Registration No. DAT-P-207/05

FCC ID: U9AWTPIWLAN-V200

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

- FCC Part 15.225 -

Test Report No. : **T33962-00-02AA**	23. March 2010 Date of issue

Type / Model Name : Toyota Wireless Teach Pendant

Product Description : Mobile Human Machine Interface

Applicant : Siemens AG, I IA AS RD ST TT

Address : Werner-von-Siemens-Str. 50

92224 AMBERG, GERMANY

Manufacturer : Siemens AG, I IA AS

Address : Gleiwitzer Str. 555

90475 NUERNBERG, GERMANY

Licence holder : Siemens AG, I IA AS RD ST TT

Address : Werner-von-Siemens-Str. 50

92224 AMBERG, 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, 2008)

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
Part 15, Subpart A, Section 15.38	Incorporation by reference

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (October, 2008)

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 15.215	Additional provisions to the general radiated emission limitations
Part 15, Subpart C, Section 15.225	Operation within the band 13.110 - 14.010 MHz

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: 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 EUT consists of one WLAN Module working in 2.4 and 5 GHz band and one RFID Module working at 13.56 MHz.

This test report describes the assessment for the RFID Module only.

The EUT is equipped with an integral antenna.
The receiver is permanently co-located within the transmitter. Therefore the receive mode is to short and was tested together with the transmitter in operating mode. There is no standby mode.

Attention: The RFID Mode may be operated only with battery. RFID Mode is not allowed while the EuT is connected to the charging equipment!

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 : 21 December 2009

Testing concluded on : 25 January 2010

Checked by:

Klaus Gegenfurtner
I confirm the correctness and integrity of this document
2010.03.24 08:17:50 +01'00'

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

Tested by:

Anton Altmann
I`m the author of this document
2010.03.23 15:24:23 +01'00'

Anton Altmann
Dipl.-Ing.(FH)

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – See attachment A

3.2 Power supply system utilised

Power supply voltage : Battery 6.1 to 8.4 VDC

3.3 Short description of the equipment under test (EUT)

The RFID Module is a part of the Wireless Termination Point (WTP). In the application communication takes place with ISO15693 at 13.56 MHz and TAGs will be read over a distance of at least 5 cm.

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 CW modulated

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 :

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.

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.

4.1.2 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.

4.1.3 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.

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

5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

5.1.1 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: This test is not applicable because the EuT is battery powered.

5.2 Field strength of the fundamental wave

For test instruments and accessories used see section 6 Part **CPR 1**.

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

5.2.3 Applicable standard

According to FCC Part 15, Section 15.225(a):
The field strength of any emission within the band 13.553 – 13.567 MHz shall not exceed 15848 µV/m at 30 m.

5.2.4 Description of Measurement

The transmitted field strength of the EUT has to be measured at an open area test site using a tuned receiver and a shielded loop antenna. The set up of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with an EMI receiver using quasi peak detector and a resolution bandwidth of 9 kHz.

5.2.5 Test result

a) Result at a measurement distance of 3m

Frequency (MHz)	Level (dBµV)	Ant. factor (dB 1/m)	Field strength dB(µV/m)
13.56	38.4	20	58.4

b) Result extrapolated to a distance of 30 m

Frequency (MHz)	Level (dBµV)	Ant. factor (dB 1/m)	Field strength dB(µV/m)	Limit dB(µV/m)	Delta (dB)
13.56	-1.6	20	18.4	84	-65.6

Limit according to FCC Part 15, Section 15.225(a):

Frequency	Field strength of fundamental wave		Measurement distance
(MHz)	(µV/m)	dB(µV/m)	(metres)
13.553 - 13.567	15848	84	30

The requirements are **FULFILLED.**

Remarks: _____

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5.3 Maximum Permissible Exposure (MPE)

For test instruments and accessories used see section 6 Part **CPR 1**.

5.3.1 Description of the test location

Test location: OATS1

5.3.2 Applicable standard

According to FCC Part 15 Subpart 15.247 (i): Systems operating under the provisions of this section shall be operated in a manner that the public is not exposed to radio frequency energy levels in excess of the Commision's guidelines.
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).

5.3.3 Description of Measurement

The maximum total power input to the antenna has been measured conducted as described in clause 5.3 of this document. Through the Friis transmission formula, which is a far field assumption and the known maximum gain of the antenna, 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)

5.3.4 Test result

The calculation results a fieldstrength in the vicinity of the EuT of less than 1 mV/m.

Conclusion:

The fieldstrength radiated by the RFID Module is too small to be considered.

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

5.3.5 Compliance regarding Co-location and Co-transmission

Applicable standard: ANSI/IEEE C95.1-1999, “IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, Clause 4.1.1. e):

For mixed or broadband fields at a number of frequencies for which there are different values of the MPE, the fraction of the MPE (in terms of E, H, or power density (S)) occurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity (1.0, or 100 % in terms of percentage.

The requirements are **FULFILLED.**

Remarks: Without consideration regarding co-transmission.

5.4 Spurious emissions

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

5.4.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.4.2 Photo documentation of the test set-up

5.4.3 Applicable standard

According to FCC Part 15C, Section 15.209:
The emissions from an intentional radiator shall not exceed the field strength levels specified in the table below.

5.4.4 Description of Measurement

The spurious emissions of the EUT have to be measured at an open area test site in the frequency range from 9 kHz to 1000 MHz using a tuned EMI receiver. The set up of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m or 300 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with the EMI receiver using Quasi peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used, according to Section 15.209(d).
The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz:	RBW:	200 Hz
150 kHz – 30 MHz:	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz

5.4.5 Test result

Results at a measurement distance of 3m

Frequency (MHz)	Level AV (dBµV)	Level QP (dBµV)	Ant. factor (dB)	Field strength QP dB(µV/m)	Field strength AV dB(µV/m)	Limit dB(µV/m)	Delta (dB)
0.009-0.090	---						
0.090-0.110		---					
0.110-0.490	---						
0.490 - 1.705		---					
1.705 - 30.0		---					
30 - 88		---					
88 - 216		---					

Limit according to FCC Part 15 Subpart 15.209(a):

Frequency	Field strength of spurious emissions		Measurement distance
(MHz)	(µV/m)	dB(µV/m)	(metres)
0.009 - 0.490	2400/F(kHz)	--	300
0.490 - 1.705	24000/F (kHz)	--	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

The requirements are **FULFILLED.**

Remarks: Measurement has been performed up to the 10th harmonic (135 MHz).

No undesired emissions occurred in the frequency range from 9 kHz up to 135 MHz

5.5 Frequency tolerance

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

5.5.1 Description of the test location

Test location: AREA4 (Climatic Chamber)

5.5.2 Photo documentation of the test set-up

5.5.3 Applicable standard

According to FCC Part 15, Section 15.225(e):
The frequency tolerance of t he carrier signal shall be maintained within ±0.01 % of the operating frequency over a temperature range of -20 °C to +50 °C at normal supply voltage and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 °C. For battery operated equipment, the equipment shall be performed using a new battery.

5.5.4 Description of Measurement

The frequency tolerance has been measured radiated using a spectrum analyser. The center frequency of the spectrum analyser has been set to the fundamental frequency. This is an alternative test method because the EuT can not be operated in un-modulated mode. The limit line was set to 10 dB below the carrier. The frequencies of the upper (f_U) and lower (f_L) points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level, have been recorded. The centre frequency is calculated as $f_C = (f_U + f_L)/2$. The measurement has been performed at normal and extreme test conditions from 0 °C to +40 °C in steps of 10 degrees (According to FCC Part 2.1055).

Analyser settings:
RBW: 1 MHz
VBW: 1 kHz

5.5.5 Test result

Test conditions		Test result
		Frequency (MHz)
T_{min} (0)°C	V_{min} (6.1 V)	13.55988
	V_{max} (8.4 V)	13.55988
T (10)°C	V_{min} (6.1 V)	13.55984
	V_{max} (8.4 V)	13.55984
T_{nom} (20)°C	V_{min} (6.1 V)	13.55982
	V_{nom} (7.2V)	13.55982
	V_{max} (8.4 V)	13.55982
T (30)°C	V_{min} (6.1 V)	13.55984
	V_{max} (8.4 V)	13.55986
T_{max} (40)°C	V_{min} (6.1 V)	13.55986
	V_{max} (8.4 V)	13.55986
Measurement uncertainty		± 10 Hz

Carrier frequency: f_c = 13.56 MHz
Max. tolerance: ± 0.01 % of 13.56 MHz = ± 1.356 kHz

Lowest frequency: f_l =13.55982 MHz

Lowest tolerance: $f_l - f_c$ = -0.18 kHz < - 1.356 kHz

Limit according to FCC Part 15, Section 15.225(e):
The frequency tolerance of t he carrier signal shall be maintained within ±0.01 % of the operating frequency.

The requirements are **FULFILLED.**

Remarks: The temperature range has been defined by the manufacturer from *0°C* to *40°C.*

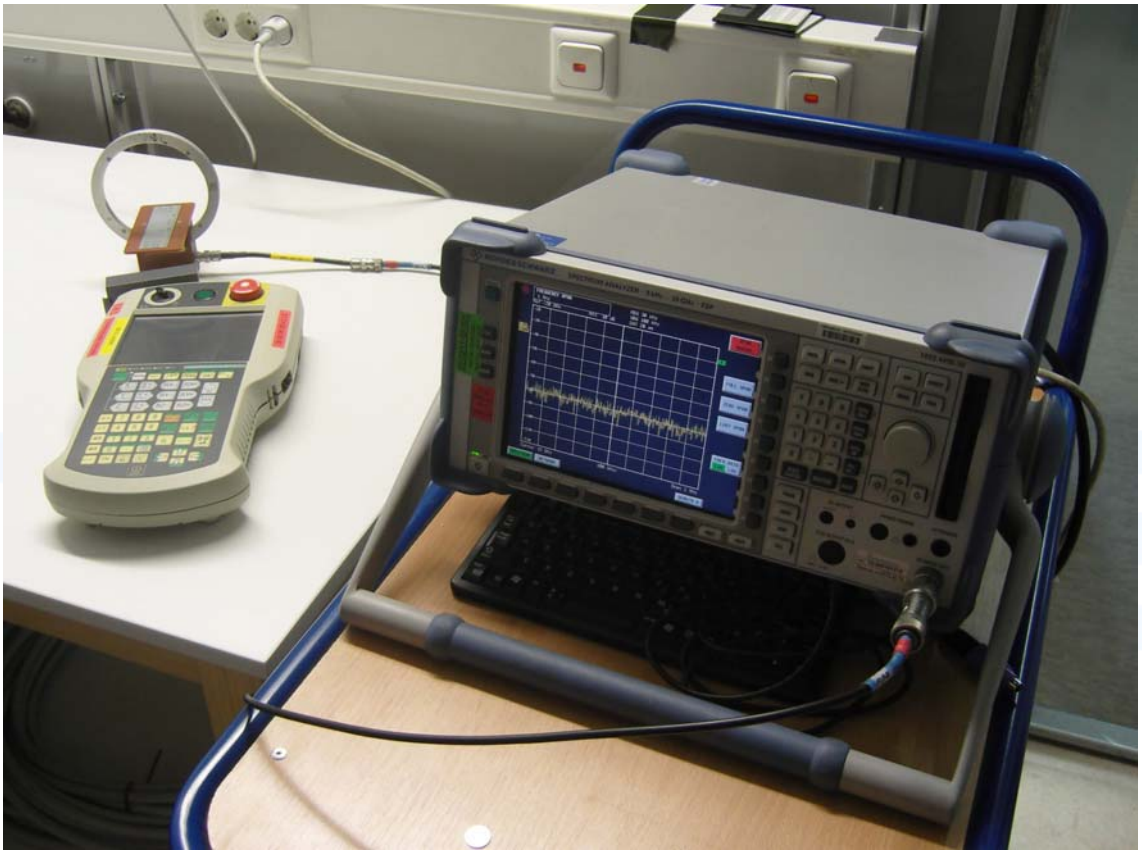
5.6 20 dB Bandwidth

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

5.6.1 Description of the test location

Test location: AREA4

5.6.2 Photo documentation of the test set-up



5.6.3 Applicable standard

According to FCC Part 15C, Section 15.215(c):
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in section 15.217 to 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. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed.

5.6.4 Description of Measurement

The frequency range has been measured radiated using a test fixture and a spectrum analyser. The limit line is set to 20 dB below the carrier. The frequency of the upper (F_H) and lower (F_L) points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level, is recorded as the modulation bandwidth. The measurement has been performed at normal and extreme test conditions in modulated transmitting mode.
Spectrum analyzer settings:
RBW: 1 kHz
VBW: 3 kHz
Detector Peak

5.6.5 Test result

Carrier Frequency (MHz)	(F_L) (MHz)	(F_H) (MHz)	Bandwidth (kHz)	Limit (kHz)
13.55982	13.55844	13.56114	2.7	14.0

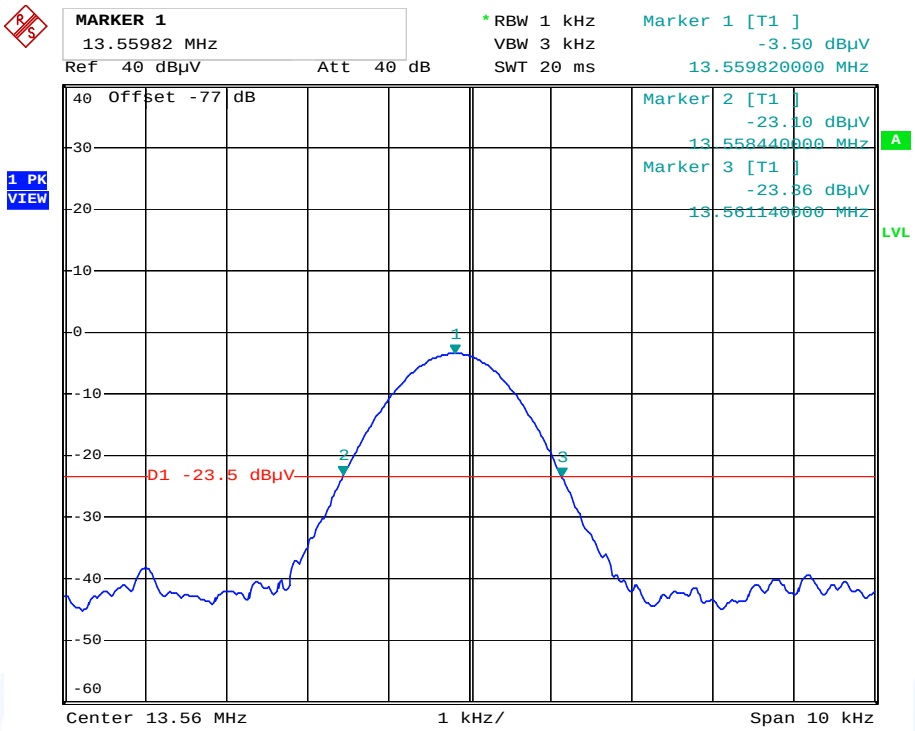
Limit according to FCC Part 15C, Section 15.215(c):

Frequency band (MHz)	Limit 20 dB bandwidth (kHz)
13.553 - 13.567	14.0

The requirements are **FULFILLED.**

Remarks: For detailed test result please refer to following test protocol.

5.6.6 Test protocol



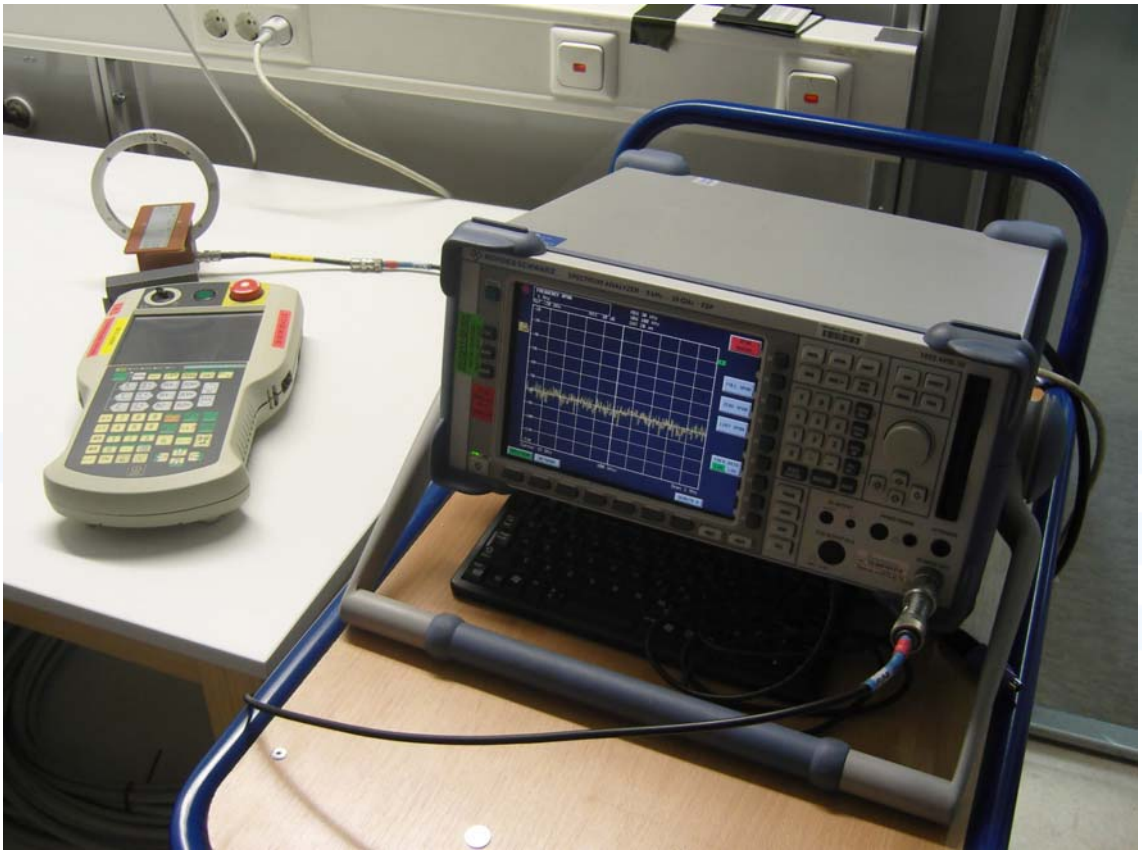
5.7 Transmitter spectrum mask

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

5.7.1 Description of the test location

Test location: AREA4

5.7.2 Photo documentation of the test set-up



5.7.3 Applicable standard

According to FCC Part 15C, Section 15.225 (a-d):
The field strength of any emission shall not exceed the limits given in FCC Part 15C, Section 15.225 (a-d)

5.7.4 Description of Measurement

The spectrum mask is measured using a spectrum analyser. The profile of the spectrum mask is displayed on analyser and have to be adjusted to the reference level given as maximum output power measured in OATS. The marker is set up manually to the particular maximum level at the effective limit in the frequency range and recorded. The measurement was performed radiated.

5.7.5 Test result

Frequency band (MHz)	Emission level (dBµV/m)	Limit (dBµV/m)
13.110 – 13.410	-8.8	40.5
13.410 - 13.553	13.1	50.5
13.553 - 13.567	18.4	84.0
13.567 – 13.710	13.1	50.5
13.710 – 14.010	-11.3	40.5
outside of 13.110 – 14.010	≤-10	29.5

Limits according to FCC Part 15C, Section 15.225(a-d):
The absolute levels of RF power at any frequency shall not exceed the limits defined in the following table:

Frequency band (MHz)	Emission level limit at 30 m (µV/m)
13.110 – 13.410	106
13.410 - 13.553	334
13.553 - 13.567	15,848
13.567 – 13.710	334
13.710 – 14.010	106
outside of 13.110 – 14.010	30

The requirements are **FULFILLED.**

Remarks: _____

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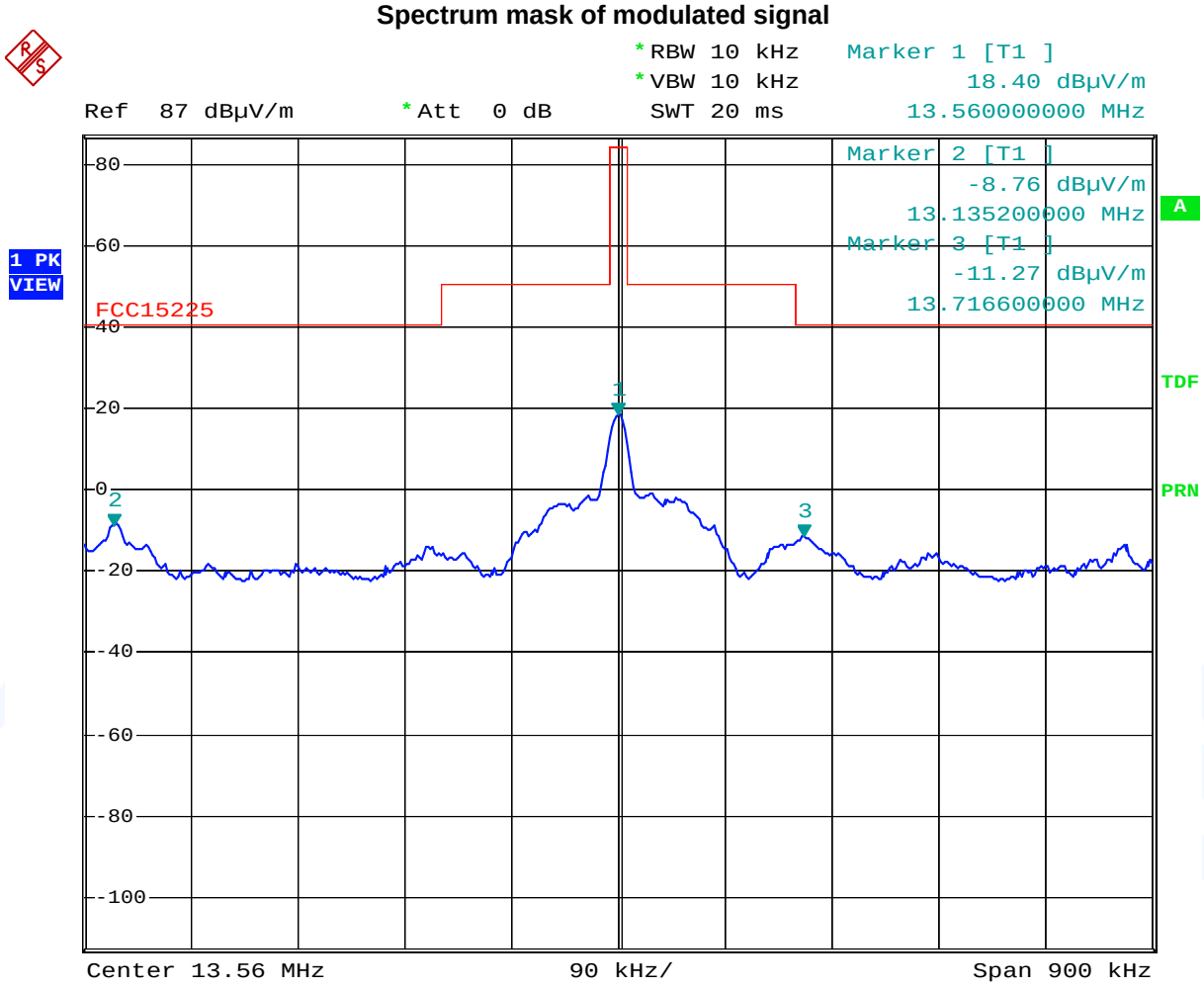
5.7.6 Test protocol

Spectrum mask of modulated signal



The values of the plot are extrapolated to a measurement distance of 30 m.

5.8 Receiver radiated emissions

5.8.1 Description of the test location

5.8.2 Applicable standard

According to FCC Part 15, Section 15.109(a):
The emission of an unintentional radiator shall not exceed the specified field strength level at 3 m.

Remarks: This test is not applicable. The receive mode is too short to make an assessment.

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.	Next Verif.
CPR 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
FE	FSP 30	Spectrum Analyzer	Rohde & Schwarz München			02-02/11-05-001
	THS730A	Handheld Scope	Tektronix GmbH			02-02/13-05-001
	HZ-10	Magnetic Field Antenna	Rohde & Schwarz München			02-02/24-05-012
	LNG32-3	Power Supply	Heinzinger electronic GmbH			02-02/50-07-034
MB	FSP 30	Spectrum Analyzer	Rohde & Schwarz München			02-02/11-05-001
	THS730A	Handheld Scope	Tektronix GmbH			02-02/13-05-001
	HZ-10	Magnetic Field Antenna	Rohde & Schwarz München			02-02/24-05-012
	LNG32-3	Power Supply	Heinzinger electronic GmbH			02-02/50-07-034
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
SER 2	ESVS 30	EMI Test Receiver	Rohde & Schwarz München			02-02/03-05-006
	VULB 9168	Trilog Broad Band Antenna	Schwarzbeck Mess-Elektronik			02-02/24-05-005
	S10162-B	RF Cable 33 m	Huber + Suhner			02-02/50-05-031
	KK-EF393-21N-16	RF Cable 20 m	Huber + Suhner			02-02/50-05-033
	NW-2000-NB	RF Cable	Huber + Suhner			02-02/50-05-113

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 1	FMZB 1516	01-02/24-01-018			02/15/2011	02/15/2010
	ESCI	02-02/03-05-004	02/09/2011	02/09/2010		
FE	FSP 30	02-02/11-05-001	04/20/2010	04/20/2009		
	THS730A	02-02/13-05-001	09/18/2010	09/18/2009		
	HZ-10	02-02/24-05-012				
	LNG32-3	02-02/50-07-034				
MB	FSP 30	02-02/11-05-001	04/20/2010	04/20/2009		
	THS730A	02-02/13-05-001	09/18/2010	09/18/2009		
	HZ-10	02-02/24-05-012				
	LNG32-3	02-02/50-07-034				
SER 1	FMZB 1516	01-02/24-01-018			02/15/2011	02/15/2010
	ESCI	02-02/03-05-004	02/09/2011	02/09/2010		
SER 2	ESVS 30	02-02/03-05-006	08/05/2010	08/05/2009		
	VULB 9168	02-02/24-05-005	05/06/2011	05/06/2008	04/08/2010	10/08/2009
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				