

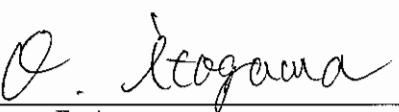
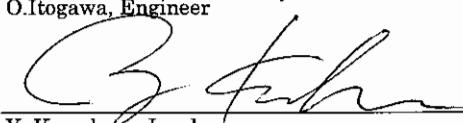


MEASUREMENT/TECHNICAL REPORT FCC Part 15 Subpart C

Issued: January 25, 2010

Name and Address of the Applicant:	Wako Pure Chemical Industries, Ltd 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605 Japan
Test Item:	IMMUNO ANALYZER
Identification:	μ TASWako i30
Serial No.:	50920005
FCC ID:	X2IUTASWAKOI30
Sample Receipt Date:	December 15, 2009
Test Specification:	FCC Part 15 Subpart C, 15.225
Date of Testing:	December 17, 2009 - January 22, 2010
Test Result:	PASS

Report Prepared by:	Cosmos Corporation 2-3571 Ohnogi, Watarai-cho, Watarai-gun, Mie, Japan 516-2102 Phone: +81-596-63-0707 Fax: +81-596-63-0777
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Tested by:	 O. Itogawa, Engineer	January 25, 2010
Reviewed by:	 Y. Kawahara, Leader	January 25, 2010

Notes:

1. This report should not be reproduced except in full, without the written approval of Cosmos Corporation.
2. All measurement data contained in this report may have uncertainty. A judgment for the limitation should be taken into the count.
3. The report in this report apply only to the sample tested.

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1. Description of Equipment Under Test

1.1 Product Description

Manufacturer	: Wako Pure Chemical Industries, Ltd
Model (referred to as the EUT)	: μ TASWako i30 (including RF module: Type TR3-C201-CS8)
Nominal Voltage	: AC100-240V (RF module: DC +5V)
Type of Modulation	: ASK/FSK
Mode of Operation	: <input type="checkbox"/> duplex <input type="checkbox"/> 1/2 duplex <input checked="" type="checkbox"/> simplex <input type="checkbox"/> other
The type of the equipment	: <input type="checkbox"/> Stand-alone <input type="checkbox"/> Combined Equipment <input type="checkbox"/> Plug-In Card <input checked="" type="checkbox"/> Other (Module Unit)
The type of the antenna	: <input type="checkbox"/> Integral <input checked="" type="checkbox"/> external <input type="checkbox"/> Other
The type of power source	: <input checked="" type="checkbox"/> AC mains <input type="checkbox"/> Dedicated AC adapter (V) <input type="checkbox"/> DC Voltage <input type="checkbox"/> Battery
The type of battery (if applicable)	: N/A
Type of Operation	: <input type="checkbox"/> Continuous <input type="checkbox"/> Burst <input checked="" type="checkbox"/> Intermittent
Stand by Mode	: <input type="checkbox"/> Available <input checked="" type="checkbox"/> N/A
Intended functions	: RFID Reader/Writer
The bandwidth of the IF filters	: N/A
Method of Communication Link	: Software to make maximum speed transmitting
The operating frequency band	: 13.56 MHz
The thermal limitation	: Not specified

1.2 Antenna Description

No.	Type Name	Gain	Antenna Type	Remarks
1	TR3-A301-3	- 66.8dBi	Printed Loop	

1.3 Accompanied Peripherals Description

No.	Equipment Name	Manufacturer	Type Name	Serial Number	Remarks
1	None	---	---	---	---

2. General Information

2.1 Test Methodology

All measurement subject to the present test report is carried out according to the procedures in ANSI C63.4:2003.

2.2 Test Facility

All measurement was performed in the following facility;

Cosmos Corporation EMC Lab. Ohnogi

(2-3571 Ohaza-iwatachi, Ohnogi, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan) The test site has been filed by FCC.

2.3 Tractability

The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.

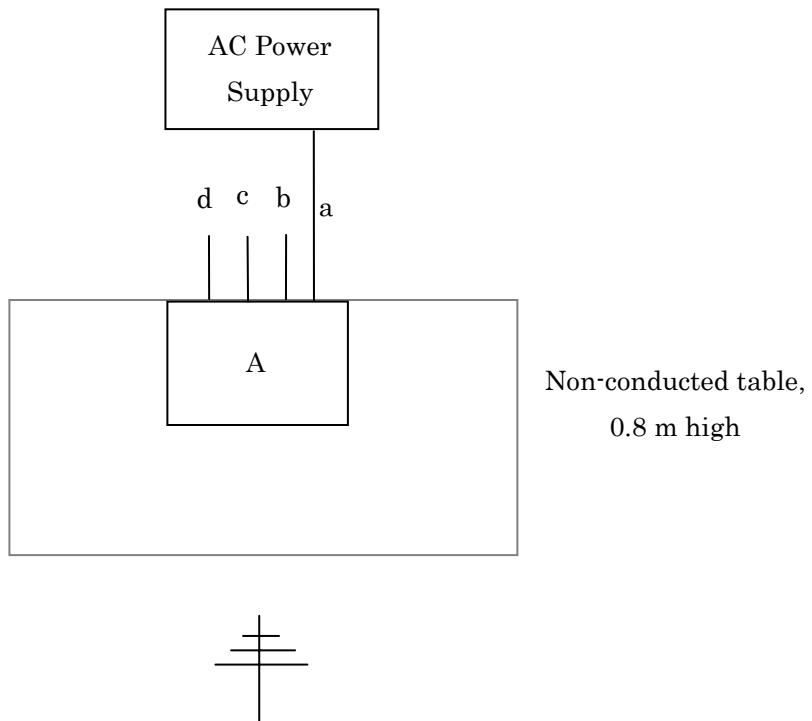
3. Summary of Test Results

No.	Requirement	RSS 210 Issue 7, RSS-Gen Issue 2 (Industry Canada)	CFR 47 Part. 15 (FCC)	Result
1	Frequency Tolerance	A2.6 – RSS 210	15.225 (e)	Pass
2	Maximum Output Power	A2.6 – RSS 210	15.225 (a)(b)(c)	Pass
3	Field Strength of Spurious Emission (Transmitter)	A2.6 – RSS 210	15.209, 15.225 (d)	Pass
4	AC Power lines Conducted Emission	7.2.2 – RSS-Gen	15.207	Pass
5	Spurious Emission (Receiver)	7.2.3 – RSS-Gen	N/A	N/A
6	Occupied Band Width(99%)	4.6.1 – RSS-Gen	N/A	N/A
7	20dB Bandwidth	N/A	15.215 (c)	Pass

4. Test Configuration

Instrument	Model	Cable	Length	Shield		
A	EUT	μ TASWako i30	a	AC Power Cord	2.0 m	x
			b	RS232C Cable	5.0 m	
			c	RS232C Cable	5.0 m	
			d	LAN Cable	5.0 m	

4.1 Conducted Emission Measurement



4.2 Test Mode

In all test configurations above, EUT makes communication link between the integrated RFID module and a RFID tag in a dedicated reagents with the maximum RF power by a special test program.

Maximum Output Power and Frequency Tolerance measurement were performed with an external stabilized DC power supply voltage varied between 85% and 115% of the nominal rated supply voltage DC+5V.

5. Measurement Result

5.1 15. 207 AC Power Conducted Emission

5.1.1 Setting Remarks

- Configure the EUT System in accordance with ANSI C63.4-2003.
- A wooden test table (1.5m×1.0m, height 0.8m) was used.
- Other power cord of support equipment is connected to another LISN to isolate its emission from the measured emission of EUT.
- The measuring port of LISN for support equipment was terminated by the 50Ω
- Activate the EUT System and run the software prepared for the test, if necessary.
- Refer to test configuration figure 4.1.

5.1.2 Minimum Standard

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 limits in the following table, as measured using a $50\ \mu\text{H}/50\ \text{ohms}$ line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	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.

5.1.3 Result

EUT complies with the requirement.

Uncertainty of measurement : $\pm 2.26\ \text{dB}$
Temperature, Humidity : 24 / 40%

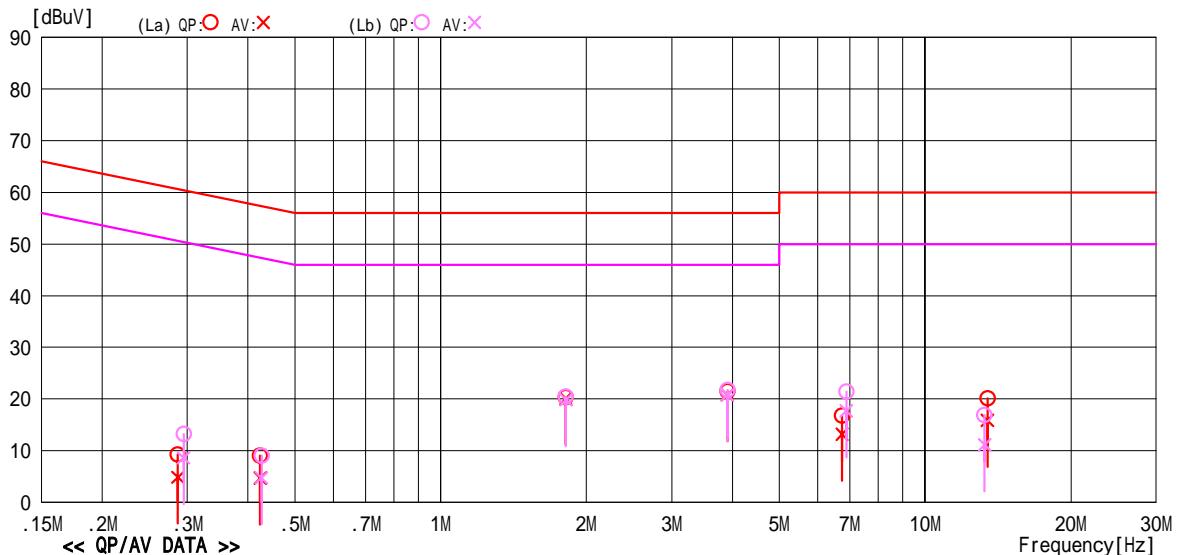
5.1.4 Measured Data

Measured Value Table

Cosmos Corporation Onoki Lab.
Date : 2010/01/08

Model Name : μ TASWako i30
Serial No. : 50920005
Operator : O. Itogawa
Power Supply : AC120V, 60Hz
Job No : CJ09-091742E
Temp/Humi : 24 /40%
Condition : Tx
Remark :
Memo : RBW:9kHz(150k-30MHz)

LIMIT : FCC 15.207(QP)
FCC 15.207(AV)



No	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
1	0.28677	-0.8	-5.3	10.1	9.3	4.8	60.6	50.6	51.3	45.8	La	
2	0.42391	-1.1	-5.4	10.1	9.0	4.7	57.4	47.4	48.4	42.7	La	
3	1.81232	10.3	10.0	10.1	20.4	20.1	56.0	46.0	35.6	25.9	La	
4	3.90829	11.2	10.5	10.3	21.5	20.8	56.0	46.0	34.5	25.2	La	
5	6.74232	6.3	2.7	10.5	16.8	13.2	60.0	50.0	43.2	36.8	La	
6	13.46468	9.4	5.0	10.8	20.2	15.8	60.0	50.0	39.8	34.2	La	
7	0.29474	3.1	-1.5	10.1	13.2	8.6	60.4	50.4	47.2	41.8	Lb	
8	0.42672	-1.0	-5.4	10.1	9.1	4.7	57.3	47.3	48.2	42.6	Lb	
9	1.81323	10.4	9.8	10.1	20.5	19.9	56.0	46.0	35.5	26.1	Lb	
10	3.90769	11.5	10.6	10.2	21.7	20.8	56.0	46.0	34.3	25.2	Lb	
11	6.88080	11.0	7.3	10.4	21.4	17.7	60.0	50.0	38.6	32.3	Lb	
12	13.27193	6.2	0.5	10.7	16.9	11.2	60.0	50.0	43.1	38.8	Lb	

-TEPT0-DV/CE Ver1.50.0128

5.2 15. 209 Transmitter Radiated Emissions

5.2.1 Setting Remarks

- The data lists in “5.2.4 Measured Data “ list the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit.
- In the frequency range between 9kHz to 1 GHz, the Electric Field Strength was measured in accordance with ANSI C63.4: 2003 and CISPR22: 1997.
- The test setup was made in accordance with ANSI C63.4: 2003.
- The antenna was measured at 1-4m height for 30MHz to 1GHz.
- The EUT was placed on the non-conductive table in the center of turntable. The height of this table was 0.8m.
- The measurement was carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment was recorded.
- Below 30MHz, a loop antenna was used at 1m height.
- By varying the configuration of the test sample and the cable routing, it was attempted to maximize the emission.
- The test receiver with Quasi Peak and Average detector is in compliance with CISPR 16-1.
- The spectrum analyzer was set-up as following;

(Frequency range : 9kHz - 30 MHz)

- ✓ Resolution bandwidth : 10 kHz
- ✓ Video bandwidth : 100 kHz
- ✓ Detector function : Peak
- ✓ Trace Mode : Max Hold

(Frequency range : 30 - 1000 MHz)

- ✓ Resolution bandwidth : 100 kHz
- ✓ Video bandwidth : 300 kHz
- ✓ Detector function : Peak
- ✓ Trace Mode : Max Hold

- EMI Test Receiver analyzer was set-up as following (Quasi-Peak Detector);
 - ✓ IF bandwidth : 200 Hz (9kHz - 150kHz)
 - ✓ IF bandwidth : 9 kHz (150kHz - 30MHz)
 - ✓ IF bandwidth : 120 kHz (30MHz - 1GHz)
- Measurement distance : 3m

5.2.2 Minimum Standard

15. 225 (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

5.2.3 Result

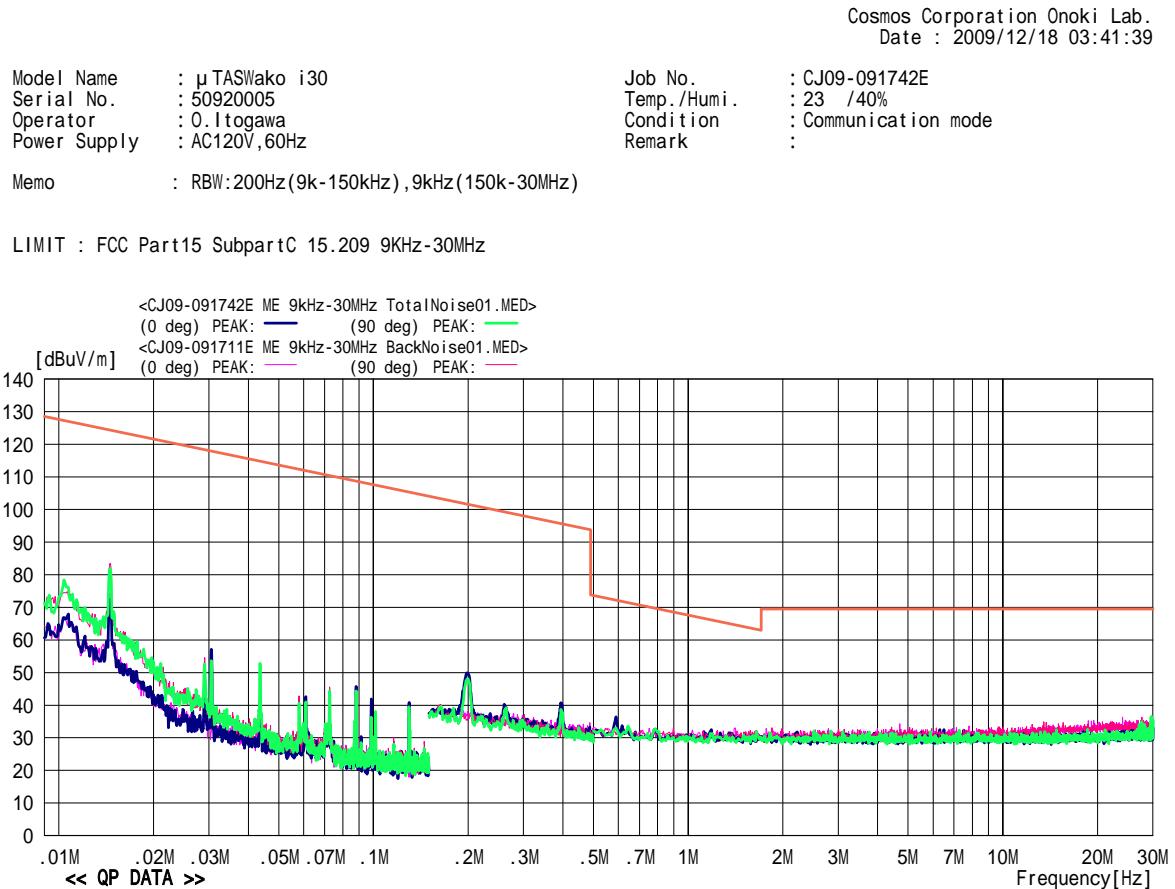
EUT complies with the requirement.

Uncertainty of measurement result: ± 3.64 dB

Temperature, Humidity : Refer to each data table

5.2.4 Measured Data

9kHz to 30MHz



No	Freq.	Reading	Ant.Fac	Loss	Result	Limit	Margin	Antenna	Angle	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]			
1	0.19775	30.4	19.0	0.2	49.6	101.7	52.1	0deg	18	
2	0.39464	20.4	19.0	0.2	39.6	95.7	56.1	0deg	13	
3	13.56000	4.8	18.4	0.9	24.1	69.5	45.4	0deg	0	
4	0.19825	28.3	19.0	0.2	47.5	101.7	54.2	90deg	84	
5	0.39404	19.2	19.0	0.2	38.4	95.7	57.3	90deg	84	
6	13.56000	6.0	18.4	0.9	25.3	69.5	44.2	90deg	0	

5.2.4 Measured Data (Continued)

30MHz to 1GHz

No spurious emission regarding RF was found.

5.3 Maximum Carrier Output Power

5.3.1 Setting Remarks

- Refer to 5.2.1
- The EUT was placed on the non-conductive table in the center of turntable.
- The measurement was carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment was recorded.
- The test receiver with Quasi Peak is in compliance with CISPR 16-1.
- The spectrum analyzer was set-up as following;

✓ Frequency Span	: Appropriate to determine carrier frequency.
✓ Resolution bandwidth	: Appropriate to determine carrier frequency.
✓ Video bandwidth	: Appropriate to determine carrier frequency.
✓ Sweep	: Auto
✓ Detector function	: Peak
✓ Trace Mode	: Max Hold

- EMI Test Receiver analyzer was set-up as following (Quasi-Peak Detector);

✓ IF bandwidth	: 9 kHz
----------------	---------

5.3.2 Minimum Standard

- 15.225(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Each limits can be calculated by following formula.

Reduction formula of μ V/m to dB μ V/m (measurement distance)

$$dB\mu V/m = 20 - \log (\mu V/m)$$

Reduction formula of 30m metric to 3m metric

$$40\log (30/3) = 40$$

according to §15.31 (f) (2)

5.3.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 3.64 dB

Temperature, Humidity : Refer to each data table

5.3.4 Measured Data

-20°C

Date of testing : December 21, 2009

Room temperature : 25°C

Relative humidity : 42%

The test at -20°C was impossible.

Because the following error message was displayed.

"Emergency stop E_591D

Chip temperature can not be measured. Please restart."

Operating temperature range of the equipment is +15°C to +30°C.

EUT complies with the requirement.

Measurement distance : 3m

Uncertainty of measurement: ±3.64dB

Humidity : 40%

The product is a vitro diagnostic medical device to analyze blood etc. using the specified reagents. This device is used at medical center or laboratory.

To analyze blood, pure water shall be used for operating this equipment on normal use.

Room ambient for operation of the equipment is +15 to 30°C as specified by the manufacturer.

-20°C is temperature which is outside range of operation temperature of EUT.

It is obvious that this medical device cannot be operated at temperature of freezing point because pure water is used.

5.3.4 Measured Data (Continued)

10°C

Date of testing : January 22, 2010

Room temperature : 22°C

Relative humidity : 39%

[-15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.58	19.88	80.50	60.62
13.410	90	19.2	4.35	23.55	80.50	56.95
13.553	90	19.2	8.70	27.90	90.47	62.57
13.560	90	19.2	14.99	34.19	124.00	89.81
13.567	90	19.2	8.15	27.35	90.47	63.12
13.710	90	19.2	5.43	24.63	80.50	55.87
14.010	90	19.3	3.45	22.75	80.50	57.75

[±0%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.60	19.90	80.50	60.60
13.410	90	19.2	4.45	23.65	80.50	56.85
13.553	90	19.2	8.82	28.02	90.47	62.45
13.560	90	19.2	15.45	34.65	124.00	89.35
13.567	90	19.2	8.34	27.54	90.47	62.93
13.710	90	19.2	5.54	24.74	80.50	55.76
14.010	90	19.3	4.02	23.32	80.50	57.18

[+15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.58	19.88	80.50	60.62
13.410	90	19.2	4.44	23.64	80.50	56.86
13.553	90	19.2	8.70	27.90	90.47	62.57
13.560	90	19.2	15.40	34.60	124.00	89.40
13.567	90	19.2	8.20	27.40	90.47	63.07
13.710	90	19.2	6.00	25.20	80.50	55.30
14.010	90	19.3	4.09	23.39	80.50	57.11

5.3.4 Measured Data (Continued)

+15°C

Date of testing : January 22, 2010

Room temperature : 22°C

Relative humidity : 39%

[-15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	1.09	20.39	80.50	60.11
13.410	90	19.2	4.25	23.45	80.50	57.05
13.553	90	19.2	8.65	27.85	90.47	62.62
13.560	90	19.2	14.98	34.18	124.00	89.82
13.567	90	19.2	8.20	27.40	90.47	63.07
13.710	90	19.2	5.34	24.54	80.50	55.96
14.010	90	19.3	3.45	22.75	80.50	57.75

[\mathbf{\pm}0\%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.47	19.77	80.50	60.73
13.410	90	19.2	4.39	23.59	80.50	56.91
13.553	90	19.2	8.59	27.79	90.47	62.68
13.560	90	19.2	15.33	34.53	124.00	89.47
13.567	90	19.2	8.32	27.52	90.47	62.95
13.710	90	19.2	5.54	24.74	80.50	55.76
14.010	90	19.3	3.40	22.70	80.50	57.80

[+15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.56	19.86	80.50	60.64
13.410	90	19.2	4.24	23.44	80.50	57.06
13.553	90	19.2	8.60	27.80	90.47	62.67
13.560	90	19.2	15.35	34.55	124.00	89.45
13.567	90	19.2	8.33	27.53	90.47	62.94
13.710	90	19.2	5.50	24.70	80.50	55.80
14.010	90	19.3	3.36	22.66	80.50	57.84

5.3.4 Measured Data (Continued)

+20

Date of testing : December 21, 2009

Room temperature : 25

Relative humidity : 42%

[-15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.42	19.72	80.50	60.78
13.410	90	19.2	4.25	23.45	80.50	57.05
13.553	90	19.2	8.60	27.80	90.47	62.67
13.560	90	19.2	15.48	34.68	124.00	89.32
13.567	90	19.2	8.21	27.41	90.47	63.06
13.710	90	19.2	5.50	24.70	80.50	55.80
14.010	90	19.3	3.34	22.64	80.50	57.86

[±0%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.46	19.76	80.50	60.74
13.410	90	19.2	4.26	23.46	80.50	57.04
13.553	90	19.2	8.61	27.81	90.47	62.66
13.560	90	19.2	15.46	34.66	124.00	89.34
13.567	90	19.2	8.34	27.54	90.47	62.93
13.710	90	19.2	5.55	24.75	80.50	55.75
14.010	90	19.3	3.38	22.68	80.50	57.82

[+15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.50	19.80	80.50	60.70
13.410	90	19.2	4.24	23.44	80.50	57.06
13.553	90	19.2	8.70	27.90	90.47	62.57
13.560	90	19.2	15.50	34.70	124.00	89.30
13.567	90	19.2	8.32	27.52	90.47	62.95
13.710	90	19.2	5.51	24.71	80.50	55.79
14.010	90	19.3	3.30	22.60	80.50	57.90

Correction Factor = Cable Loss (dB) + Antenna Factor (dB)

5.3.4 Measured Data (Continued)

+30°C

Date of testing : January 22, 2010

Room temperature : 22°C

Relative humidity : 39%

[-15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.39	19.69	80.50	60.81
13.410	90	19.2	4.23	23.43	80.50	57.07
13.553	90	19.2	8.59	27.79	90.47	62.68
13.560	90	19.2	15.45	34.65	124.00	89.35
13.567	90	19.2	8.20	27.40	90.47	63.07
13.710	90	19.2	5.49	24.69	80.50	55.81
14.010	90	19.3	3.30	22.60	80.50	57.90

[±0%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.48	19.78	80.50	60.72
13.410	90	19.2	4.25	23.45	80.50	57.05
13.553	90	19.2	8.78	27.98	90.47	62.49
13.560	90	19.2	15.40	34.60	124.00	89.40
13.567	90	19.2	8.30	27.50	90.47	62.97
13.710	90	19.2	5.49	24.69	80.50	55.81
14.010	90	19.3	3.35	22.65	80.50	57.85

[+15%V]

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	0.46	19.76	80.50	60.74
13.410	90	19.2	4.24	23.44	80.50	57.06
13.553	90	19.2	8.56	27.76	90.47	62.71
13.560	90	19.2	15.48	34.68	124.00	89.32
13.567	90	19.2	8.25	27.45	90.47	63.02
13.710	90	19.2	5.39	24.59	80.50	55.91
14.010	90	19.3	3.35	22.65	80.50	57.85

5.3.4 Measured Data (Continued)

+40°C, +50°C

Date of testing : December 21, 2009

Room temperature : 25°C

Relative humidity : 42%

The test at +40°C and +50°C was impossible.

Because the following error message was displayed.

"Emergency stop E_591D

Chip temperature can not be measured. Please restart."

Operating temperature range of the equipment is +15°C to +30°C.

The product is a vitro diagnostic medical device to analyze blood etc. using the specified reagents. This device is integrating 13.56 RFID and is used at medical center or laboratory.

To analyze blood, pure water shall be used for operating this equipment on normal use.

Room ambient for operation of the equipment is +15 to 30°C as specified by the manufacturer.

+40°C and +50°C is temperature which is outside range of operation temperature of EUT.

5.4 Frequency Tolerance

5.4.1 Setting Remarks

- Refer to setting remarks 5.3.1.
- With an environmental test chamber, EUT is exposed in extreme temperatures until its temperature is stabilized. (Approximately 30 minutes) Then EUT is on with nominal AC voltage, or installed a fully charged battery.

5.4.2 Minimum Standard

15.225(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees 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 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.4.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 1 Hz

5.4.4 Measured Data

Date of testing : December 21, 2009

Room temperature : 25

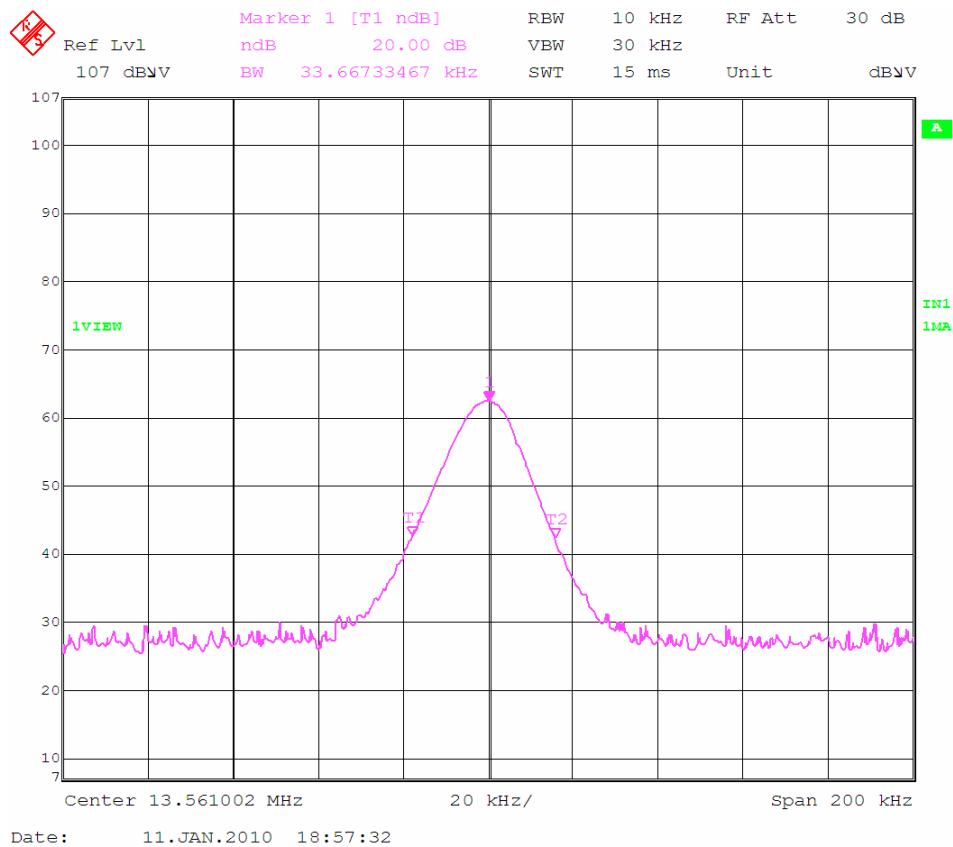
Relative humidity : 42%

Temp [°C]	P/S [VAC]	Frequency [Hz]	Limit [±Hz]	Offset from the CF [Hz]	Limit [%]	Error[%]
Center	Frequency		13,560,000			
-20	102	incapable measurement				
	120	incapable measurement				
	138	incapable measurement				
-10	102	incapable measurement				
	120	incapable measurement				
	138	incapable measurement				
0	102	13560013	1356.00	13	±0.01	0.000
	120	13560013	1356.00	13	±0.01	0.000
	138	13560013	1356.00	13	±0.01	0.000
10	102	13560013	1356.00	13	±0.01	0.000
	120	13560013	1356.00	13	±0.01	0.000
	138	13560013	1356.00	13	±0.01	0.000
20	102	13560015	1356.00	15	±0.01	0.000
	120	13560015	1356.00	15	±0.01	0.000
	138	13560015	1356.00	15	±0.01	0.000
30	102	13560009	1356.00	9	±0.01	0.000
	120	13560009	1356.00	9	±0.01	0.000
	138	13560009	1356.00	9	±0.01	0.000
40	102	incapable measurement				
	120	incapable measurement				
	138	incapable measurement				
50	102	incapable measurement				
	120	incapable measurement				
	138	incapable measurement				

Supplementary information:

The equipment did not operate normally at -20°C, -10°C, 40°C and 50°C.

5.5 20 dB bandwidth



6. Photos

6.1 Setup Photo (Conducted Emission)

Front View



Side View



6.2 Setup Photo (Radiated Emission)

Front View (30MHz-1GHz)



Close-up (30MHz-1GHz)



6.3 Setup Photo (Electromagnetic Radiated Emission)

Front View (9KHz-30MHz)



Close-up (9KHz-30MHz)



7. List of Test Measurement Instruments

7.1 Conducted Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	100803390	November, 2009 November, 2010
EMI Test Receiver	ROHDE& SCHWARZ	ESCS30	100335	November, 2009 November, 2010
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341F	8S-2996-1	July, 2009 July, 2010
Transient Limiter	AGILENT TECHNOLOGIES	11947A	3107A03745	September, 2009 September, 2010
RF Selector	Techno Science Japan Corp.	RFM-E221	3148	Confirmed Before Test

7.2 Radiated Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Programmable AC/DC Power Source	NF Corporation	ES18000W	425779	Confirmed Before Test
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	October, 2009 October, 2010
Biconical Antenna (30 to 300MHz)	SCHWARZBECK	VHBB9124(Balun) BBA9106(Elements)	9124-311	September, 2009 September, 2010
Log.-Periodic Antenna (300MHz to 1GHz)	SCHWARZBECK	UHALP9108A	645	September, 2009 September, 2010
Loop Antenna (0.15 to 30 MHz)	ROHDE & SCHWARZ	HFH2-Z2	131	June, 2009 June, 2010