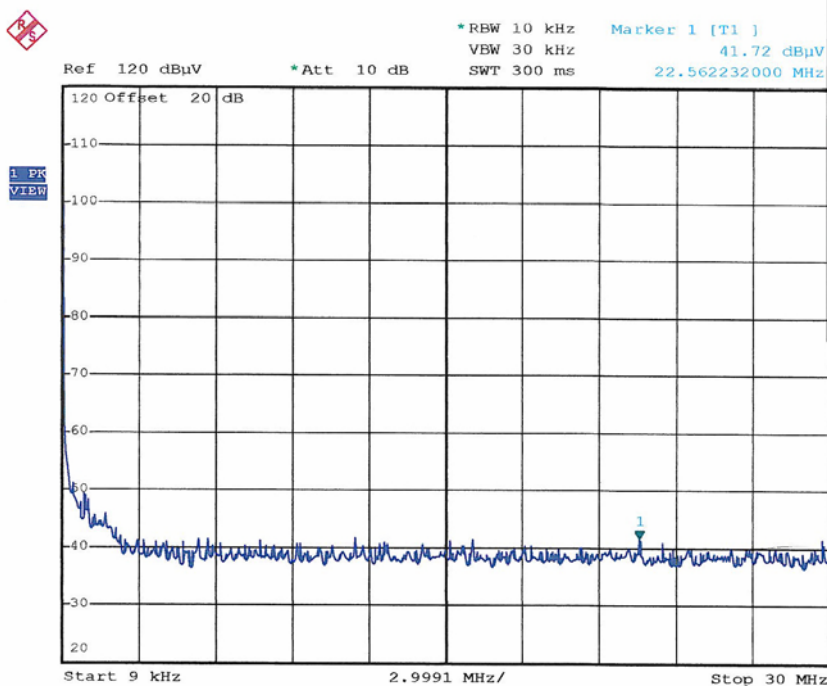
The requirements are **FULFILLED**.

**Remarks:** The measurement was performed up to 8 GHz. All emissions not reported in this test report are more than 30 dB below the specified limit. For detailed test results please refer to following test protocols.



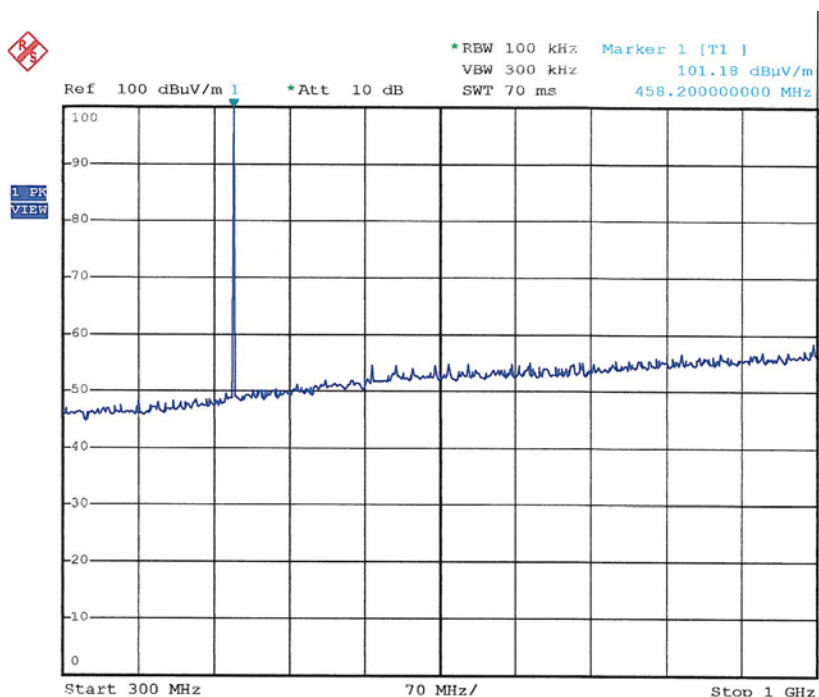
FCC ID: V9X-LMD400R

# Transmitting Mode

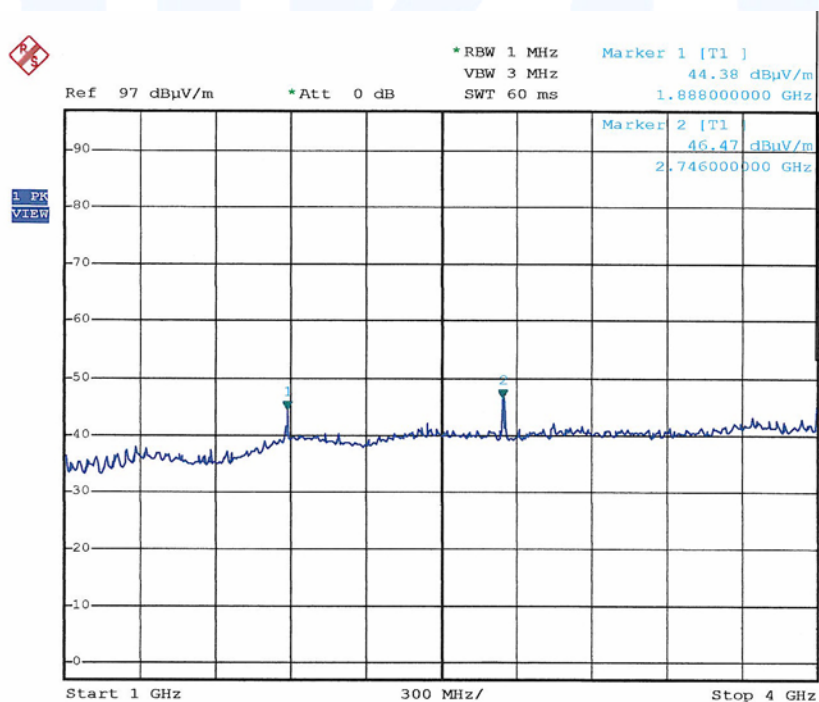


FCC ID: V9X-LMD400R

# Transmitting Mode

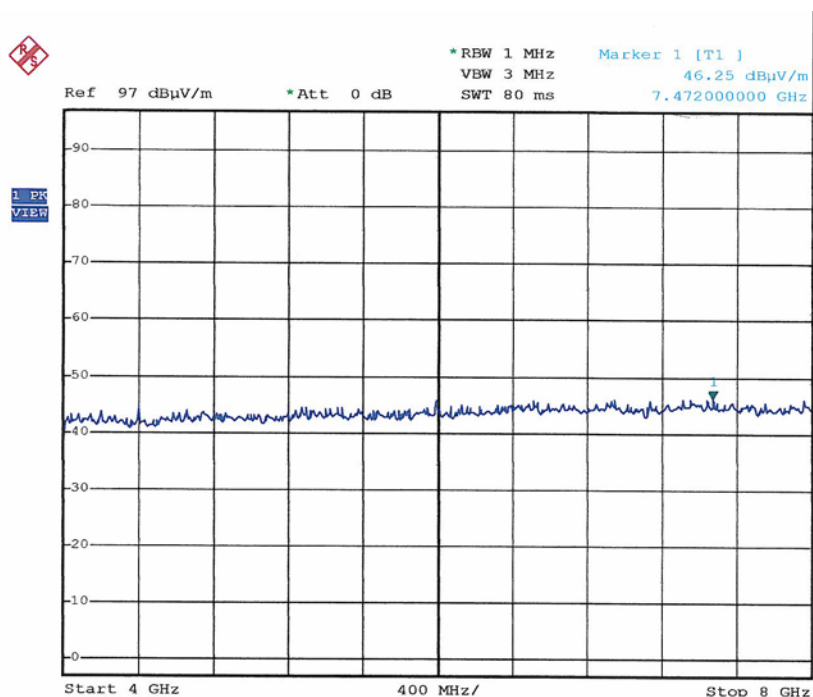


Note: Carrier frequency at marker 1



FCC ID: V9X-LMD400R

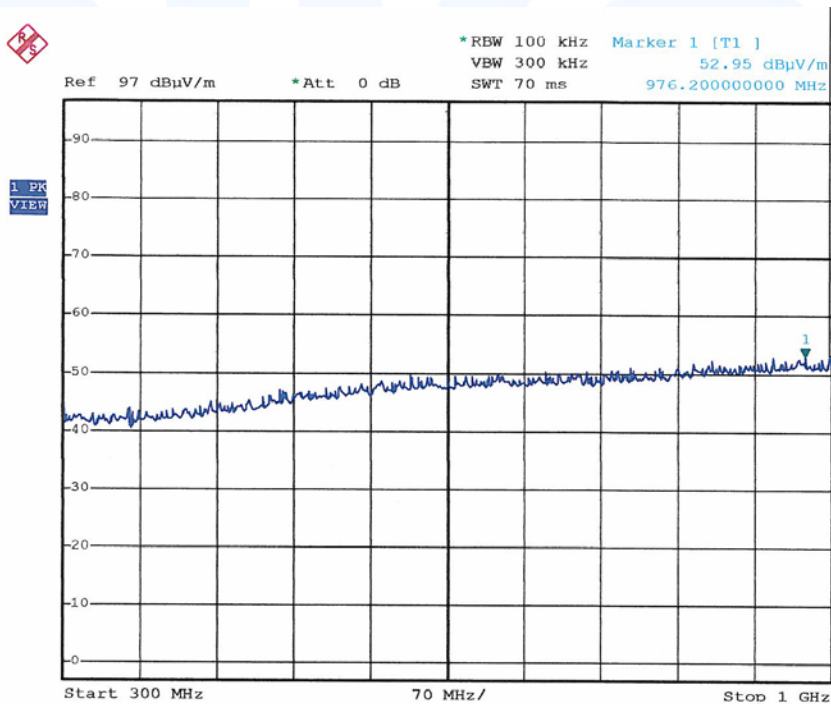
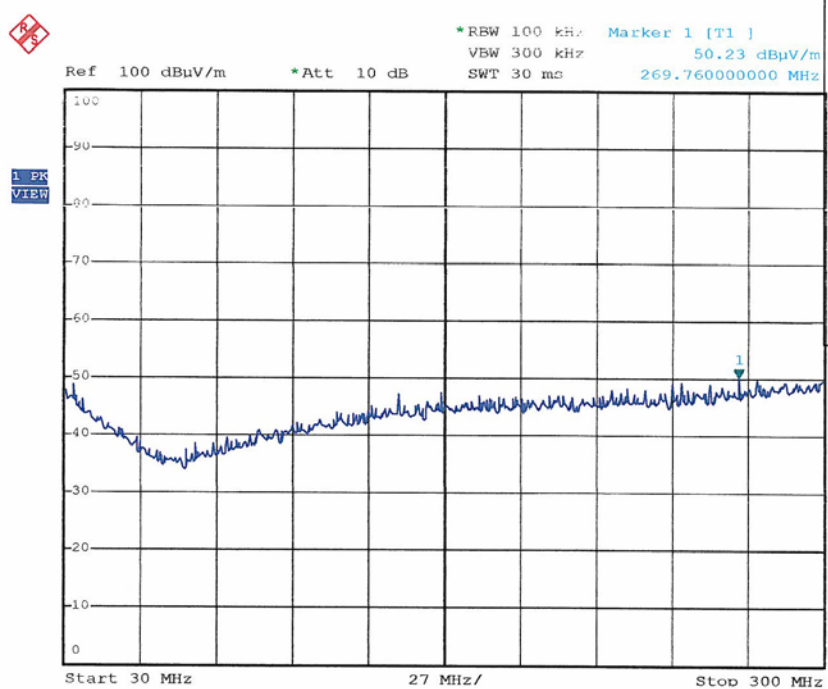
Transmitting Mode



mikes

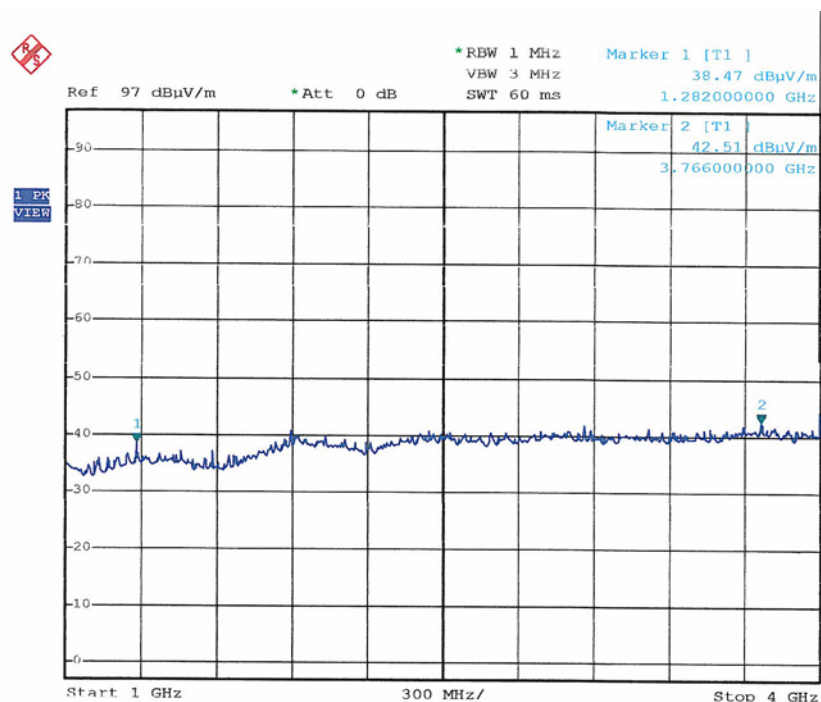
FCC ID: V9X-LMD400R

Receive Mode



FCC ID: V9X-LMD400R

Receive Mode



mikes



## 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               | Kind of Equipment       | Manufacturer                  | Equipment No.   |
|---------|--------------------------|-------------------------|-------------------------------|-----------------|
| CPC 2   | ESCI                     | EMI Test Receiver       | Rohde & Schwarz München       | 02-02/03-05-004 |
|         | SMBV100A                 | Vector Signal Generator | Rohde & Schwarz               | 02-02/05-09-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
| FE      | ESCI                     | EMI Test Receiver       | Rohde & Schwarz München       | 02-02/03-05-004 |
|         | WK-340/40                | Climatic Chamber        | Weiss Umwelttechnik GmbH      | 02-02/45-05-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
| HE      | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
| MB      | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
| SEC 1-3 | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
| SER 1   | FMZB 1516                | Magnetic Field Antenna  | Schwarzbeck Mess-Elektronik   | 01-02/24-01-018 |
|         | ESCI                     | EMI Test Receiver       | Rohde & Schwarz München       | 02-02/03-05-004 |
|         | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
|         |                          |                         |                               |                 |
| SER 2   | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | BBA 9106 / VHA 9103      | Biconical Antenna       | Schwarzbeck Mess-Elektronik   | 02-02/24-05-002 |
|         | UHALP 9108 A             | Log. Per. Antenna       | Schwarzbeck Mess-Elektronik   | 02-02/24-05-003 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
|         |                          |                         |                               |                 |
| SER 3   | FSP 30                   | Spectrum Analyzer       | Rohde & Schwarz München       | 02-02/11-05-001 |
|         | AFS4-01000400-10-10P-4   | RF Amplifier 1-4 GHz    | PARZICH GMBH                  | 02-02/17-05-003 |
|         | AMF-4F-04001200-15-10P   | RF Amplifier 4-12 GHz   | PARZICH GMBH                  | 02-02/17-05-004 |
|         | BBHA 9120 E 251          | Broadband Horn Antenna  | Schwarzbeck Mess-Elektronik   | 02-02/24-05-006 |
|         | WBH218H N                | Horn Antenna 2-18 GHz   | Q-par Angus Ltd               | 02-02/24-05-007 |
|         | Sucoflex N-2000-SMA      | RF Cable                | novotronik Signalverarbeitung | 02-02/50-05-075 |
|         | PE1540                   | Power Supply            | Phillips Fluke GmbH           | 02-02/50-07-032 |
|         | Multiflex 141-SMA-N-1500 | Coaxicable              | novotronik Signalverarbeitung | 02-02/50-09-015 |
|         | Multiflex 141-SMA-N-1500 | Coaxicable              | novotronik Signalverarbeitung | 02-02/50-09-016 |

**FCC ID: V9X-LMD400R**

| Test ID | Model Type  | Equipment No.   | Next Calib. | Last Calib. | Next Verif. | Last Verif. |
|---------|---|-----------------|-------------|-------------|-------------|-------------|
| CPC 2   | ESCI<br>SMBV100A<br>PE1540  | 02-02/03-05-004 | 01/19/2010  | 01/19/2009  |             |             |
|         |   | 02-02/05-09-001 | 03/12/2012  | 03/12/2009  | 03/12/2010  | 03/12/2009  |
|         |   | 02-02/50-07-032 |             |             |             |             |
| FE      | ESCI<br>WK-340/40<br>PE1540   | 02-02/03-05-004 | 01/19/2010  | 01/19/2009  |             |             |
|         |   | 02-02/45-05-001 | 06/17/2014  | 06/17/2009  | 12/17/2009  | 06/17/2009  |
|         |   | 02-02/50-07-032 |             |             |             |             |
| HE      | FSP 30<br>PE1540  | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/50-07-032 |             |             |             |             |
| MB      | FSP 30<br>PE1540  | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/50-07-032 |             |             |             |             |
| SEC 1-3 | FSP 30<br>PE1540  | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/50-07-032 |             |             |             |             |
| SER 1   | FMZB 1516<br>ESCI<br>FSP 30<br>PE1540   | 01-02/24-01-018 |             |             | 02/23/2010  | 02/23/2009  |
|         |   | 02-02/03-05-004 | 01/19/2010  | 01/19/2009  |             |             |
|         |   | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/50-07-032 |             |             |             |             |
| SER 2   | FSP 30<br>BBA 9106 / VHA 9103<br>UHALP 9108 A<br>PE1540   | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/24-05-002 |             |             | 01/03/2010  | 07/03/2009  |
|         |   | 02-02/24-05-003 |             |             | 01/03/2010  | 07/03/2009  |
|         |   | 02-02/50-07-032 |             |             |             |             |
| SER 3   | FSP 30<br>AFS4-01000400-10-10P-4<br>AMF-4F-04001200-15-10P<br>BBHA 9120 E 251<br>WBH218H N<br>Sucoflex N-2000-SMA<br>PE1540<br>Multiflex 141-SMA-N-1500<br>Multiflex 141-SMA-N-1500 | 02-02/11-05-001 | 04/20/2010  | 04/20/2009  |             |             |
|         |   | 02-02/17-05-003 |             |             |             |             |
|         |   | 02-02/17-05-004 |             |             |             |             |
|         |   | 02-02/24-05-006 |             |             | 11/08/2009  | 05/08/2009  |
|         |   | 02-02/24-05-007 |             |             |             |             |
|         |   | 02-02/50-05-075 |             |             |             |             |
|         |   | 02-02/50-07-032 |             |             |             |             |
|         |   | 02-02/50-09-015 |             |             |             |             |
|         |   | 02-02/50-09-016 |             |             |             |             |