

FCC ID: XUY0YX0YU02033

EMI - TEST REPORT

- FCC Part 15.225 -

**Test Report No. : T35830-00-01KG**

09. May 2012

Date of issue

Type / Model Name : Card Reader HID iClass**Product Description** : Card reader 13,56 MHz**Applicant** : Y SOFT CorporationAddress : Czech Technology Park, Podnikatelska 2902/4612 00 BRNO, Czech Republic**Manufacturer** : Y SOFT CorporationAddress : Czech Technology Park, Podnikatelska 2902/4612 00 BRNO, Czech Republic**Licence holder** : Y SOFT CorporationAddress : Czech Technology Park, Podnikatelska 2902/4612 00 BRNO, Czech Republic**Test Result** according to the
standards listed in clause 1 test
standards:**POSITIVE**

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

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart A - General (September, 2011)

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

FCC Rules and Regulations Part 15 Subpart C- Intentional Radiators (September, 2011)

Part 15, Subpart C, Section 15.225	Operation within the band 13.110-14.010 MHz
Part 15, Subpart C, Section 15.207(c)	Conducted limits
Part 15, Subpart C, Section 15.209(a)	Radiated emissions, general requirements

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: 2005	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

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2 SUMMARY

GENERAL REMARKS:

The EuT is working at frequency of 13.56 MHz.

The identical RF-part is buildt in 3 different versions of readers:

- USB card reader YU02033 001
- USB card reader YU02033 00M (100% identical, only different firmware)
- Serial card reader YE01033 001 (RS232-Interface instead of USB-Interface for connection to "Ethernet Terminal Ultralight". Other differences in HW see photo documentation)

The test report covers the complete testing with the USB reader model YU02033 001. On the model YE01033 001 partly tests were performed to find out the worst case measurement.

FINAL ASSESSMENT:

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

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

Testing commenced on : 24. January 2012

Testing concluded on : 09. May 2012

Checked by:

Tested by:

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

Klaus Gegenfurtner
Dipl.-Ing. (FH)

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3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EuT

USB-Reader unit:



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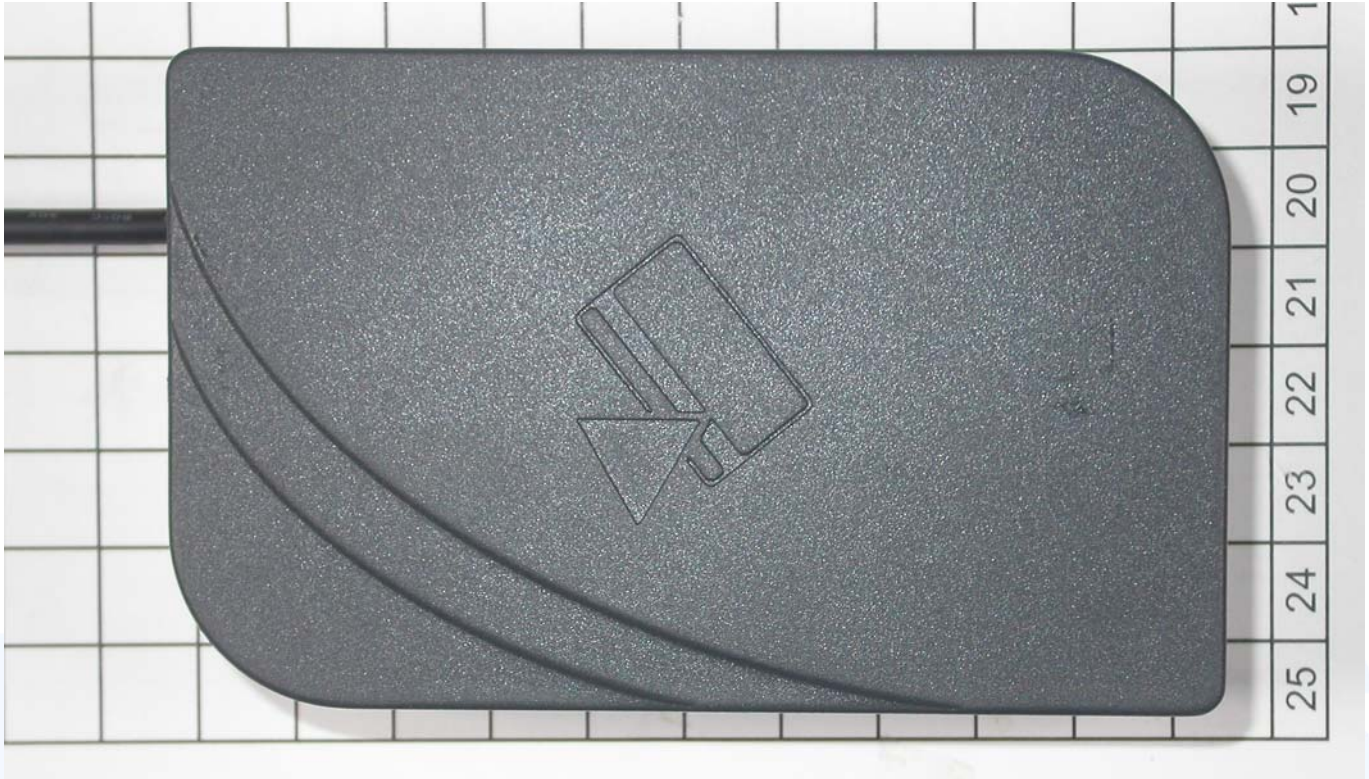
Serial-Reader unit:



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USB-Reader unit:

Front view

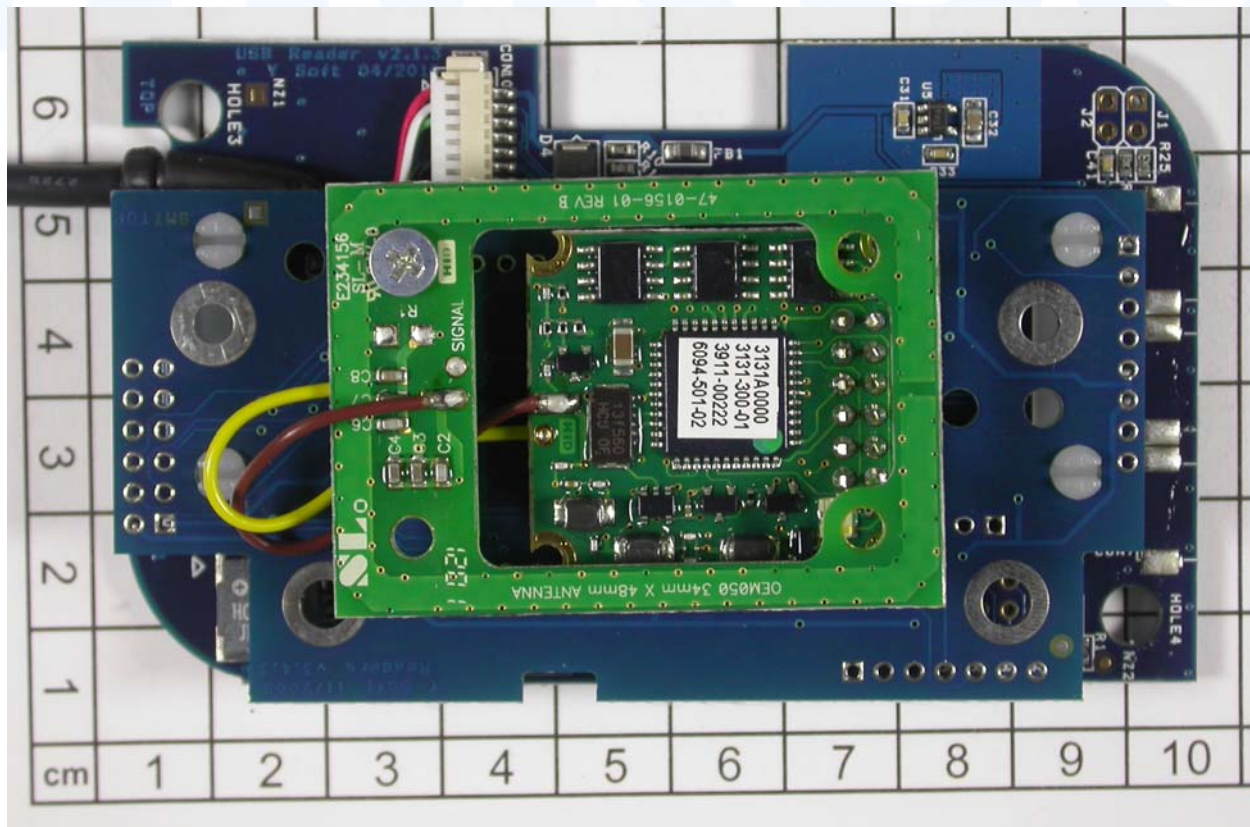
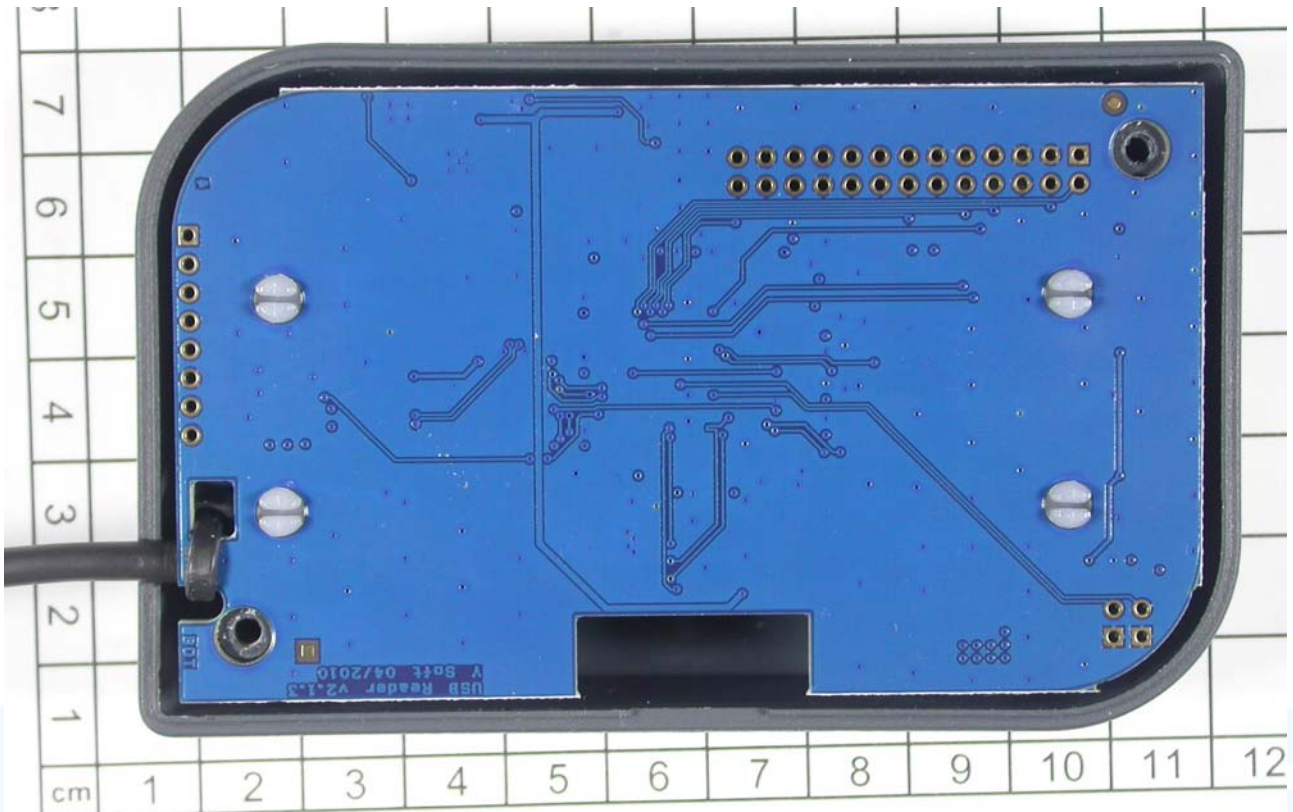


Rear view:



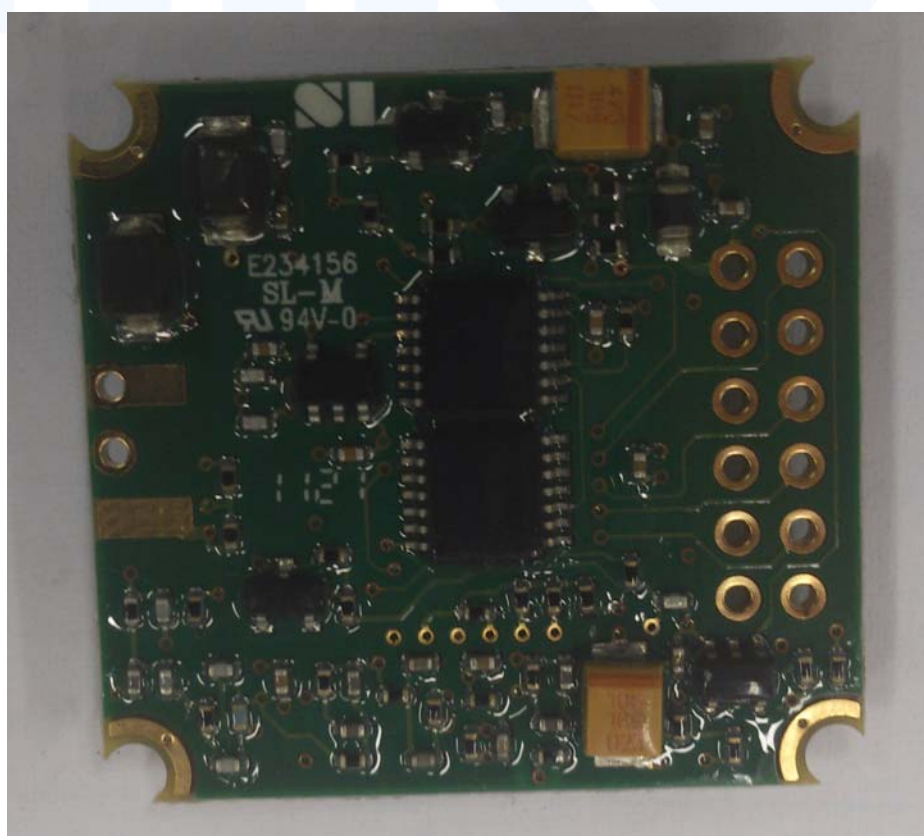
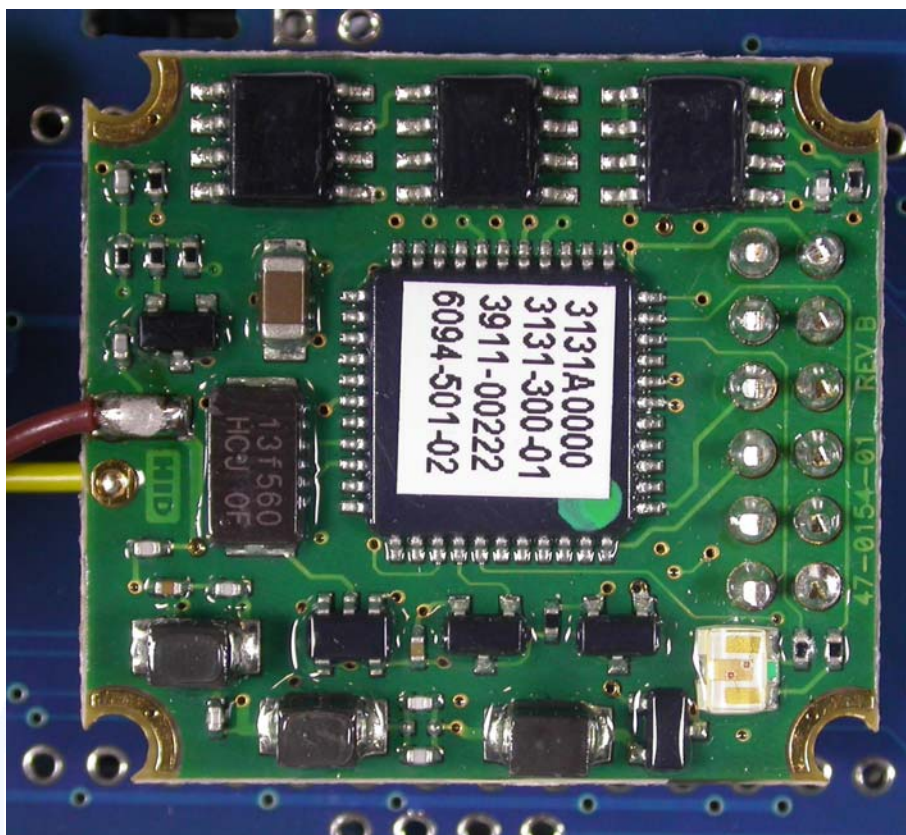
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Reader unit open housing:



FCC ID: XUY0YX0YU02033

Reader part:



FCC ID: XUY0YX0YU02033
Serial-Reader unit:

Front view:

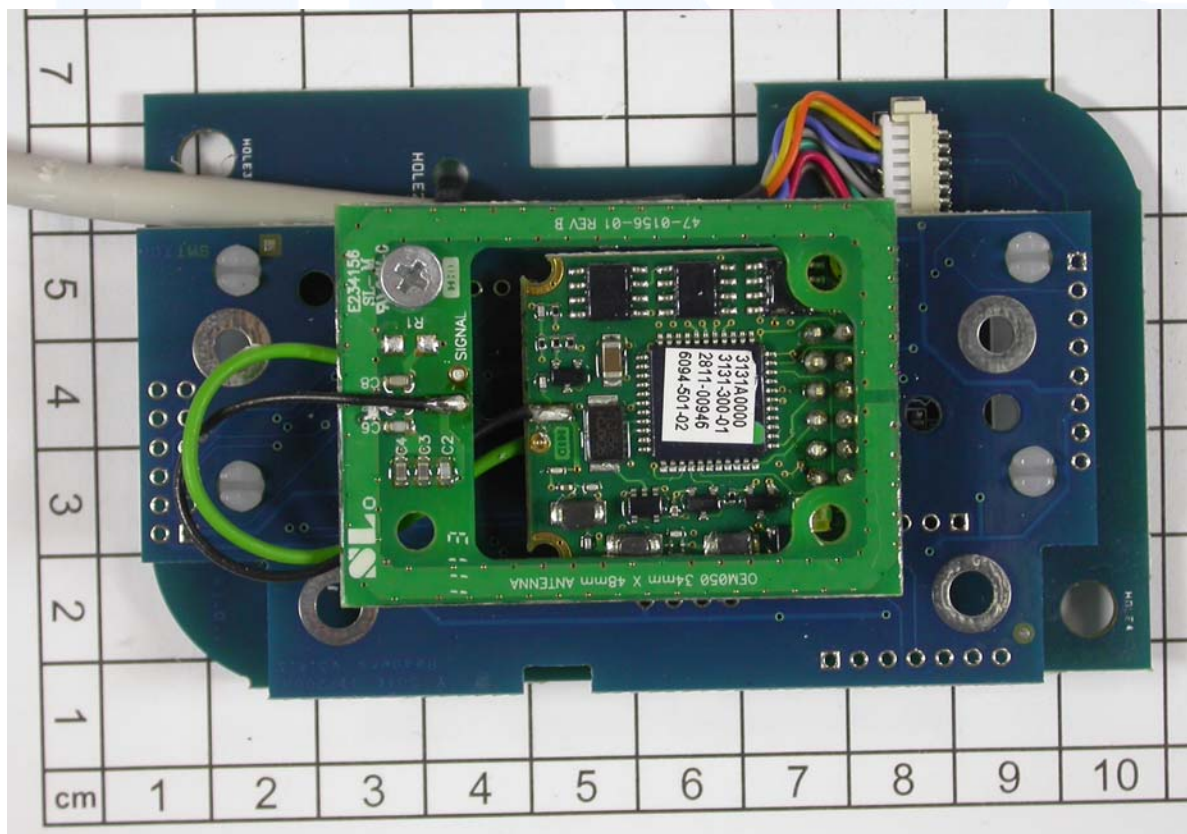
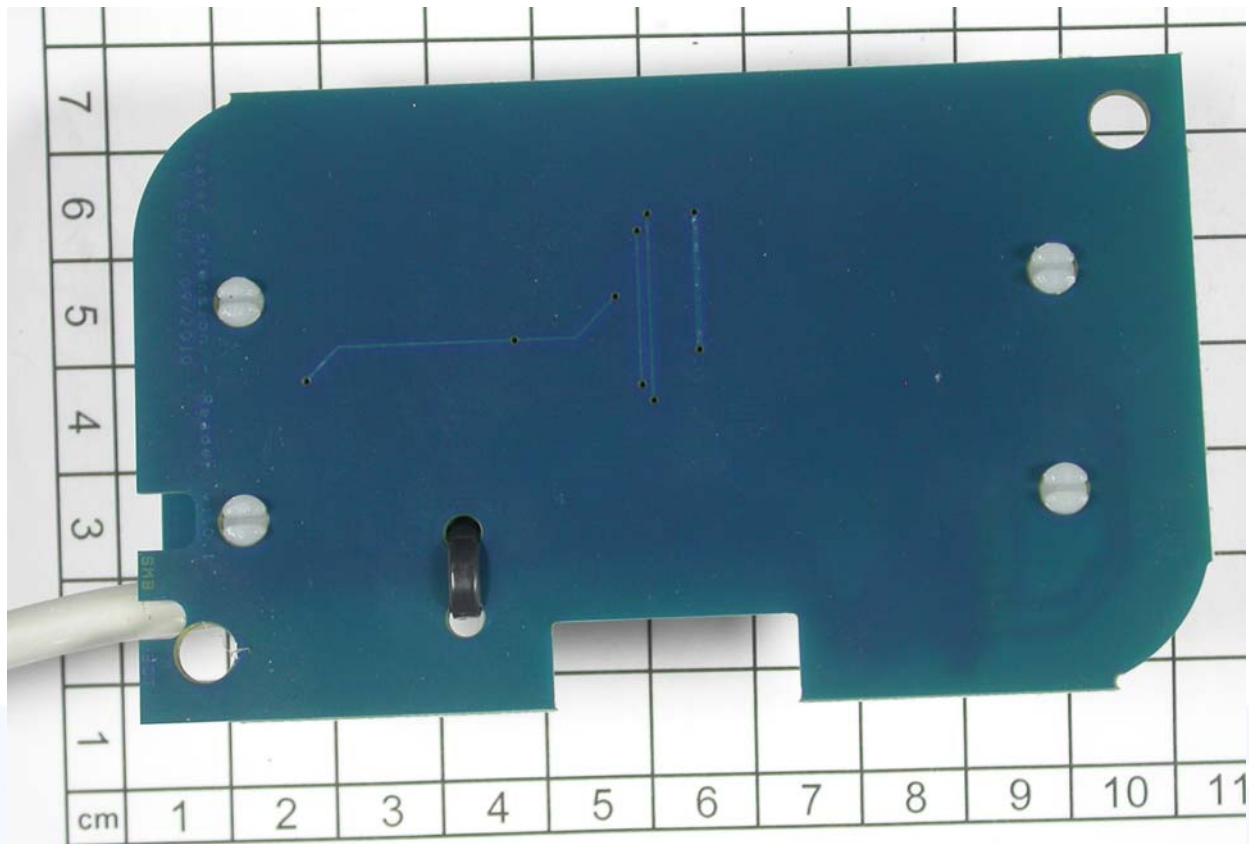


Rear view:



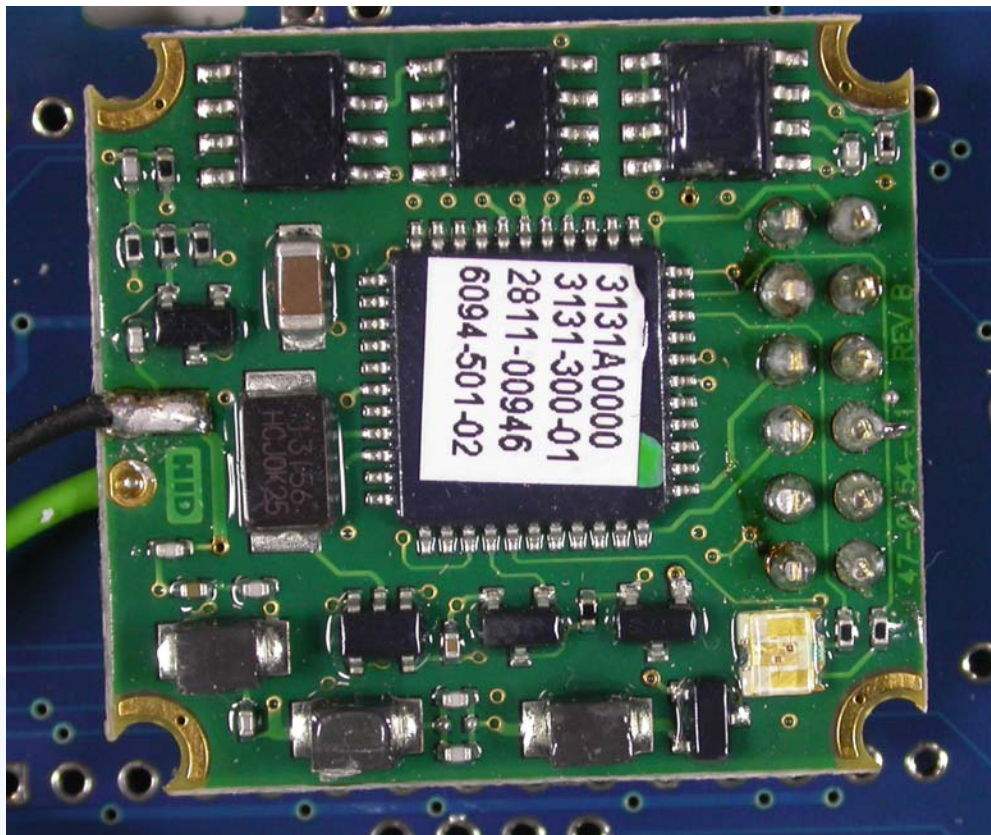
FCC ID: XUY0YX0YU02033

Reader unit open housing:



FCC ID: XUY0YX0YU02033

Reader part:



FCC ID: XUY0YX0YU02033

3.2 Power supply system utilised

Power supply voltage : 5V DC

3.3 Short description of the Equipment under Test (EuT)

The EuT is a card reader for reading of authentication cards.

Number of tested samples: 1

Serial number: see Photo documentation of the EuT under Point 3 / Equipment Under Test

EuT operation mode:

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

- Tx mode at 13.56 MHz

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:

- USB cable Model : unshielded, 1.0 m

- Laptop Mikes Intern Model : 02-01/01-07-007

- Ultralight Reader w/extension interface Model : YL01072 00R

- Model :

- Model :

- Model :

- customer specific cables

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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 is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 /11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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 in International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

In compliance with 47 CFR Part 15 Subpart A Section 15.38 testing for FCC compliance may be done following the ANSI C63.4-2003 procedures and using the CISPR 22 Limits.

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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 C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

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5 TEST CONDITIONS AND RESULTS

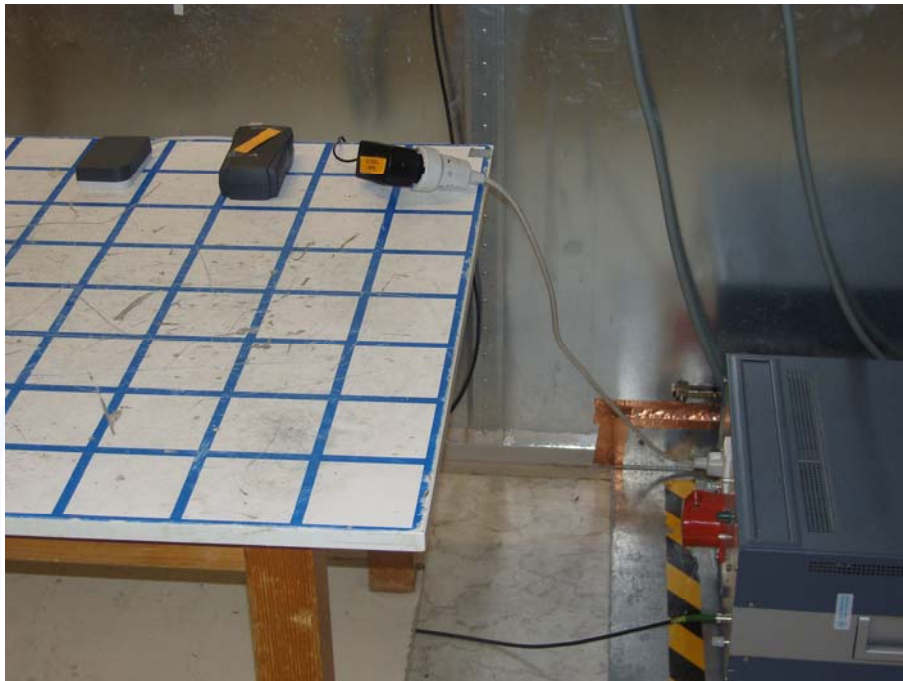
5.1 Conducted emissions

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

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



5.1.3 Applicable standard

According to FCC Part 15, Section 15.207(c):

Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AV adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

5.1.4 Description of Measurement

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

5.1.5 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin > 10 dB

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Limit according to FCC Part 15, Section 15.207(a):

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

The requirements are **FULFILLED**.

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

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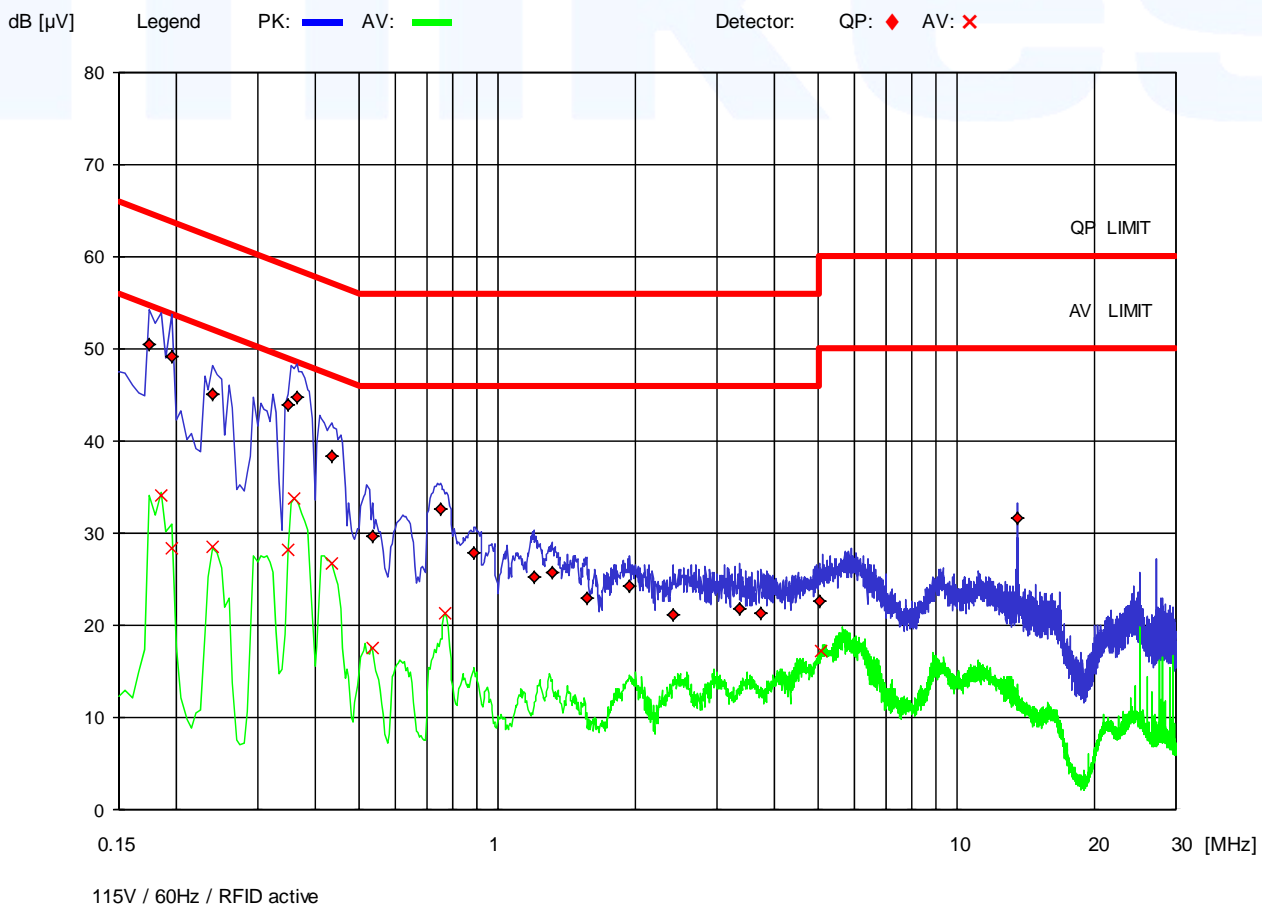
FCC ID: XUY0YX0YU02033

5.1.6 Test protocol

Test point	L1
Operation mode:	Tx mode at 13.56 MHz
Remarks:	Connected and powered with Ultralight Reader w/extension interface

Result: Passed

Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
175	50,4	-14,3	185	34,1	-20,2
195	49,1	-14,7	195	28,3	-25,5
240	45	-17,1	240	28,5	-23,6
350	44	-15,0	350	28,2	-20,8
365	44,8	-13,8	360	33,8	-14,9
435	38,3	-18,9	435	26,8	-20,4
535	29,7	-26,3	535	17,5	-28,5
750	32,7	-23,3	770	21,4	-24,6
890	27,9	-28,1	5050	17,2	-32,8
1200	25,3	-30,7			
1315	25,8	-30,2			
1565	22,9	-33,1			
1940	24,3	-31,7			
2410	21,1	-34,9			
3360	21,8	-34,2			

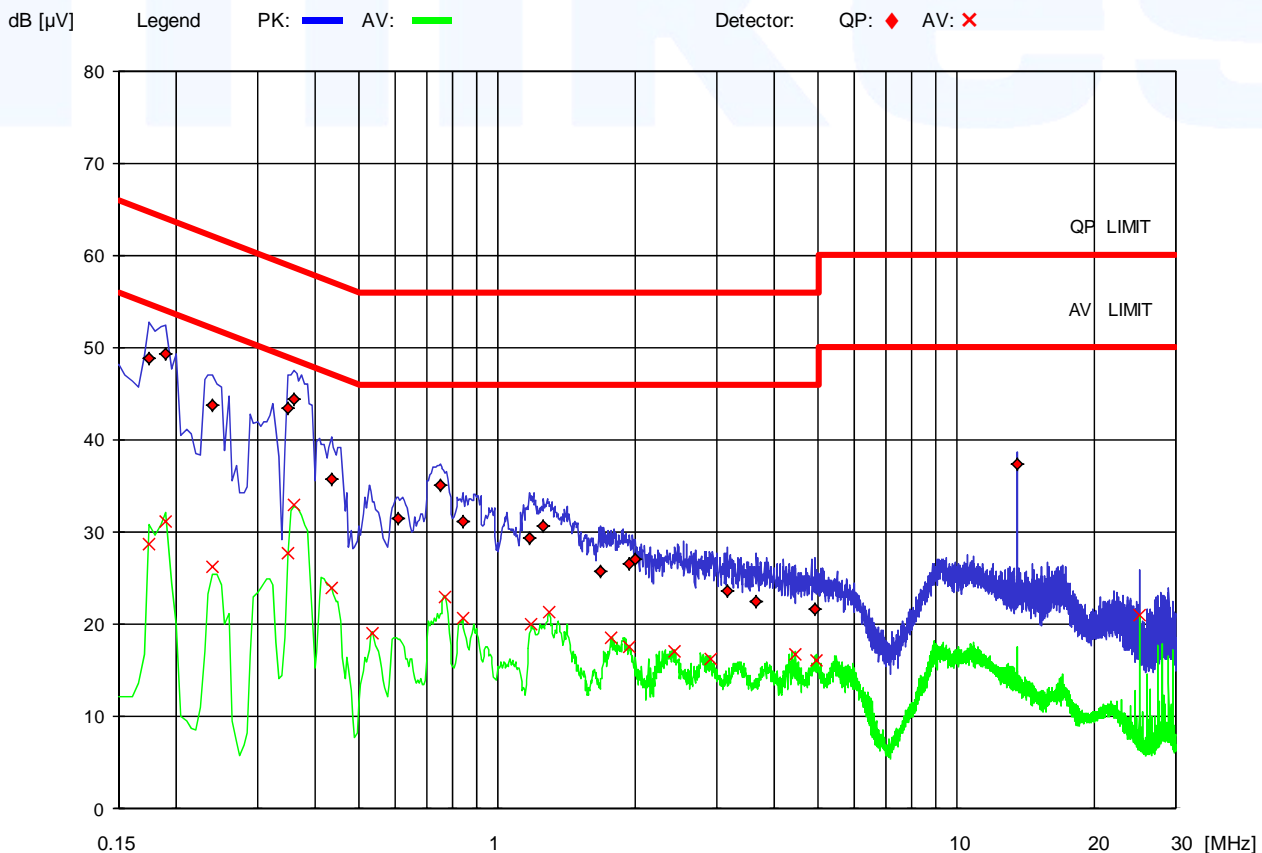
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FCC ID: XUY0YX0YU02033

Test point	N
Operation mode:	Tx mode at 13.56 MHz
Remarks:	Connected and powered with Ultralight Reader w/extension interface

Result: Passed

Freq kHz	QP- L dB[μV]	D-Limit QP [dB]	Freq kHz	AV-L dB[μV]	D-Limit AV [dB]
175	48,9	-15,8	175	28,7	-26,0
190	49,3	-14,7	190	31,1	-22,9
240	43,8	-18,3	240	26,2	-25,9
350	43,4	-15,6	350	27,7	-21,3
360	44,4	-14,3	360	32,9	-15,8
435	35,8	-21,4	435	24	-23,2
610	31,4	-24,6	535	19,1	-26,9
750	35,1	-20,9	770	22,9	-23,1
840	31,2	-24,8	840	20,7	-25,3
1175	29,3	-26,7	1185	20,1	-25,9
1260	30,7	-25,3	1295	21,3	-24,7
1680	25,7	-30,3	1765	18,6	-27,4
1940	26,6	-29,4	1940	17,6	-28,4
2000	27,1	-28,9	2440	17	-29,0
3165	23,6	-32,4	2925	16,3	-29,7

[illegible]

115V / 60Hz / RFID active

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5.2 Field strength of the fundamental wave

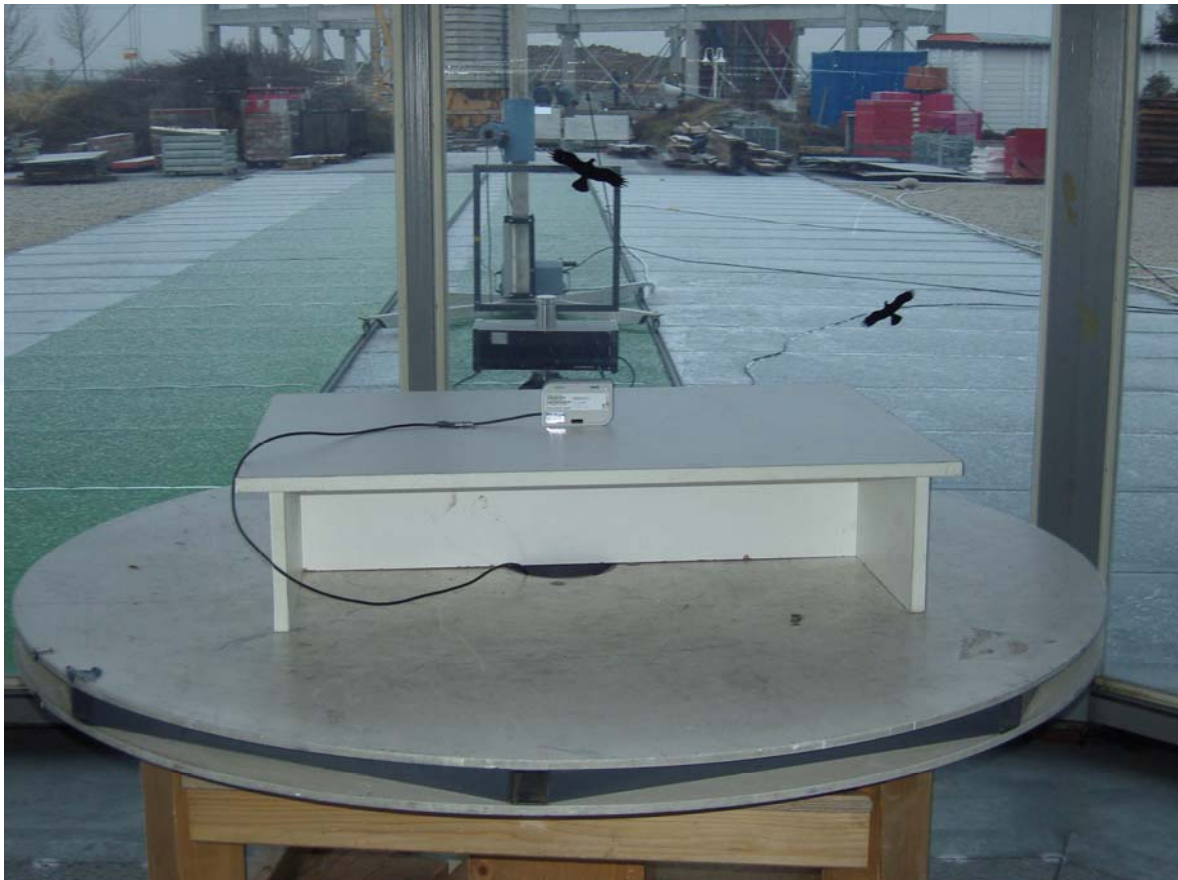
For test instruments and accessories used see section 6 Part CPR 1.

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 Description of Measurement

The magnetic field strength from the EuT will be measured on an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2]. The final measurement will be performed with an EMI Receiver set to 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) [2].

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The final level, expressed in dB μ V/m, is arrived at by taking the reading from the EMI receiver (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz: ResBW: 200 Hz

150 kHz – 30 MHz: ResBW: 9 kHz

Example:

Frequency (MHz)	Level (dB μ V)	+	Factor (dB)	=	Level (dB μ V/m)	Limit (dB μ V/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

5.2.4 Test result

Measured value at 3m

Frequency [MHz]	L: PK [dB μ V]	L: AV [dB μ V]	L: QP [dB μ V]	Correct. [dB]	L: PK [dB μ V/m]	L: AV [dB μ V/m]	L: QP [dB μ V/m]	Limit [dB μ V/m]	Delta [dB]
13.56	38.8	17.1	35.5	20.0	58.8	37.1	55.5	124.0	-68.5

Calculated value at 30m:

Frequency [MHz]	L: PK [dB μ V]	L: AV [dB μ V]	L: QP [dB μ V]	Correct. [dB]	L: PK [dB μ V/m]	L: AV [dB μ V/m]	L: QP [dB μ V/m]	Limit [dB μ V/m]	Delta [dB]
13.56	-1.2	-22.9	-4.5	20.0	18.8	-2.9	15.5	84.0	-68.5

Limit according to FCC Part 15 Subpart 15.225(a)

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

The requirements are **FULFILLED**.

Remarks:

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5.3 Spurious emissions (Magnetic field) 9 kHz – 30 MHz

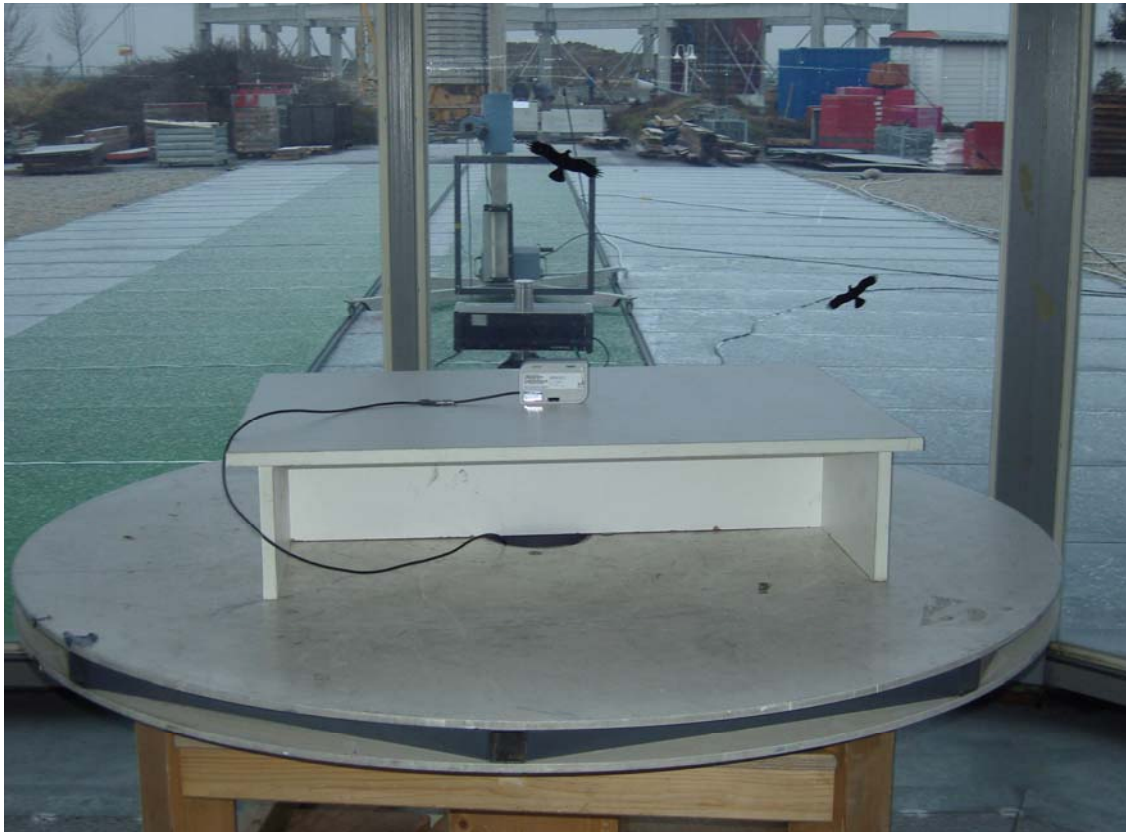
For test instruments and accessories used see section 6 Part SER 1.

5.3.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.3.2 Photo documentation of the test set-up



5.3.3 Description of Measurement

The spurious emissions from the EuT will be measured on an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2]. The final measurement will be performed with an EMI Receiver set to 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) [2].

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the EMI receiver (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz: ResBW: 200 Hz

150 kHz – 30 MHz: ResBW: 9 kHz

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Example:

Frequency (MHz)	Level (dBμV)	+	Factor (dB)	=	Level (dBμV/m)	Limit (dBμV/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

5.3.4 Test result

Frequency [MHz]	L: PK [dBμV]	L: AV [dBμV]	L: QP [dBμV]	Correct. [dB]	L: PK [dBμV/m]	L: AV [dBμV/m]	L: QP [dBμV/m]	Limit [dBμV/m]	Delta [dB]
0.009 – 30.0				20				40.0	> 20

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(μV/m)	dB (μV/m)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	30	29.5	30

The requirements are **FULFILLED**.

Remarks:

FCC ID: XUY0YX0YU02033

5.4 Radiated emissions (electric field) 30 MHz – 1 GHz

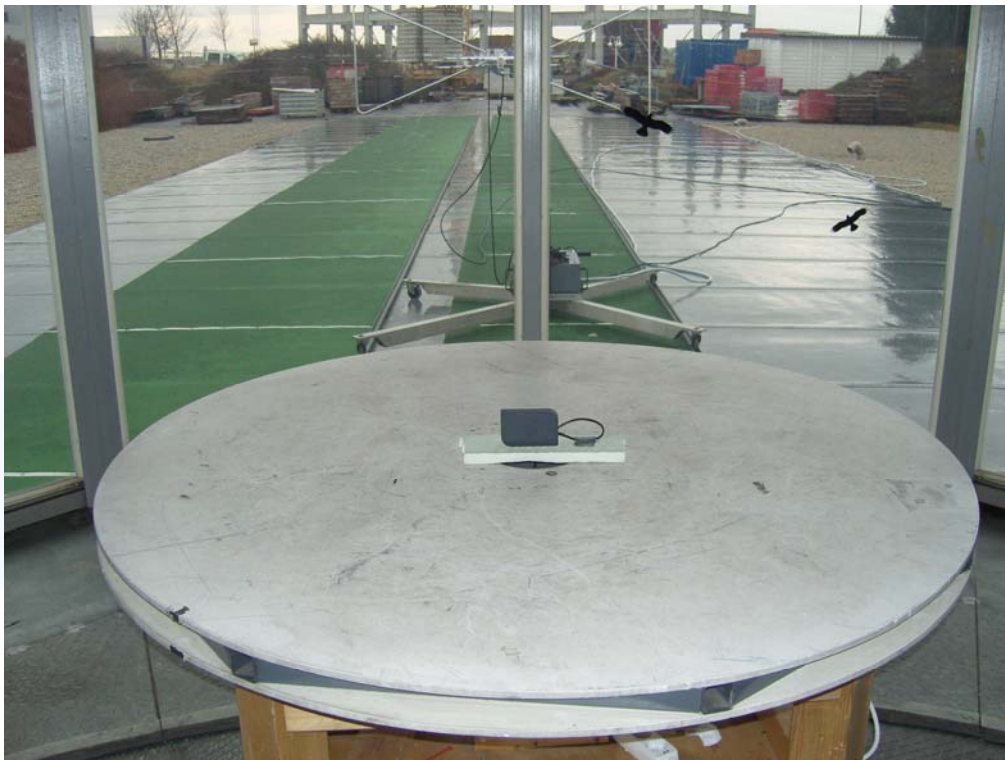
For test instruments and accessories used see section 6 Part SER 2.

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 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 polarized 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 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003. 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 screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization's and the EuT are rotated 360 degrees.

The final level, expressed in dB μ V/m, is arrived by taking the reading from the EMI receiver (Level dB μ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page.

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The resolution bandwidth during the measurement is as follows:

30 MHz – 1000 MHz:

ResBW: 120 kHz

Example:

Frequency (MHz)	Level (dBμV)	+	Factor (dB)	=	Level (dBμV/m)	Limit (dBμV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

5.4.4 Test result

Frequency [MHz]	L: QP [dBμV]	Correct. [dB]	L: QP [dBμV/m]	Limit [dBμV/m]	Delta [dB]
54.24	2.0	15.1	17.1	40.0	-22.9
108.48	5.2	12.0	17.2	43.5	-26.3
162.72	5.8	15.6	21.4	43.5	-22.1
176.28	3.7	14.8	18.5	43.5	-25.0
189.84	3.5	14.3	17.8	43.5	-25.7
203.40	6.8	14.0	20.8	43.5	-22.7
216.96	3.5	14.4	17.9	46.0	-28.1

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(μV/m)	dB (μV/m)	
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:

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5.5 Frequency tolerance of the carrier

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

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Photo documentation of the test set-up



5.5.3 Test result

Test conditions		Test result		
		Frequency (MHz)		
T_{\min} (-20)°C	V_{nom} (5.0)V	13.560073		
T (-10)°C	V_{nom} (5.0)V	13.560090		
T (0)°C	V_{nom} (5.0)V	13.560089		
T (10)°C	V_{nom} (5.0)V	13.560084		
T_{nom} (20)°C	V_{\min} (4.25)V	13.560065		
	V_{nom} (5.0)V	13.560066		
	V_{\max} (5.75)V	13.560067		
T (30)°C	V_{nom} (5.0)V	13.560051		
T (40)°C	V_{nom} (5.0)V	13.560050		
T_{\max} (50)°C	V_{nom} (5.0)V	13.560055		
Maximum tolerance of carrier frequency (kHz)		-0.0 / +0.09		
Measurement uncertainty		± 10 Hz		

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Limit according to FCC Part 15 Subpart 15.225 (e): ± 0.01 % of carrier frequency at 13.560 MHz = ± 1.356 kHz

The requirements are **FULFILLED**.

Remarks:

mikes

FCC ID: XUY0YX0YU02033

5.6 Emission Bandwidth

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

5.6.1 Description of the test location

Test location: Shielded Room S4

5.6.2 Photo documentation of the test set-up



5.6.3 Description of Measurement

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio of -20 dB. The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or the first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.

The resolution bandwidth of measuring instrument was set to a value as shown in the following table below according to ANSI C63.4-2003.

Fundamental frequency	Minimum resolution bandwidth
9 kHz to 30 MHz	1kHz
30 to 1000 MHz	10 kHz
1000 MHz to 40 GHz	100 kHz

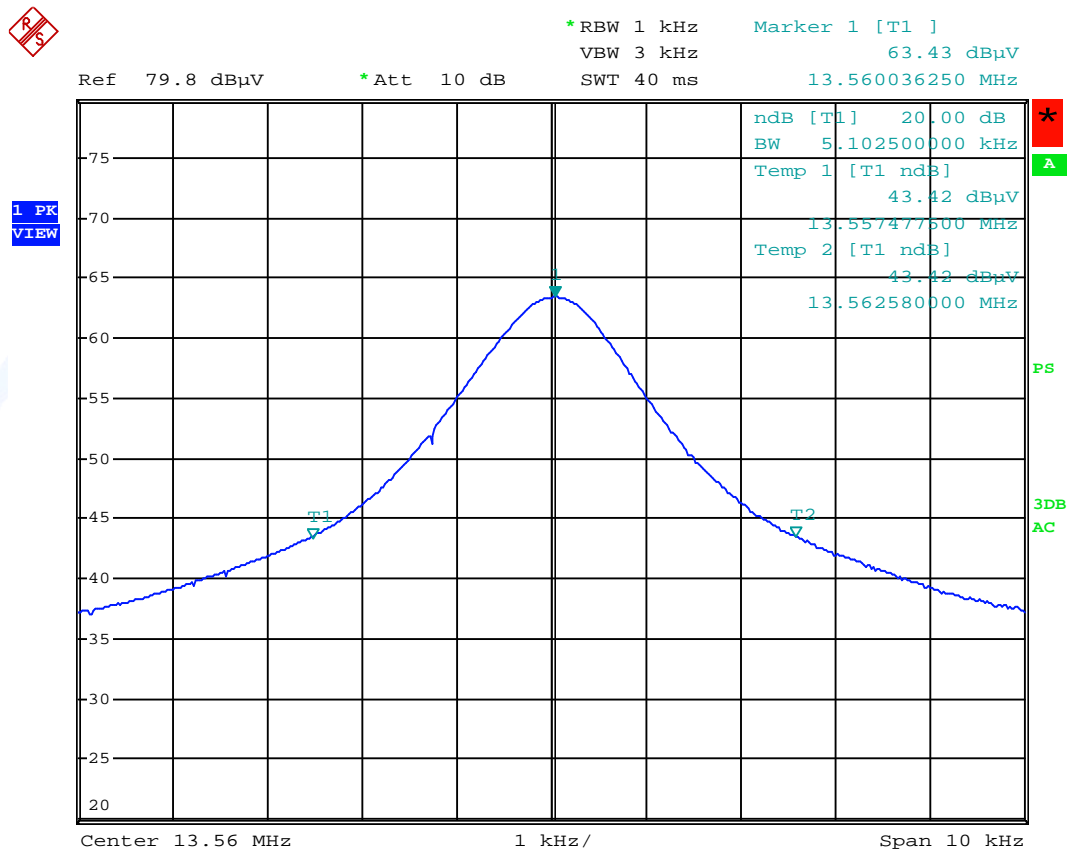
5.6.4 Test result

Channel Frequency [MHz]	20 dB Bandwidth [kHz]
13.56	5.1025

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

5.6.5 Test protocol



FCC ID: XUY0YX0YU02033

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

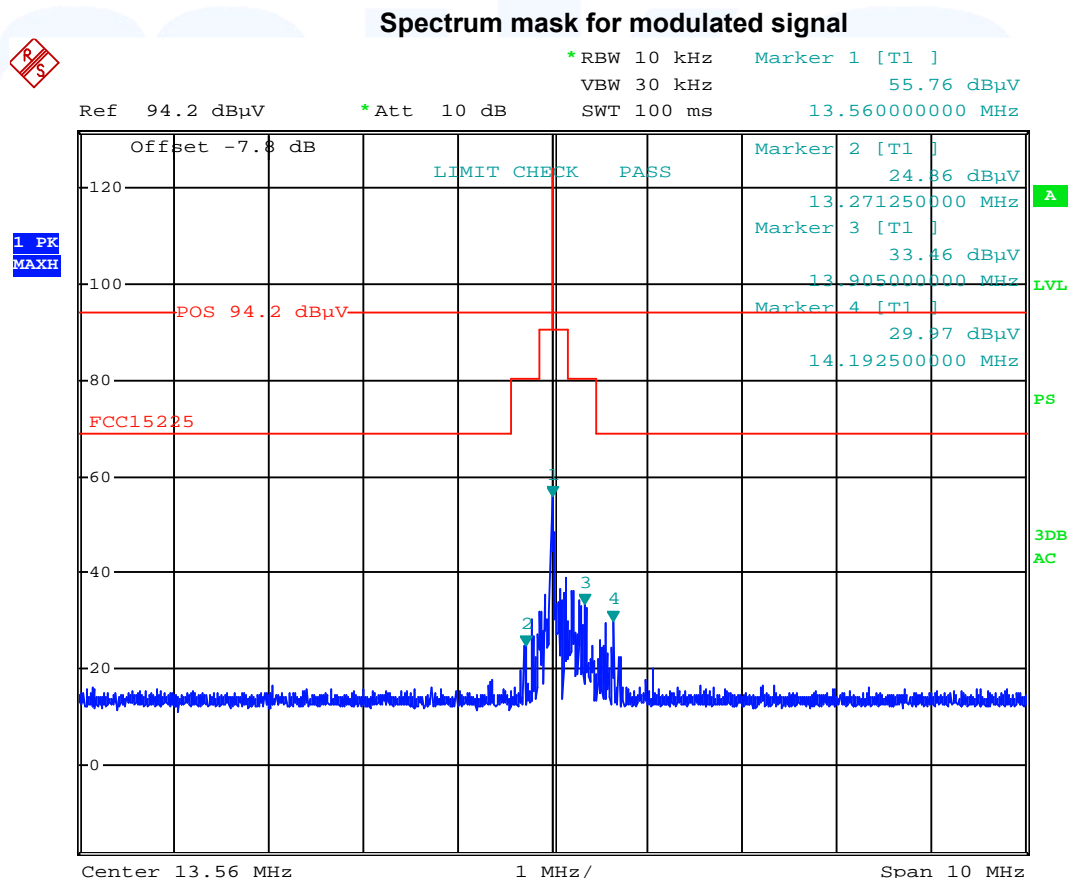
5.7.2 Test result

The absolute levels of RF power at any frequency shall not exceed the limits defined in FCC Part §15.225 a-d

The requirements are **FULFILLED**.

Remarks:

5.7.3 Test protocol

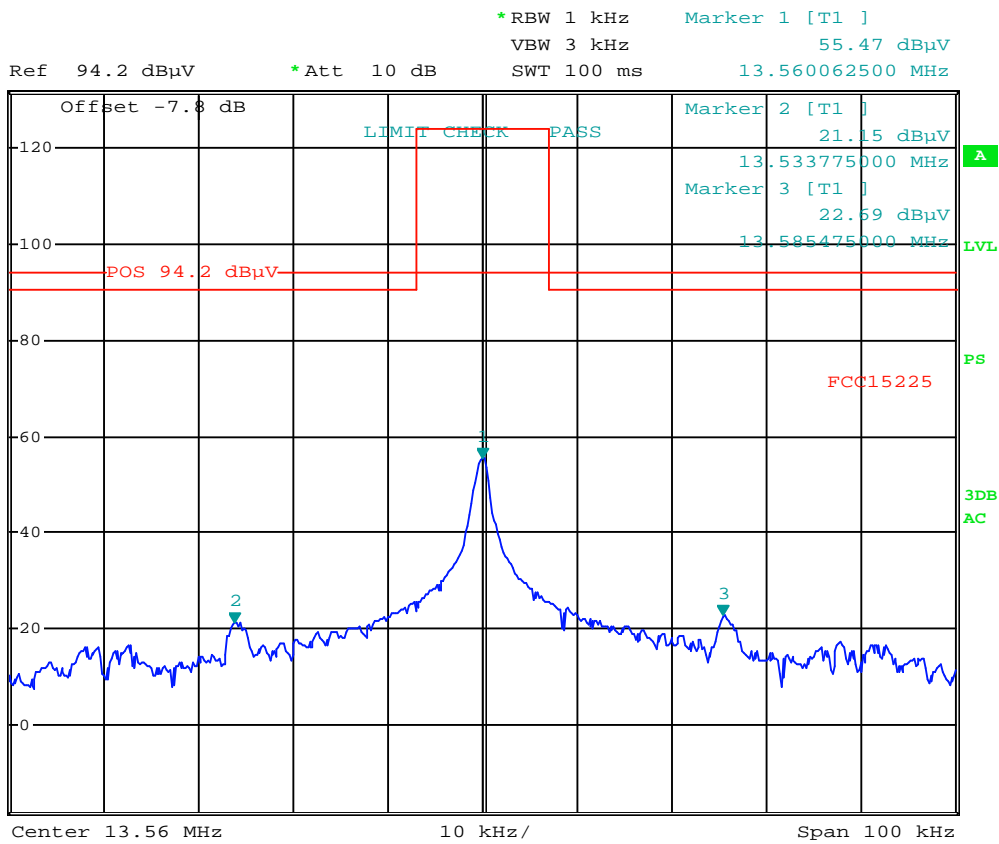


Date: 26.JAN.2012 14:41:23

FCC ID: XUY0YX0YU02033
Spectrum mask for modulated signal



1 PK
VIEW



FCC ID: XUY0YX0YU02033

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

The calibration intervals and the calibration history will be given out on request.

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.
A 4	ESHS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-002
	ESH 2 - Z 5	LISN	Rohde & Schwarz München	02-02/20-05-004
	N-4000-BNC	RF Cable	Huber + Suhner	02-02/50-05-138
	N-1500-N	RF Cable	Huber + Suhner	02-02/50-05-140
	ESH 3 - Z 2	Pulse Limiter	Rohde & Schwarz München	02-02/50-05-155
CPR 1	FMZB 1516	Magnetic Field Antenna	Schwarzbeck Mess-Elektron	01-02/24-01-018
	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-005
	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
FE	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-004
	HZ-10	Magnetic Field Antenna	Rohde & Schwarz München	02-02/24-05-012
	MetraHIT World	TRMS Multimeter	GOSSEN-METRAWATT Gm	02-02/32-10-001
	WK-340/40	Climatic Chamber	Weiss Umwelttechnik GmbH	02-02/45-05-001
	6543A	Power Supply	HP Hewlett-Packard	02-02/50-05-157
MB	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-004
	HZ-10	Magnetic Field Antenna	Rohde & Schwarz München	02-02/24-05-012
	MetraHIT World	TRMS Multimeter	GOSSEN-METRAWATT Gm	02-02/32-10-001
	WK-340/40	Climatic Chamber	Weiss Umwelttechnik GmbH	02-02/45-05-001
	6543A	Power Supply	HP Hewlett-Packard	02-02/50-05-157
SER 1	FMZB 1516	Magnetic Field Antenna	Schwarzbeck Mess-Elektron	01-02/24-01-018
	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-005
	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
SER 2	ESVS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-006
	VULB 9168	Trilog Broadband Antenn	Schwarzbeck Mess-Elektron	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

FCC ID: XUY0YX0YU02033

Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A4				
02-02/03-05-002	30/06/2012	30/06/2011		
02-02/20-05-004	12/05/2012	12/05/2011	09/07/2012	09/01/2012
02-02/50-05-138				
02-02/50-05-140				
02-02/50-05-155			05/10/2012	05/04/2012
CPR 1				
01-02/24-01-018			16/02/2012	16/02/2011
02-02/03-05-005	21/11/2012	21/11/2011		
02-02/50-05-031				
02-02/50-05-033				
02-02/50-05-113				
FE				
02-02/03-05-004	21/02/2012	21/02/2011		
02-02/24-05-012				
02-02/32-10-001	25/08/2012	25/08/2011		
02-02/45-05-001	31/05/2013	31/05/2011	22/06/2012	22/12/2011
02-02/50-05-157				
MB				
02-02/03-05-004	21/02/2012	21/02/2011		
02-02/24-05-012				
02-02/32-10-001	25/08/2012	25/08/2011		
02-02/45-05-001	31/05/2013	31/05/2011	22/06/2012	22/12/2011
02-02/50-05-157				
SER 1				
01-02/24-01-018			16/02/2012	16/02/2011
02-02/03-05-005	21/11/2012	21/11/2011		
02-02/50-05-031				
02-02/50-05-033				
02-02/50-05-113				
SER 2				
02-02/03-05-006	20/06/2012	20/06/2011		
02-02/24-05-005	07/03/2012	07/03/2011	06/04/2012	06/10/2011
02-02/50-05-031				
02-02/50-05-033				
02-02/50-05-113				