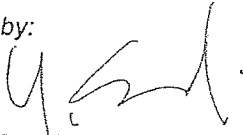



SECTION 4

Test Reports for the Radio Spectrum

(EN 302 291-1 V1.1.1/2005, EN 302 291-2 V1.1.1/2005)

Prüfbericht - Nr.: 12607335 001		Seite 1 von 32 Page 1 of 32	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>		Kyocera Mita Corporation 2-28, 1-chome, Tamatsukuri, Chuo-ku, Osaka, 540-8585 Japan	
Gegenstand der Prüfung: <i>Test Item:</i>		RFID Module	
Bezeichnung: <i>Identification:</i>		Serien-Nr.: <i>Serial No.:</i>	
2K3A0512		Engineering Sample	
Wareneingangs-Nr.: <i>Receipt No.:</i>		Eingangsdatum: <i>Date of Receipt:</i>	
PT0214002176-1		2010-07-23	
Prüfört: <i>Testing Location:</i>		TÜV Rheinland Japan Ltd. - Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan	
Prüfgrundlage: [Radio] <i>Test Specification:</i> EN 302 291-2 V1.1.1 EN 302 291-1 V1.1.1 EN 50364:2001			
Prüfergebnis: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).	
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland Japan Ltd. - Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan	
geprüft/ tested by:		kontrolliert/ reviewed by:	
 2010-09-21 Y. Sasaki / Inspector		 2010-09-21 T. Cheung / Reviewer	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
Sonstiges / Other Aspects:		Refer to Section 1 "General Remarks"	
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.			

Prüfbericht - Nr.:
Test Report No.:

12607335 001

Seite 2 von 32
Page 2 of 32

TEST SUMMARY

5.1.1 HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

RESULT: PASS

6.1.1 H-FIELD (RADIATED)

RESULT: PASS

6.1.2 DUTY CYCLE

RESULT: PASS

6.1.3 TRANSMITTER RADIATED SPURIOUS EMISSIONS BELOW 30MHZ

RESULT: PASS

6.1.4 TRANSMITTER RADIATED SPURIOUS EMISSIONS ABOVE 30MHZ

RESULT: PASS

6.2.1 RECEIVER RADIATED SPURIOUS EMISSIONS

RESULT: N/A

Prüfbericht - Nr.:
Test Report No.:

12607335 001

Seite 3 von 32
Page 3 of 32

Contents

1.	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS.....	5
2.	TEST SITES	6
2.1	TEST FACILITIES.....	6
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	6
2.3	MEASUREMENT UNCERTAINTY.....	7
3.	GENERAL PRODUCT INFORMATION	8
3.1	PRODUCT FUNCTION AND INTENDED USE	8
3.2	SYSTEM DETAILS.....	8
3.3	INDEPENDENT OPERATION MODES.....	9
3.4	CLOCK FREQUENCIES.....	9
3.5	SUPPRESSING PARTS	9
4.	TEST SET-UP AND OPERATION MODES.....	11
4.1	TEST METHODOLOGY.....	11
4.2	PHYSICAL CONFIGURATION FOR TESTING.....	11
4.3	TEST SOFTWARE.....	11
4.4	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	12
4.5	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	12
5.	HEALTH REQUIREMENTS.....	13
5.1.1	<i>Human Exposure to Electromagnetic Fields</i>	<i>13</i>
6.	TEST RESULTS RADIO REQUIREMENTS	15
6.1	TRANSMITTER PARAMETERS	15
6.1.1	<i>H-Field (Radiated)</i>	<i>15</i>
6.1.2	<i>Duty Cycle</i>	<i>22</i>
6.1.3	<i>Transmitter Radiated Spurious Emissions below 30MHz</i>	<i>23</i>
6.1.4	<i>Transmitter Radiated Spurious Emissions above 30MHz.....</i>	<i>24</i>
6.2	RECEIVER PARAMETERS	26
6.2.1	<i>Receiver Radiated Spurious Emissions</i>	<i>26</i>
7.	PHOTOGRAPHS OF THE TEST SETUP	27
8.	LIST OF TABLES	31
9.	LIST OF FIGURES.....	31

Prüfbericht - Nr.: 12607335 001
*Test Report No.:*Seite 4 von 32
Page 4 of 32

10.	LIST OF PHOTOGRAPHS	31
11.	ATTACHMENT: TEST PLAN 12607335 A BY TÜV RHEINLAND JAPAN LTD.	32
12.	ATTACHMENT: DECLARATION REGARDING EN 302 291-2 BY KYOCERA MITA.....	32

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 5 von 32
Page 5 of 32

1. General Remarks

This test report is prepared for verification of compliance with harmonized standards within clause 3.1a (health requirements only) and 3.2 of R&TTE directive (1999/5/EC).

1.1 Complementary Materials

All attachments are integral parts of this test report.

This applies especially to the following documents:

- (1) Test plan 12607335 A by TÜV Rheinland Japan Ltd.
- (2) Declaration regarding EN 302 291-2 by Kyocera Mita Corporation

2. Test Sites

2.1 Test Facilities

TÜV Rheinland Japan Ltd. - Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
For Radio Testing					
Receiver	Rohde & Schwarz	ESU 8	100025	RF-0020	2011-02
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2010-12
3dB Attenuator	Hewlett Packard	8491A 3 dB	34742	RF-0286	2010-11
Low Noise Pre-Amplifier, 9kHz-1GHz	TSJ	MLA-10K01-B01-35	1336163	RF-0275	2010-11
RF Selector (10m)	Toyo Corporation	NS4900	0703-182	RF-0029	2011-05
Loop Antenna with power supply, 9kHz-30MHz	Rohde & Schwarz	HFH2-Z2	100139	RF-0048	2011-02
Biconical Antenna, 25-300MHz (RX)	Schwarzbeck	BBA 9106	-	RF-0289	2010-11
Log-Periodic Antenna, 300-1000MHz (RX)	Schwarzbeck	UHALP 9107	91071248	RF-0288	2010-11
Dipole Antenna, 28-60MHz (TX)	EMCO	3121C-DB1	6904-1170	RF-0371	2011-06
Dipole Antenna, 60-140MHz (TX)	EMCO	3121C-DB2	6904-1170	RF-0372	2011-06
Dipole Antenna, 140-400MHz (TX)	EMCO	3121C-DB3	6904-1170	RF-0373	2011-06
Dipole Antenna, 400-1000MHz (TX)	EMCO	3121C-DB4	6904-1170	RF-0374	2011-06
Signal Generator (9kHz - 1.1GHz)	Rohde & Schwarz	SML01	105325	RF-0073	2011-04
Temperature Chamber	Voetsch	VT 4018	585660250 90010	BT-8012	2011-08

Prüfbericht - Nr.: 12607335 001
*Test Report No.:*Seite 7 von 32
Page 7 of 32

2.3 Measurement Uncertainty

Table 2: Emission Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Radiated Emission	9kHz – 30MHz	± 3.99dB
	30MHz - 1GHz	± 4.8dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is an RFID reader-writer module intended to use with the dedicated printer and communicate with the tag on its toner cartridge by RFID protocol.

There is typo to be fixed in the test plan: 12607335 A by TÜV Rheinland Japan Ltd.

3.2 System Details

Specified output power:	0.2nW EIRP
Antenna gain:	-53dBi
Antenna type:	Printed loop antenna
Antenna mounting type:	Integrated
Frequency range:	13.56MHz
Number of channels:	1
Modulation type:	ASK
Operation frequency band:	Annex 9, band f (acc. to ERC Recommendation 70-03)
Rated voltage:	DC 3.3V \pm 15%
Rated current:	100mA max
Protection class:	III
Test voltage:	DC 2.97V, 3.3V, and 3.63V

Table 3: Interfaces present on the EUT

No.	Interface	Cable Length for Testing, Shielding	Interface Classification
1.	4-wire flat cable [EUT <-> JIG]	0.2m, Un-Shielded	DC Power and Signal Port
2.	AC power line for JIG	2m, Un-Shielded	AC Power Port

Duty cycle for testing: 20%

For more details, refer to the attached test plan: 12607335 A by TÜV Rheinland Japan Ltd.

3.3 Independent Operation Modes

The EUT was tested on a stand-alone basis (only attached to the test jig) and the test system was configured in a typical fashion (as a customer would normally use it).

Testing was performed at the operating frequency (13.56MHz).

The basic operation modes are:

- A. Continuously writing mode, 13.56MHz (RFID) according to ISO 15693, communicating with tag
- B. Continuously reading mode, 13.56MHz (RFID) according to ISO 15693, communicating with tag

For radiated tests, the worst-case position was investigated for X/Y/Z orientation with highest emission, the worst-position was Y orientation below 30MHz shown in Photograph 5 and X orientation above 30MHz shown in Photograph 4. Therefore, final measurements were conducted in Y orientation and X orientation for below and above 30MHz, respectively.

For more details, refer to the attached test plan: 12607335 A by TÜV Rheinland Japan Ltd.

3.4 Clock Frequencies

The highest clock frequency generated by the EUT is 13.56 MHz.

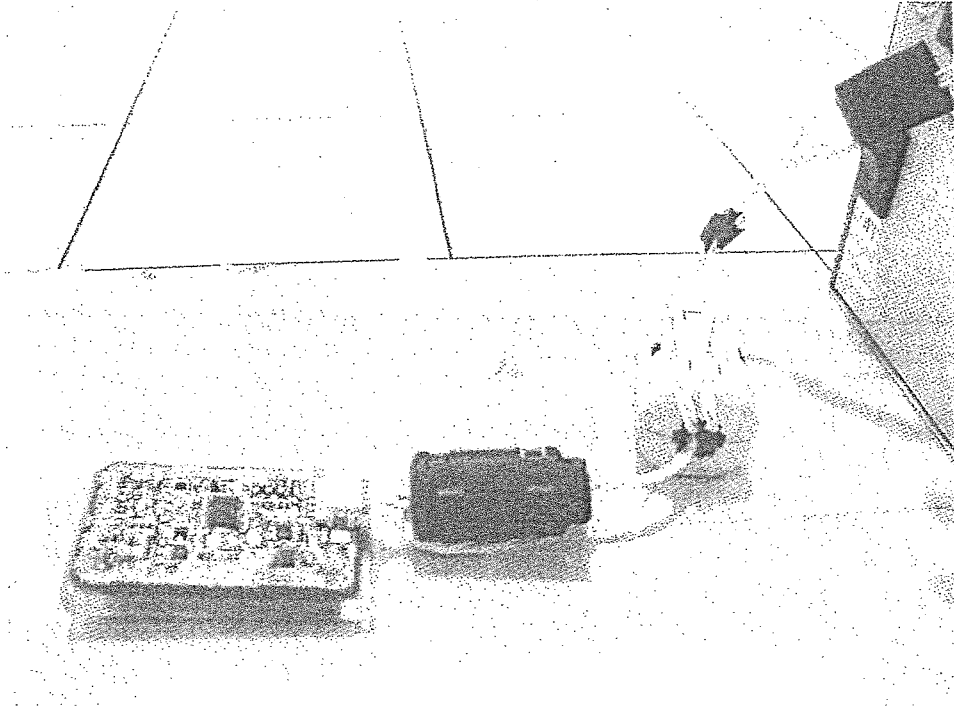
3.5 Suppressing Parts

Two ferrite cores are inserted to the flat cable between the EUT and JIG. JIG is only for testing purpose. It does not exist when installed into host.

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 10 von 32
Page 10 of 32

Photograph 1: Suppressing Parts



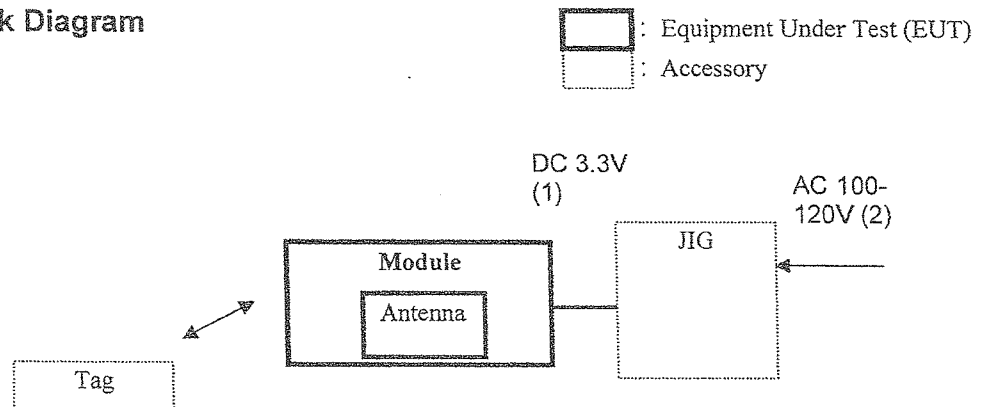
4. Test Set-up and Operation Modes

4.1 Test Methodology

Radio: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Physical Configuration for Testing

Figure 1: Block Diagram



Notes:

The JIG can change DC voltage supplying to the EUT.
For more details, refer to section: Photographs of the Test Set-Up.

4.3 Test Software

No software used for the testing.

Prüfbericht - Nr.: 12607335 001
Test Report No.:Seite 12 von 32
Page 12 of 32

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- | | |
|----------------|--------------|
| 1. Product: | JIG |
| Manufacturer: | Kyocera Mita |
| Model: | unspecified |
| Rated Voltage: | AC 100-120V |
| Input Current: | unspecified |
| Frequency: | 50/60Hz |
| Serial Number: | unspecified |

4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

5. Health Requirements

5.1.1 Human Exposure to Electromagnetic Fields

RESULT:**PASS**

Date of testing: 2010-07-27

Ambient temperature: 21°C

Relative humidity: 71%

Atmospheric pressure: 1008hPa

Test procedure: EN 50364:2001

Low test voltage: DC 2.97V

Normal test voltage: DC 3.3V

High test voltage: DC 3.63V

Low test temperature: -20°C

Normal test temperature: 25°C

High test temperature: 55°C

Test modes applied: A, B

Compliance criteria:

According to EN 50364:2001 sub-clause 5.1.1 it is assumed that the basic limit value is 28V/m rms at the distance of 20cm for 13.56MHz. And any device emitting less than 77.94dBuV/m rms at the distance of 3m complies with this limit.

Measurement values:

The emitted average field level of the EUT at the distance of 3m was measured as 43.2dBuV/m. Thus the average field level is below 77.94dBuV/m.

Verdict:

From the stated values above it can be assumed that the compliance criteria are met.

Measurements were performed at the mode and the orientation corresponding to the worst case output field level at normal conditions.

Table 4: Average Field Strength at Normal and Extreme Conditions, Mode A

Freq. [MHz]	Reading rms [dBuV/m]	Correction Factor [dB]	Output Level rms [dBuV/m]	Voltage	Temp.
13.560	14.3	20.3	34.6	Low	Low
13.560	15.6	20.3	35.9	Normal	Low
13.560	16.8	20.3	37.1	High	Low
13.560	14.5	20.3	34.8	Low	Normal
13.560	15.8	20.3	36.1	Normal	Normal
13.560	16.9	20.3	37.2	High	Normal
13.560	14.5	20.3	34.8	Low	High
13.560	15.8	20.3	36.1	Normal	High
13.560	16.9	20.3	37.2	High	High

Notes: Output power PK = Reading PK + Cable loss
Measuring instrument: peak power meter

Table 5: Average Field Strength at Normal and Extreme Conditions, Mode B

Freq. [MHz]	Reading rms [dBuV/m]	Correction Factor [dB]	Output Level rms [dBuV/m]	Voltage	Temp.
13.560	19.7	20.3	40.0	Low	Low
13.560	22.9	20.3	43.2	Normal	Low
13.560	22.2	20.3	42.5	High	Low
13.560	19.5	20.3	39.8	Low	Normal
13.560	22.7	20.3	43.0	Normal	Normal
13.560	22.1	20.3	42.4	High	Normal
13.560	19.5	20.3	39.8	Low	High
13.560	22.7	20.3	43.0	Normal	High
13.560	22.1	20.3	42.4	High	High

Notes: Output power PK = Reading PK + Cable loss
Measuring instrument: peak power meter

6. Test Results RADIO Requirements

6.1 Transmitter Parameters

6.1.1 H-Field (Radiated)

RESULT:**PASS**

Date of testing:	2010-07-27
Ambient temperature:	21°C
Relative humidity:	71%
Atmospheric pressure:	1008hPa
Reference Standard:	EN 302 291-1 V1.1.1, Clause 7.1.1.
Test procedure:	EN 302 291-1 V1.1.1, Clause 7.1.1.2
Limit:	EN 302 291-1 V1.1.1, Clause 7.1.1.3, Table 4 and Figure 1
Measurement distance	3m
Low test voltage:	DC 2.97V
Normal test voltage:	DC 3.3V
High test voltage:	DC 3.63V
Low test temperature:	-20°C
Normal test temperature:	25°C
High test temperature:	55°C
Test modes applied:	A, B

Note:

H-Field was measured at normal and extreme conditions.

Maximum level was obtained when operated in Mode A. Refer to the shaded row in the Table 6.

Limit of the test described in the test plan 12607335 A is a typo, therefore the limit described in this test report must be applied.

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 16 von 32
Page 16 of 32

Table 6: H-Field, Carrier Maximum Field Strength at Normal and Extreme Conditions, Y Orientation, Mode A

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
13.560	24.5	20.3	44.8	96.5	51.7	Low	Low
13.560	26.0	20.3	46.3	96.5	50.2	Normal	Low
13.560	27.2	20.3	47.5	96.5	49.0	High	Low
13.560	24.3	20.3	44.6	96.5	51.9	Low	Normal
13.560	25.8	20.3	46.1	96.5	50.4	Normal	Normal
13.560	27.1	20.3	47.4	96.5	49.1	High	Normal
13.560	24.3	20.3	44.6	96.5	51.9	Low	High
13.560	25.8	20.3	46.1	96.5	50.4	Normal	High
13.560	27.1	20.3	47.4	96.5	49.1	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Table 7: H-Field, Carrier Maximum Field Strength at Normal and Extreme Conditions, Y Orientation, Mode B

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
13.560	23.3	20.3	43.6	96.5	52.9	Low	Low
13.560	24.8	20.3	45.1	96.5	51.4	Normal	Low
13.560	26.0	20.3	46.3	96.5	50.2	High	Low
13.560	23.1	20.3	43.4	96.5	53.1	Low	Normal
13.560	24.6	20.3	44.9	96.5	51.6	Normal	Normal
13.560	25.9	20.3	46.2	96.5	50.3	High	Normal
13.560	23.1	20.3	43.4	96.5	53.1	Low	High
13.560	24.6	20.3	44.9	96.5	51.6	Normal	High
13.560	25.9	20.3	46.2	96.5	50.3	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Table 8: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Lower Sideband, Y Orientation, Mode A

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
12.560	5.0	20.3	25.3	55.5	30.2	Low	Low
12.560	5.1	20.3	25.4	55.5	30.1	Normal	Low
12.560	5.0	20.3	25.3	55.5	30.2	High	Low
12.560	4.8	20.3	25.1	55.5	30.4	Low	Normal
12.560	4.9	20.3	25.2	55.5	30.3	Normal	Normal
12.560	4.9	20.3	25.2	55.5	30.3	High	Normal
12.560	4.8	20.3	25.1	55.5	30.4	Low	High
12.560	4.9	20.3	25.2	55.5	30.3	Normal	High
12.560	4.9	20.3	25.2	55.5	30.3	High	High
12.660	5.1	20.3	25.4	55.5	30.1	Low	Low
12.660	5.1	20.3	25.4	55.5	30.1	Normal	Low
12.660	5.0	20.3	25.3	55.5	30.2	High	Low
12.660	4.9	20.3	25.2	55.5	30.3	Low	Normal
12.660	4.9	20.3	25.2	55.5	30.3	Normal	Normal
12.660	4.9	20.3	25.2	55.5	30.3	High	Normal
12.660	4.9	20.3	25.2	55.5	30.3	Low	High
12.660	4.9	20.3	25.2	55.5	30.3	Normal	High
12.660	4.9	20.3	25.2	55.5	30.3	High	High
13.110	5.9	20.3	26.2	61.5	35.3	Low	Low
13.110	5.5	20.3	25.8	61.5	35.7	Normal	Low
13.110	5.3	20.3	25.6	61.5	35.9	High	Low
13.110	5.7	20.3	26.0	61.5	35.5	Low	Normal
13.110	5.3	20.3	25.6	61.5	35.9	Normal	Normal
13.110	5.2	20.3	25.5	61.5	36.0	High	Normal
13.110	5.7	20.3	26.0	61.5	35.5	Low	High
13.110	5.3	20.3	25.6	61.5	35.9	Normal	High
13.110	5.2	20.3	25.5	61.5	36.0	High	High
13.410	5.1	20.3	25.4	68.0	42.6	Low	Low
13.410	5.1	20.3	25.4	68.0	42.6	Normal	Low
13.410	5.0	20.3	25.3	68.0	42.7	High	Low
13.410	4.9	20.3	25.2	68.0	42.8	Low	Normal
13.410	4.9	20.3	25.2	68.0	42.8	Normal	Normal
13.410	4.9	20.3	25.2	68.0	42.8	High	Normal
13.410	4.9	20.3	25.2	68.0	42.8	Low	High
13.410	4.9	20.3	25.2	68.0	42.8	Normal	High
13.410	4.9	20.3	25.2	68.0	42.8	High	High
13.553	10.2	20.3	30.5	80.5	50.0	Low	Low
13.553	11.2	20.3	31.5	80.5	49.0	Normal	Low
13.553	12.1	20.3	32.4	80.5	48.6	High	Low
13.553	10.0	20.3	30.3	80.5	50.2	Low	Normal
13.553	11.0	20.3	31.3	80.5	49.2	Normal	Normal
13.553	12.0	20.3	32.3	80.5	48.2	High	Normal
13.553	10.0	20.3	30.3	80.5	50.2	Low	High
13.553	11.0	20.3	31.3	80.5	49.2	Normal	High
13.553	12.0	20.3	32.3	80.5	48.2	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Table 9: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Lower Sideband, Y Orientation, Mode B

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
12.560	5.1	20.3	25.4	55.5	30.1	Low	Low
12.560	5.1	20.3	25.4	55.5	30.1	Normal	Low
12.560	4.9	20.3	25.2	55.5	30.3	High	Low
12.560	4.9	20.3	25.2	55.5	30.3	Low	Normal
12.560	4.9	20.3	25.2	55.5	30.3	Normal	Normal
12.560	4.8	20.3	25.1	55.5	30.4	High	Normal
12.560	4.9	20.3	25.2	55.5	30.3	Low	High
12.560	4.9	20.3	25.2	55.5	30.3	Normal	High
12.560	4.8	20.3	25.1	55.5	30.4	High	High
12.660	5.1	20.3	25.4	55.5	30.1	Low	Low
12.660	5.2	20.3	25.5	55.5	30.0	Normal	Low
12.660	5.1	20.3	25.4	55.5	30.1	High	Low
12.660	4.9	20.3	25.2	55.5	30.3	Low	Normal
12.660	5.0	20.3	25.3	55.5	30.2	Normal	Normal
12.660	5.0	20.3	25.3	55.5	30.2	High	Normal
12.660	4.9	20.3	25.2	55.5	30.3	Low	High
12.660	5.0	20.3	25.3	55.5	30.2	Normal	High
12.660	5.0	20.3	25.3	55.5	30.2	High	High
13.110	5.5	20.3	25.8	61.5	35.7	Low	Low
13.110	5.3	20.3	25.6	61.5	35.9	Normal	Low
13.110	5.2	20.3	25.5	61.5	36.0	High	Low
13.110	5.3	20.3	25.6	61.5	35.9	Low	Normal
13.110	5.1	20.3	25.4	61.5	36.1	Normal	Normal
13.110	5.1	20.3	25.4	61.5	36.1	High	Normal
13.110	5.3	20.3	25.6	61.5	35.9	Low	High
13.110	5.1	20.3	25.4	61.5	36.1	Normal	High
13.110	5.1	20.3	25.4	61.5	36.1	High	High
13.410	5.1	20.3	25.4	68.0	42.6	Low	Low
13.410	5.1	20.3	25.4	68.0	42.6	Normal	Low
13.410	5.1	20.3	25.4	68.0	42.6	High	Low
13.410	4.9	20.3	25.2	68.0	42.8	Low	Normal
13.410	4.9	20.3	25.2	68.0	42.8	Normal	Normal
13.410	5.0	20.3	25.3	68.0	42.7	High	Normal
13.410	4.9	20.3	25.2	68.0	42.8	Low	High
13.410	4.9	20.3	25.2	68.0	42.8	Normal	High
13.410	5.0	20.3	25.3	68.0	42.7	High	High
13.553	9.5	20.3	29.8	80.5	50.7	Low	Low
13.553	10.5	20.3	30.8	80.5	49.7	Normal	Low
13.553	11.3	20.3	31.6	80.5	48.9	High	Low
13.553	9.3	20.3	29.6	80.5	50.9	Low	Normal
13.553	10.3	20.3	30.6	80.5	49.9	Normal	Normal
13.553	11.2	20.3	31.5	80.5	49.0	High	Normal
13.553	9.3	20.3	29.6	80.5	50.9	Low	High
13.553	10.3	20.3	30.6	80.5	49.9	Normal	High
13.553	11.2	20.3	31.5	80.5	49.0	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Table 10: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Upper Sideband, Y Orientation, Mode A

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
13.567	12.1	20.3	32.4	80.5	48.1	Low	Low
13.567	13.5	20.3	33.8	80.5	46.7	Normal	Low
13.567	14.6	20.3	34.9	80.5	45.6	High	Low
13.567	11.9	20.3	32.2	80.5	48.3	Low	Normal
13.567	13.3	20.3	33.6	80.5	46.9	Normal	Normal
13.567	14.5	20.3	34.8	80.5	45.7	High	Normal
13.567	11.9	20.3	32.2	80.5	48.3	Low	High
13.567	13.3	20.3	33.6	80.5	46.9	Normal	High
13.567	14.5	20.3	34.8	80.5	45.7	High	High
13.710	5.1	20.3	25.4	68.0	42.6	Low	Low
13.710	5.1	20.3	25.4	68.0	42.6	Normal	Low
13.710	4.9	20.3	25.2	68.0	42.8	High	Low
13.710	4.9	20.3	25.2	68.0	42.8	Low	Normal
13.710	4.9	20.3	25.2	68.0	42.8	Normal	Normal
13.710	4.8	20.3	25.1	68.0	42.9	High	Normal
13.710	4.9	20.3	25.2	68.0	42.8	Low	High
13.710	4.9	20.3	25.2	68.0	42.8	Normal	High
13.710	4.8	20.3	25.1	68.0	42.9	High	High
14.010	5.5	20.3	25.9	61.5	35.6	Low	Low
14.010	5.4	20.3	25.8	61.5	35.7	Normal	Low
14.010	5.1	20.3	25.5	61.5	36.0	High	Low
14.010	5.3	20.3	25.7	61.5	35.8	Low	Normal
14.010	5.2	20.3	25.6	61.5	35.9	Normal	Normal
14.010	5.0	20.3	25.4	61.5	36.1	High	Normal
14.010	5.3	20.3	25.7	61.5	35.8	Low	High
14.010	5.2	20.3	25.6	61.5	35.9	Normal	High
14.010	5.0	20.3	25.4	61.5	36.1	High	High
14.460	5.0	20.3	25.4	55.5	30.1	Low	Low
14.460	5.0	20.3	25.4	55.5	30.1	Normal	Low
14.460	4.8	20.3	25.2	55.5	30.3	High	Low
14.460	4.8	20.3	25.2	55.5	30.3	Low	Normal
14.460	4.8	20.3	25.2	55.5	30.3	Normal	Normal
14.460	4.7	20.3	25.1	55.5	30.4	High	Normal
14.460	4.8	20.3	25.2	55.5	30.3	Low	High
14.460	4.8	20.3	25.2	55.5	30.3	Normal	High
14.460	4.7	20.3	25.1	55.5	30.4	High	High
14.560	4.9	20.3	25.3	55.5	30.2	Low	Low
14.560	4.9	20.3	25.3	55.5	30.2	Normal	Low
14.560	4.8	20.3	25.2	55.5	30.3	High	Low
14.560	4.7	20.3	25.1	55.5	30.4	Low	Normal
14.560	4.7	20.3	25.1	55.5	30.4	Normal	Normal
14.560	4.7	20.3	25.1	55.5	30.4	High	Normal
14.560	4.7	20.3	25.1	55.5	30.4	Low	High
14.560	4.7	20.3	25.1	55.5	30.4	Normal	High
14.560	4.7	20.3	25.1	55.5	30.4	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Prüfbericht - Nr.: 12607335 001
Test Report No.:

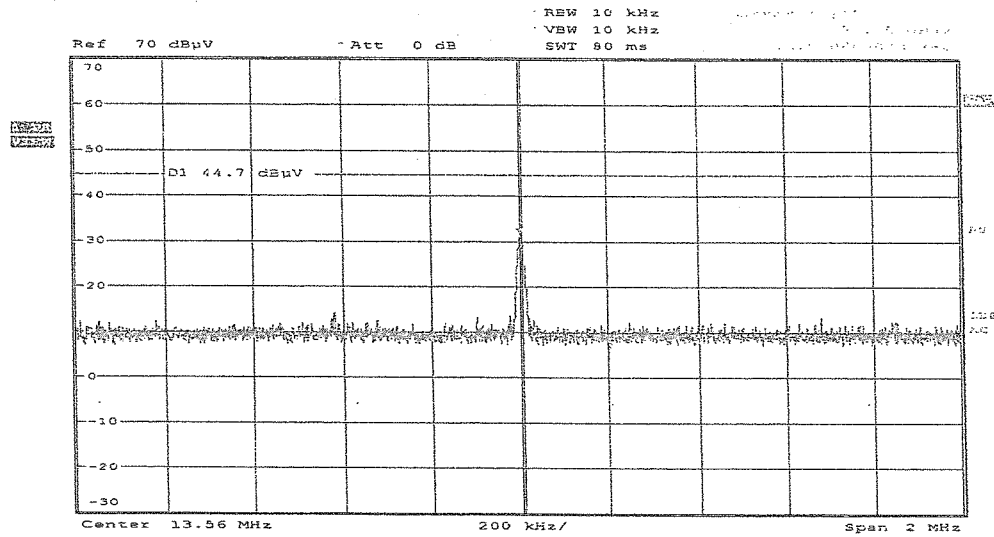
Seite 20 von 32
Page 20 of 32

Table 11: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Upper Sideband, Y Orientation, Mode B

Freq. [MHz]	Reading QP [dBuV/m]	Factor [dB]	Field QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]	Voltage	Temp.
13.567	11.3	20.3	31.6	80.5	48.9	Low	Low
13.567	12.6	20.3	32.9	80.5	47.6	Normal	Low
13.567	13.8	20.3	34.1	80.5	46.4	High	Low
13.567	11.1	20.3	31.4	80.5	49.1	Low	Normal
13.567	12.4	20.3	32.7	80.5	47.8	Normal	Normal
13.567	13.7	20.3	34.0	80.5	46.5	High	Normal
13.567	11.1	20.3	31.4	80.5	49.1	Low	High
13.567	12.4	20.3	32.7	80.5	47.8	Normal	High
13.567	13.7	20.3	34.0	80.5	46.5	High	High
13.710	5.1	20.3	25.4	68.0	42.6	Low	Low
13.710	5.0	20.3	25.3	68.0	42.7	Normal	Low
13.710	5.0	20.3	25.3	68.0	42.7	High	Low
13.710	4.9	20.3	25.2	68.0	42.8	Low	Normal
13.710	4.8	20.3	25.1	68.0	42.9	Normal	Normal
13.710	4.9	20.3	25.2	68.0	42.8	High	Normal
13.710	4.9	20.3	25.2	68.0	42.8	Low	High
13.710	4.8	20.3	25.1	68.0	42.9	Normal	High
13.710	4.9	20.3	25.2	68.0	42.8	High	High
14.010	5.3	20.3	25.7	61.5	34.8	Low	Low
14.010	5.2	20.3	25.6	61.5	35.9	Normal	Low
14.010	5.1	20.3	25.5	61.5	36.0	High	Low
14.010	5.1	20.3	25.5	61.5	36.0	Low	Normal
14.010	5.0	20.3	25.4	61.5	36.1	Normal	Normal
14.010	5.0	20.3	25.4	61.5	36.1	High	Normal
14.010	5.1	20.3	25.5	61.5	36.0	Low	High
14.010	5.0	20.3	25.4	61.5	36.1	Normal	High
14.010	5.0	20.3	25.4	61.5	36.1	High	High
14.460	4.9	20.3	25.3	55.5	30.2	Low	Low
14.460	5.0	20.3	25.4	55.5	30.1	Normal	Low
14.460	4.8	20.3	25.2	55.5	30.3	High	Low
14.460	4.7	20.3	25.1	55.5	30.4	Low	Normal
14.460	4.8	20.3	25.2	55.5	30.3	Normal	Normal
14.460	4.7	20.3	25.1	55.5	30.4	High	Normal
14.460	4.7	20.3	25.1	55.5	30.4	Low	High
14.460	4.8	20.3	25.2	55.5	30.3	Normal	High
14.460	4.7	20.3	25.1	55.5	30.4	High	High
14.560	5.0	20.3	25.4	55.5	30.1	Low	Low
14.560	4.8	20.3	25.2	55.5	30.3	Normal	Low
14.560	4.9	20.3	25.3	55.5	30.2	High	Low
14.560	4.8	20.3	25.2	55.5	30.3	Low	Normal
14.560	4.6	20.3	25.0	55.5	30.5	Normal	Normal
14.560	4.8	20.3	25.2	55.5	30.3	High	Normal
14.560	4.8	20.3	25.2	55.5	30.3	Low	High
14.560	4.6	20.3	25.0	55.5	30.5	Normal	High
14.560	4.8	20.3	25.2	55.5	30.3	High	High

Notes: Detector: quasi-peak, RBW = 9kHz

Figure 2: H-Field, Spectral Diagram, Mode A, Normal Condition



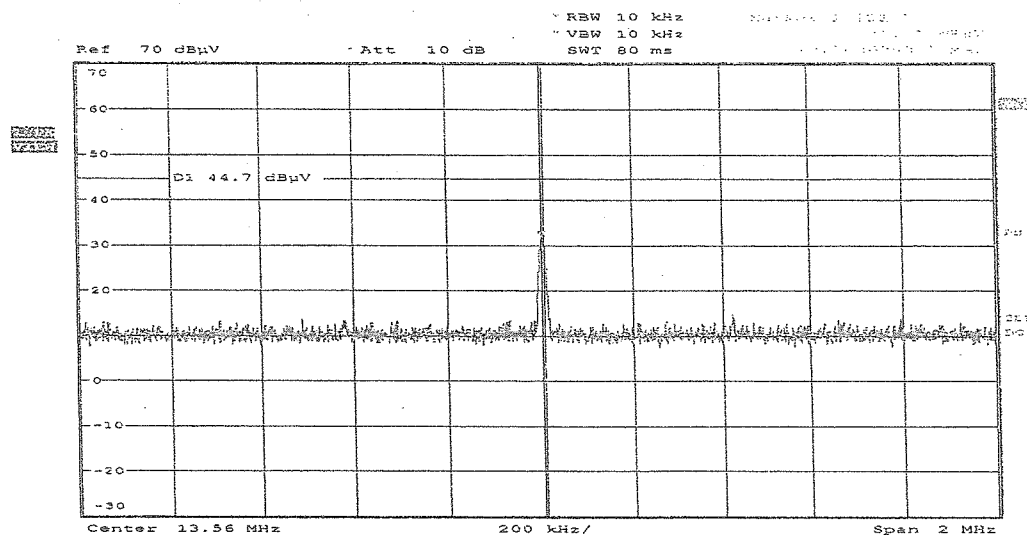
H-Field, Mode A, NV, 3m, y-axis
Date: 27.JUL.2010 12:27:13

Note: No correction factor is included in this spectrum.
The red line indicates the lowest limit which corresponds to -16dBuA/m at 10m for the spectrum mask.

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 22 von 32
Page 22 of 32

Figure 3: H-Field, Spectral Diagram, Mode B, Normal Condition



H-Field, Mode B, NV, 3m, y-axis
Date: 27.JUL.2010 15:40:25

Note: No correction factor is included in this spectrum.
The red line indicates the lowest limit which corresponds to -16dBuA/m at 10m for the spectrum mask.

6.1.2 Duty Cycle

RESULT:

PASS

Requirement: EN 302 291-2 V1.1.1, clause 4.3.5

The customer declares that the EUT complies with this item.

Refer to the attached document: Declaration concerning EN 302 291-2 V1.1.1 by Kyocera Mita.

Table 12: Duty Cycle

Declared Duty Cycle	Duty Cycle Class	Max. Duty Cycle Ratio
< 20%	4	100%

Prüfbericht - Nr.: 12607335 001
Test Report No.:Seite 23 von 32
Page 23 of 32**6.1.3 Transmitter Radiated Spurious Emissions below 30MHz****RESULT:****PASS**

Date of testing: 2010-07-27

Ambient temperature: 23°C
Relative humidity: 71%
Atmospheric pressure: 1008hPa

Reference Standard: EN 302 291-1 V1.1.1, Clause 7.2.3

Test procedure: EN 302 291-1 V1.1.1, Clause 7.2.3.1
Limit: EN 302 291-1 V1.1.1, Clause 7.2.3.2, Table 6

Frequency range: 9kHz – 30MHz
Measurement distance: 3m
Kind of test site: Semi Anechoic Chamber

Test mode applied: A, B

Note:

Final measurement was performed for the worst case. Mode A was selected as the worst case which showed the largest level.

Table 13: Radiated Spurious Emissions, Quasi-Peak Data, 9kHz – 30MHz, Mode A, Y Orientation

Frequency [MHz]	EUT Orient.	Reading QP [dBuV/m]	Factor [dB]	Level QP [dBuV/m]	Limit QP [dBuV/m]	Margin [dB]
27.12	Y	6.3	21.9	28.2	66.3	38.1

Notes: Level = Reading + Factor
Measurement instrument settings:
Detector: quasi-peak (QP), RBW = 120kHz

Prüfbericht - Nr.: 12607335 001
Test Report No.:Seite 24 von 32
Page 24 of 32**6.1.4 Transmitter Radiated Spurious Emissions above 30MHz****RESULT:****PASS**

Date of testing:	2010-07-26
Ambient temperature:	23°C
Relative humidity:	70%
Atmospheric pressure:	1014hPa
Reference Standard:	EN 302 291-1 V1.1.1, Clause 7.2.4
Test procedure:	EN 302 291-1 V1.1.1, Clause 7.2.4.1
Limit:	EN 302 291-1 V1.1.1, Clause 7.2.4.2, Table 7
Frequency range:	30 – 1000MHz
Measurement distance:	3m
Kind of test site:	Full Anechoic Chamber
Test mode applied:	A, B

Note:

Final measurement was performed for the worst case. Mode A was selected as the worst case which showed the largest level.

Test procedure above 30MHz:

The testing was performed in a full anechoic 3 m chamber. The EUT was placed on a non conductive surface made of low-dielectric material, 102 cm above the ground absorbers.

The EUT was rotated to find the maximum emission spurious radiated. The antenna was placed in horizontal and vertical polarization to find the worst case emission.

The EUT was replaced by a transmitting antenna in order to performed substitution method as described in EN 302 291-1 V1.1.1, Clause 7.2.4.1. The corrected ERP values were recorded and shown in the tables below.

Prüfbericht - Nr.: 12607335 001
Test Report No.:Seite 25 von 32
Page 25 of 32**Table 14: Radiated Spurious Emissions, Quasi-Peak Data, 30 – 1000MHz, Mode A, X Orientation**

Frequency [MHz]	EUT / Antenna Orientation	Reading [dBm]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]
583.09	X / H	-59.40	-3.74	-63.14	-54	9.14
745.82	X / H	-62.60	-1.30	-63.90	-54	9.90
610.22	X / H	-61.50	-2.80	-64.30	-54	10.30

Notes: Level = Reading + Factor
Measurement instrument settings:
Detector: quasi-peak, RBW = 120kHz

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 26 von 32
Page 26 of 32

6.2 Receiver Parameters

6.2.1 Receiver Radiated Spurious Emissions

RESULT:

N/A

Reference Standard: EN 302 291-1 V1.1.1, Clause 8.2

Test procedure: EN 302 291-1 V1.1.1, Clause 8.2.2

Frequency range: 9kHz – 1000MHz

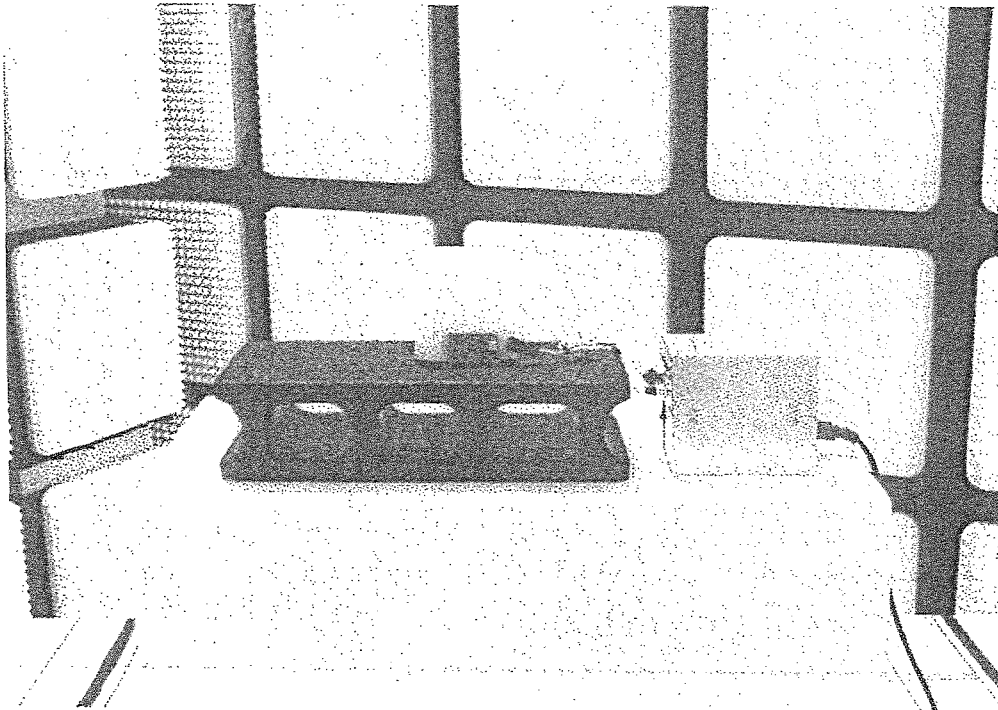
Remark: The EUT contains a receiver with a permanently co-located transmitter; this test item is not applicable.

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 27 von 32
Page 27 of 32

7. Photographs of the Test Setup

Photograph 2: Set-up for Radiated Emission, EUT configuration X-axis

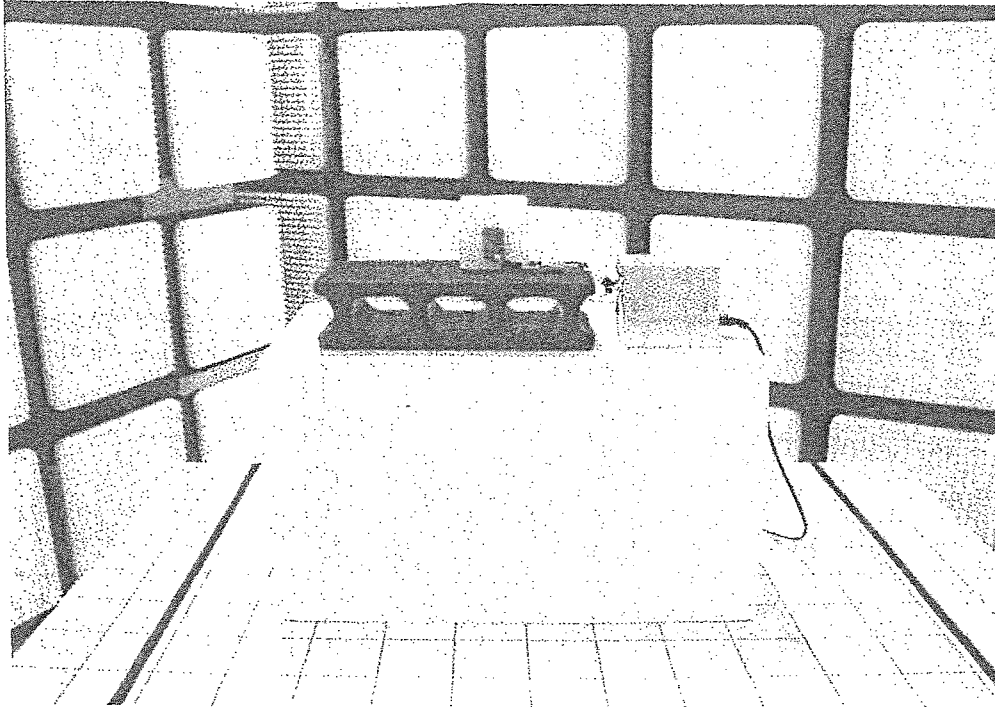


Prüfbericht - Nr.:
Test Report No.:

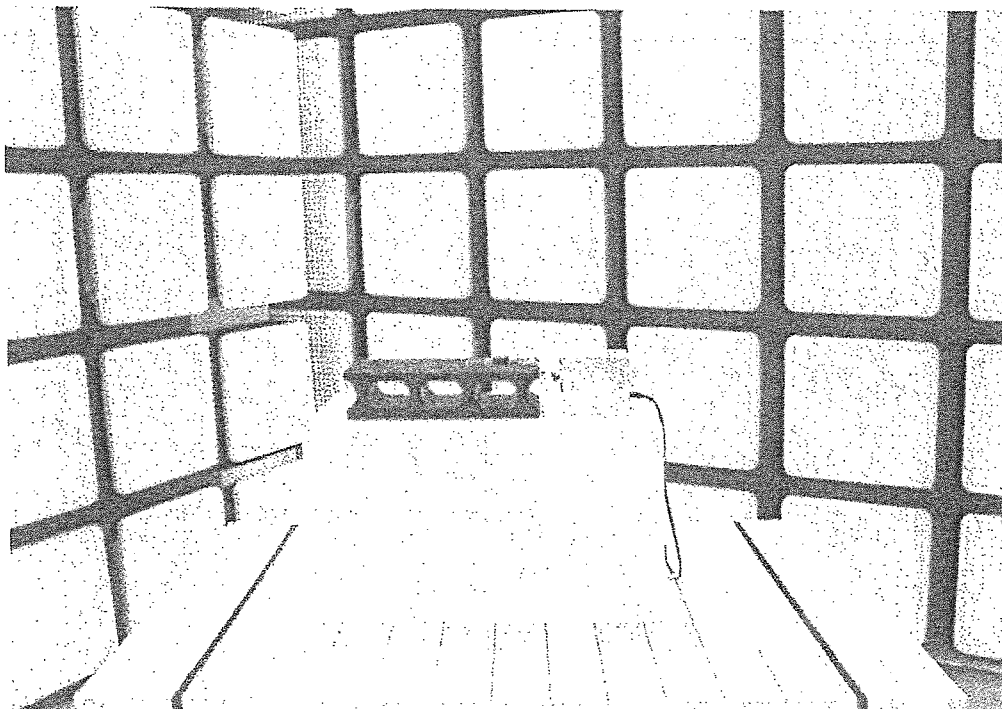
12607335 001

Seite 28 von 32
Page 28 of 32

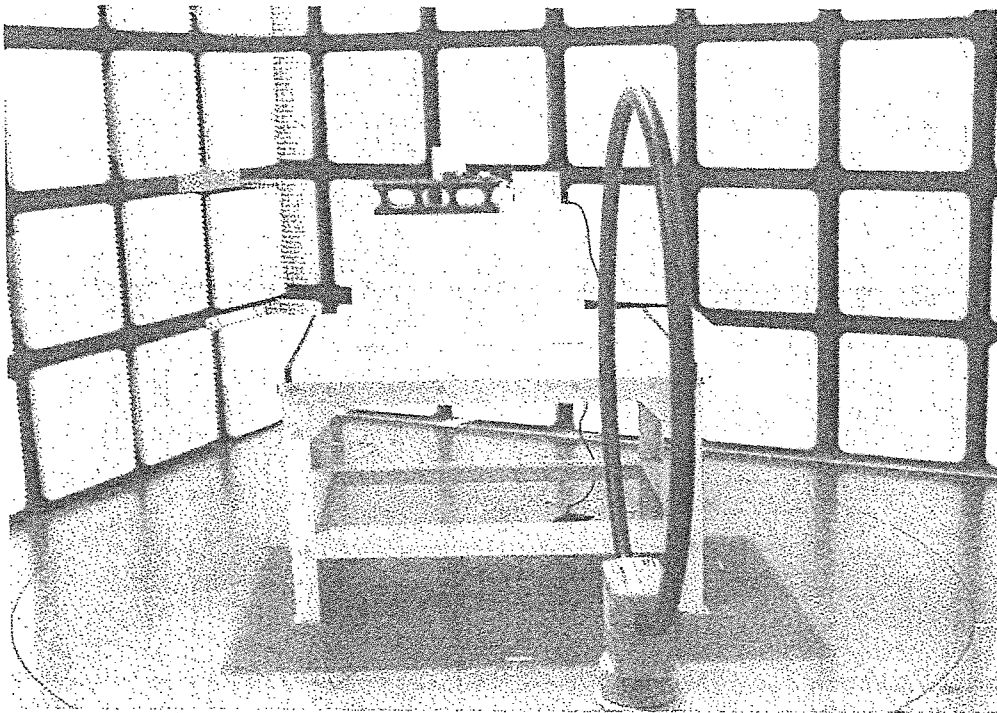
Photograph 3: Set-up for Radiated Emission, EUT configuration Y-axis



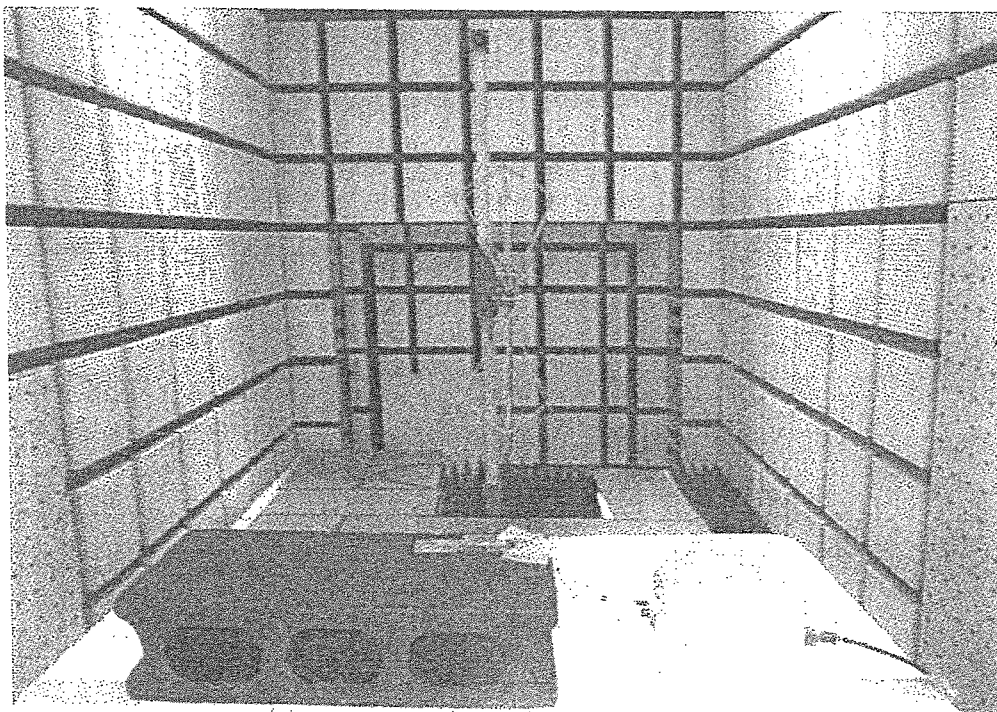
Photograph 4: Set-up for Radiated Emission, EUT configuration Z-axis



Photograph 5: Set-up for H-Field, and Radiated Spurious Emissions of Transmitter below 30MHz, Front View



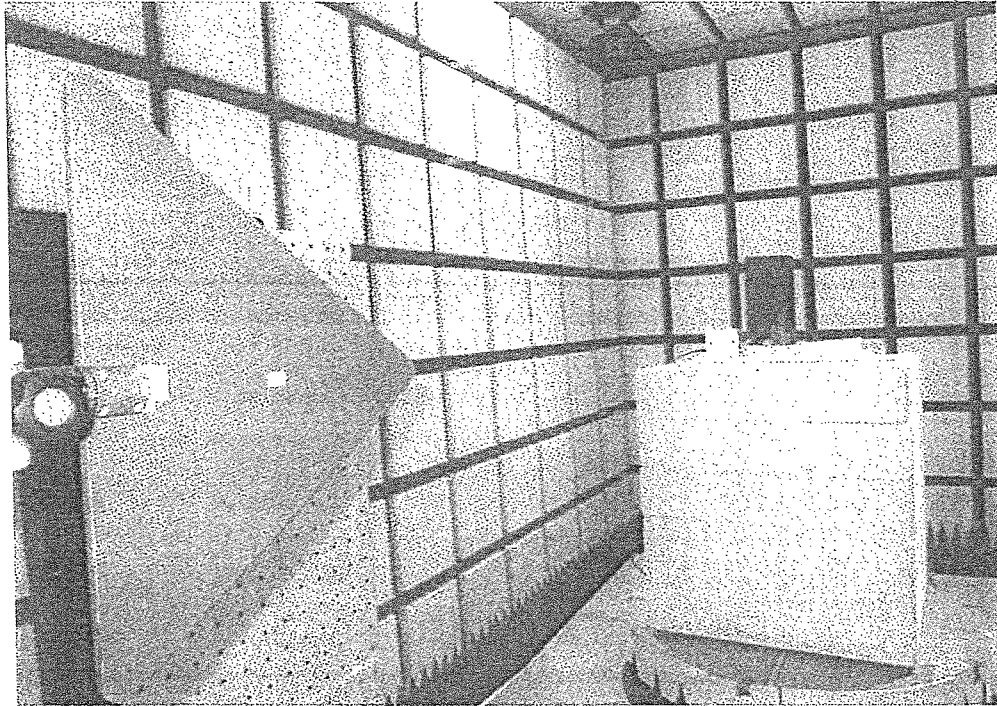
Photograph 6: Set-up for Radiated Spurious Emissions of Transmitter and Receiver above 30MHz Using Biconical Antenna, Rear View



Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 30 von 32
Page 30 of 32

Photograph 7: Set-up for Radiated Spurious Emissions of Transmitter and Receiver above 30MHz Using Logperiodical Antenna, Rear View



8. List of Tables

Table 1: List of Test and Measurement Equipment.....	6
Table 2: Emission Measurement Uncertainty.....	7
Table 3: Interfaces present on the EUT.....	8
Table 4: Average Field Strength at Normal and Extreme Conditions, Mode A.....	14
Table 5: Average Field Strength at Normal and Extreme Conditions, Mode B.....	14
Table 6: H-Field, Carrier Maximum Field Strength at Normal and Extreme Conditions, Y Orientation, Mode A.....	16
Table 7: H-Field, Carrier Maximum Field Strength at Normal and Extreme Conditions, Y Orientation, Mode B.....	16
Table 8: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Lower Sideband, Y Orientation, Mode A.....	17
Table 9: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Lower Sideband, Y Orientation, Mode B.....	18
Table 10: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Upper Sideband, Y Orientation, Mode A.....	19
Table 11: H-Field, Field Strength, Spectrum Mask at Normal and Extreme Conditions, Upper Sideband, Y Orientation, Mode B.....	20
Table 12: Duty Cycle.....	22
Table 13: Radiated Spurious Emissions, Quasi-Peak Data, 9kHz – 30MHz, Mode A, Y Orientation.....	23
Table 14: Radiated Spurious Emissions, Quasi-Peak Data, 30 – 1000MHz, Mode A, X Orientation.....	25

9. List of Figures

Figure 1: Block Diagram.....	11
Figure 2: H-Field, Spectral Diagram, Mode A, Normal Condition.....	21
Figure 3: H-Field, Spectral Diagram, Mode B, Normal Condition.....	22

10. List of Photographs

Photograph 1: Suppressing Parts.....	10
Photograph 2: Set-up for Radiated Emission, EUT configuration X-axis.....	27
Photograph 3: Set-up for Radiated Emission, EUT configuration Y-axis.....	28
Photograph 4: Set-up for Radiated Emission, EUT configuration Z-axis.....	28
Photograph 5: Set-up for H-Field, and Radiated Spurious Emissions of Transmitter below 30MHz, Front View.....	29
Photograph 6: Set-up for Radiated Spurious Emissions of Transmitter and Receiver above 30MHz Using Biconical Antenna, Rear View.....	29
Photograph 7: Set-up for Radiated Spurious Emissions of Transmitter and Receiver above 30MHz Using Logperiodical Antenna, Rear View.....	30

Prüfbericht - Nr.: 12607335 001
Test Report No.:

Seite 32 von 32
Page 32 of 32

**11. Attachment: Test Plan 12607335 A by TÜV
Rheinland Japan Ltd.**

7 pages following

**12. Attachment: Declaration regarding EN 302 291-2
by Kyocera Mita Corporation**

1 page following