



# TEST REPORT

**STANDARD : FCC Part15 Subpart C Section 15.207 & 15.209**

Applicant	Testing Laboratory
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<b>Equipment Type</b>	ID card reader
<b>Trademark</b>	Sankyo
<b>Model(s)</b>	ISI220-0332
<b>Serial No.</b>	DSR-002-0001
<b>Equipment Authorization</b>	Certification (FCC ID : WJ6-ISI220033201A )
<b>Test Result</b>	Complied
<b>Report Number</b>	JN10120008(R1)
<b>Report Issue Date</b>	February 3, 2011

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The test report JN10120008 was superseded by this test report.

Approved by

Yoshihide Mimura

Tested by

Naohei Murakami

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## SECTION 1. GENERAL INFORMATION

### TEST PERFORMED

<b>Location</b>	Nagano No.3 Test Site
<b>EUT Received</b>	December 8, 2010
<b>Date of Test</b>	From December 8, 2010 to February 1, 2011
<b>Standard Applied</b>	FCC Part15C – Section 15.207 & 15.209 Intentional Radiators
<b>Measurement methods</b>	ANSI C63.4-2003
<b>Test Procedure</b>	Document number : RJP-EM001, RJP-EM003
<b>Deviation from Standard(s)</b>	None

### QUALIFICATIONS OF TESTING LABORATORY

ACCREDITATION	SCOPE	LAB. CODE	Remarks
VLAC	EMC Testing	VLAC-008-4	JAPAN
BSMI	EMC Testing	SL2-IN-E-6007	TAIWAN
<b>FILING</b>			
VCCI	EMC Testing	R-260, C-282, C-263, T-1730, T-1727 R-261, C-283, C-264, T-1732, T-1733 R-262, C-422, C-265, T-1734, T-1735 G-123	JAPAN
FCC	EMC Testing	Designation Number : JP0010	USA
IC	EMC Testing	2042O-1	CANADA
SAUDI ARABIA	EMC Testing	N/A	

### ABBREVIATIONS

EUT	: Equipment Under Test	DoC	: Declaration of Conformity
AMN	: Artificial Mains Network	ISN	: Impedance Stabilization Network
LISN	: Line Impedance Stabilization Network	Q-P	: Quasi-peak
AMP	: Amplifier	AVG	: Average
ATT	: Attenuator	PK	: Peak
ANT	: Antenna	Cal	: Calibration
BBA	: Broadband Antenna	N/A	: Not applicable or Not available
DIP	: Dipole Antenna	LCD	: Liquid-Crystal Display
AE	: Associated Equipment	HDMI	: High-Definition Multimedia Interface

## SECTION 2. SUMMARY OF TEST RESULTS

The minimum margins to the limits are as follows:

Test	Reference < FCC >	Result
Conducted disturbance at mains terminals	15.207	Pass
Radiated disturbance	15.205 15.209	Pass
Voltage Varied	15.31 (e)	Pass

Note :

1. As for the FCC Part 15 Subpart B-Unintentional Radiators, the EUT has been measured and declared as DoC by NIDEC SANKYO CORPORATION.
2. See Section 10 for details.

### SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following apparatus.

#### 3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks
A1	ID card reader	ISI220-0332	DSR-0020001	NIDEC SANKYO CORPORATION	
A2	AC adapter	UEA360-2425	A02-0093967	UNIFIVE Co., Ltd.	accessories
<b>Rated Power</b> : AC100-240 V, 50/ 60 Hz, 1.5 A					
<b>Supplied Power</b> : AC120 V, 60 Hz					
<b>Condition of Equipment</b>		Preproduction			
<b>Type</b>		Tabletop			
<b>Suppression Devices</b>		No Modifications by the laboratory were made to the device			

#### 3.2 Overview of EUT :

<b>Carrier Frequency</b>	13.56 MHz +/-50ppm
<b>Modulation Method</b>	Transmitting – Amplitude Shift Keying
<b>RF Output Power</b>	40.9 dB $\mu$ V/m (at 3.0m : Measurement value)

#### 3.3 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
USB	USB Type A	4 pin	

#### 3.4 Highest Frequency Oscillator(s) / Crystal(s)

Base Clock	Operating Frequency	Board Name	Remarks
13.56 MHz	13.56 MHz	RF Board	
48 MHz	192 MHz	Main Board	
	480 MHz	Main Board	Highest Frequency

#### 3.5 Frequency Range of Measurements

	Required Measurement Frequency Range	Measured Frequency Range
Conducted	0.15 – 30 MHz	0.15 – 30 MHz
Radiated (Magnetic Field)	0.009 – 30 MHz	0.009 – 30 MHz
Radiated (Electric Field)	30 – 5000 MHz	30 – 5000 MHz

## SECTION 4. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
<b>B</b>	Computer	GQ646AW#ABJ	JPA80708FD	HP	DoC
<b>C</b>	LCD	510MPS	MH15H4JXA00527Y	SAMSUNG	DoC
<b>D</b>	Keyboard	KB-0316	BC3480DGAVJ5EL	HP	DoC
<b>E</b>	Mouse	M-SBF96	FB7330AN3VB1TXG	HP	DoC
<b>F</b>	Printer	P850A	1YLY193767	EPSON	BKMP850A
<b>G</b>	ID card	G05A251A01	None	TMP CO.,LTD	N/A
<b>Supplied Power:</b>					
<b>B, C, F</b>	AC120 V, 60 Hz				

Note : IC card are not self powered.

## SECTION 5. USED CABLE(S)

The following cable(s) was used for the test.

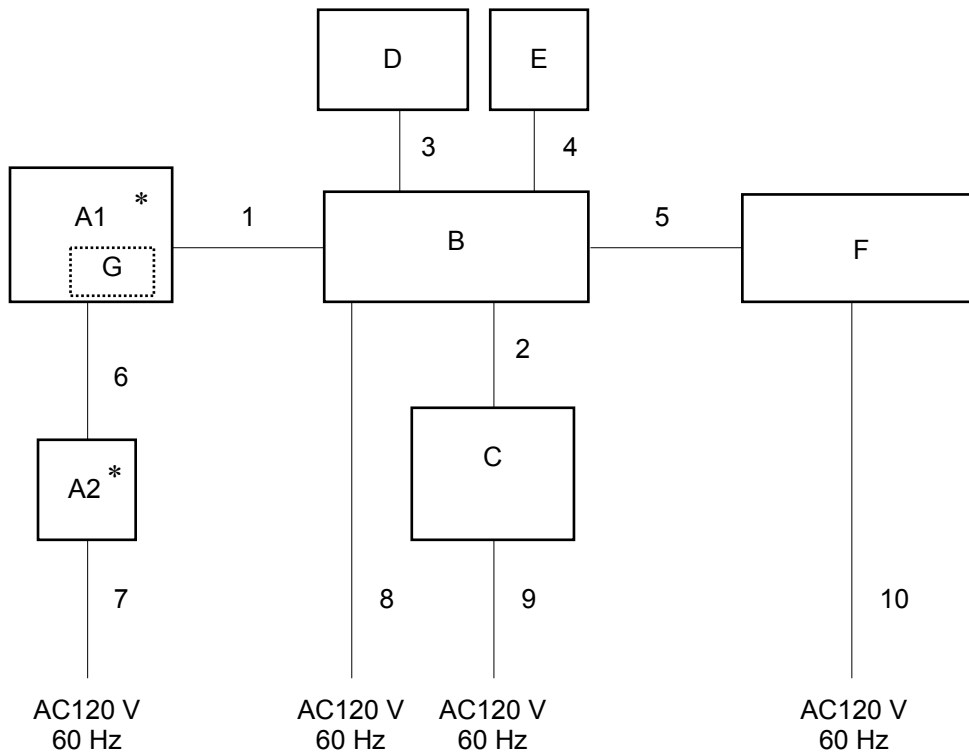
No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	USB cable	4.00	Yes	Yes	
2	Video cable	1.80	Yes	Yes	
3	Keyboard cable	1.80	Yes	Yes	
4	Mouse cable	1.80	Yes	Yes	
5	Parallel cable	2.10	Yes	Yes	
6	Power cable (DC) for EUT	1.80	Yes	Yes	
7	Power cable (AC) for EUT	1.83	No	No	
8	Power cable for Computer	1.90	No	No	
9	Power cable for LCD	1.80	No	No	
10	Power cable for Printer	1.80	No	No	

Note :

1. No ferrite core is attached to the outer cables.

## SECTION 6. TEST CONFIGURATION

\* : EUT



The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.



## SECTION 7. OPERATING CONDITION

The EUT was operated under the following conditions during the test.

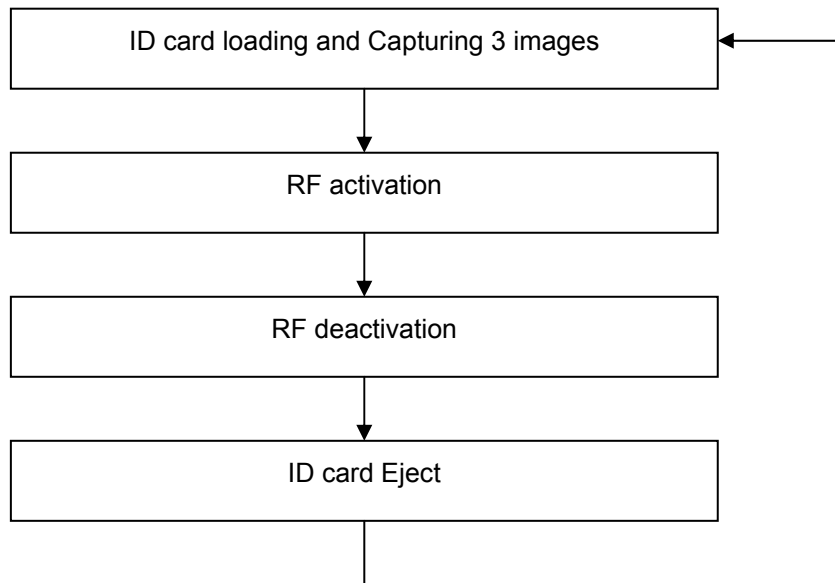
### 7.1 Operating Condition

The test was carried out under Continuous test mode.

EUT was examined in the operating conditions that had maximum emissions.

### 7.2 Operating Flow [Continuous test mode]

Following operations were performed continuously.

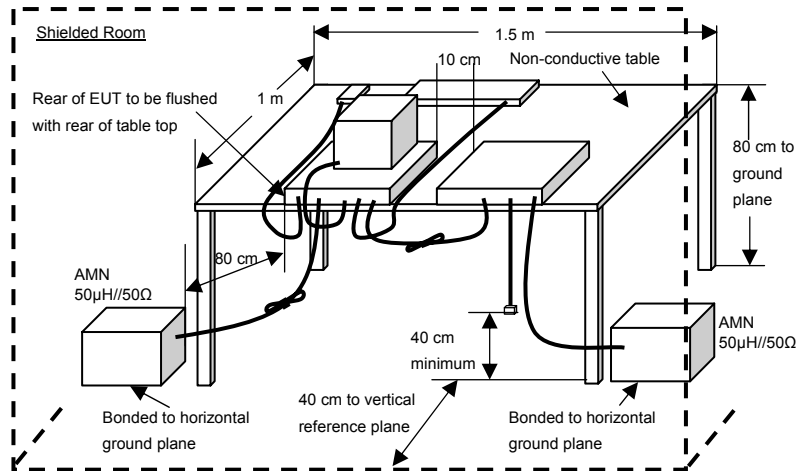


## SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.

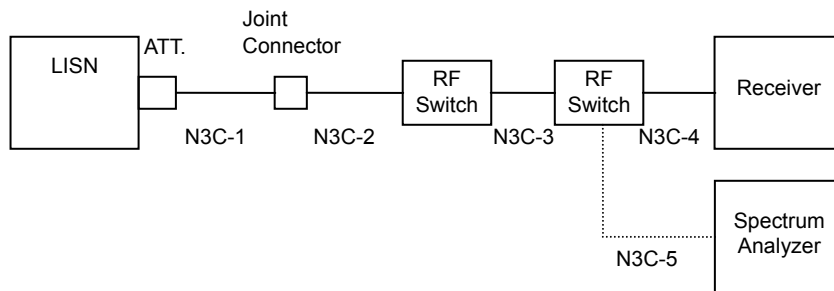
### Conducted disturbance at mains terminals

Test setup as per standard



\* Reference Ground plane : greater than 2 x 2m

### Diagram of the measuring instruments



### Setting for the instruments

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.15 – 30	Receiver	Quasi Peak	10 kHz	N/A
		Average	10 kHz	N/A

#### [ Preliminary Measurement ]

EUT is tested on all operating conditions.

The spectrum analyzer is controlled by the computer program to sweep the frequency range to be measured, then spectrum chart is plotted out to find the worst emission conditions in operating mode and/or configuration decision for the final test.

All leads other than safety ground are tested.

#### [ Final Measurement ]

The EUT is operated in the worst emission condition found by the preliminary test.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

At least six highest spectrum are measured in quasi-peak and average (if necessary) using the test receiver.

**Radiated disturbance**  
Test setup as per standard

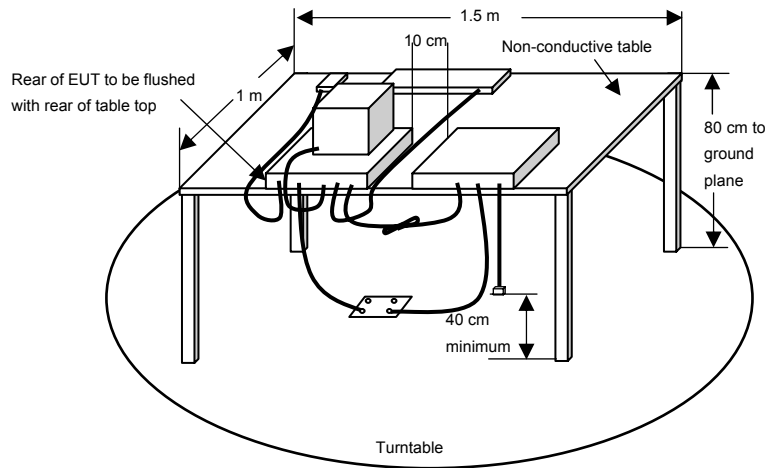
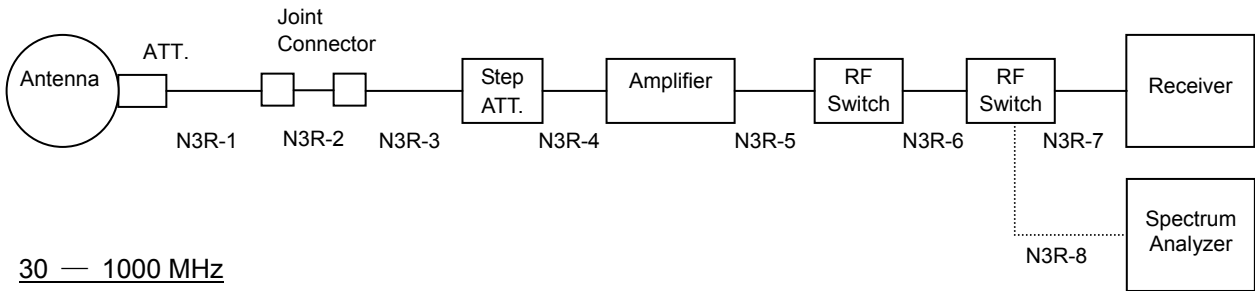
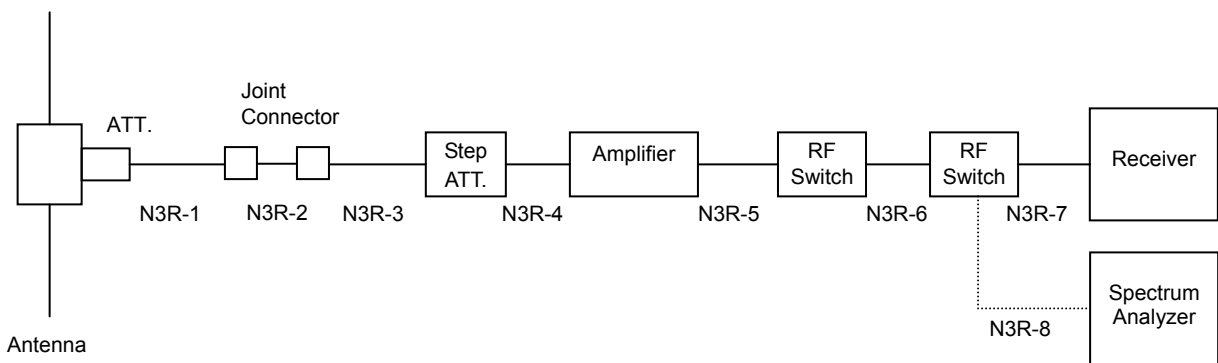


Diagram of the measuring instruments

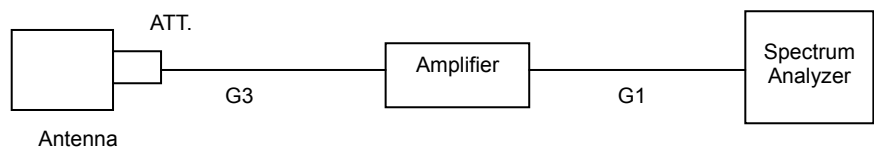
0.009 — 30 MHz



30 — 1000 MHz



Above 1 GHz



**< Below 30MHz >**

Setting for the instruments

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.009 - 0.15	Receiver	Quasi Peak	200 Hz	N/A
0.15 - 30	Receiver	Quasi Peak	10 kHz	N/A.

[ Preliminary Measurement ]

EUT is tested on all operating conditions.

The Loop antenna is used for Magnetic field measurements on the frequency range 0.009 – 30 MHz.

The antenna mast is attachable to the Loop antenna and antenna's center height is set 1 meter above the ground. Antenna angle is adjustable 0 to 360 degree and antenna polarization is also changed. (vertical and horizontal)The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

[ Final Measurement ]

The EUT operated in the worst emission condition found by the preliminary test.

The turntable azimuth (EUT direction) and antenna angle are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. Higher spectrum is measured by the test receiver (quasi-peak)

**< 30 - 1000MHz >**

Setting for the instruments

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
30 – 1000	Receiver	Quasi Peak	120 kHz	N/A
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
		Average	1 MHz	10 Hz

[ Preliminary Measurement ]

EUT is tested on all operating conditions.

The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree, And find the worst emission conditions in configuration, operating mode, or ambient noise notation.

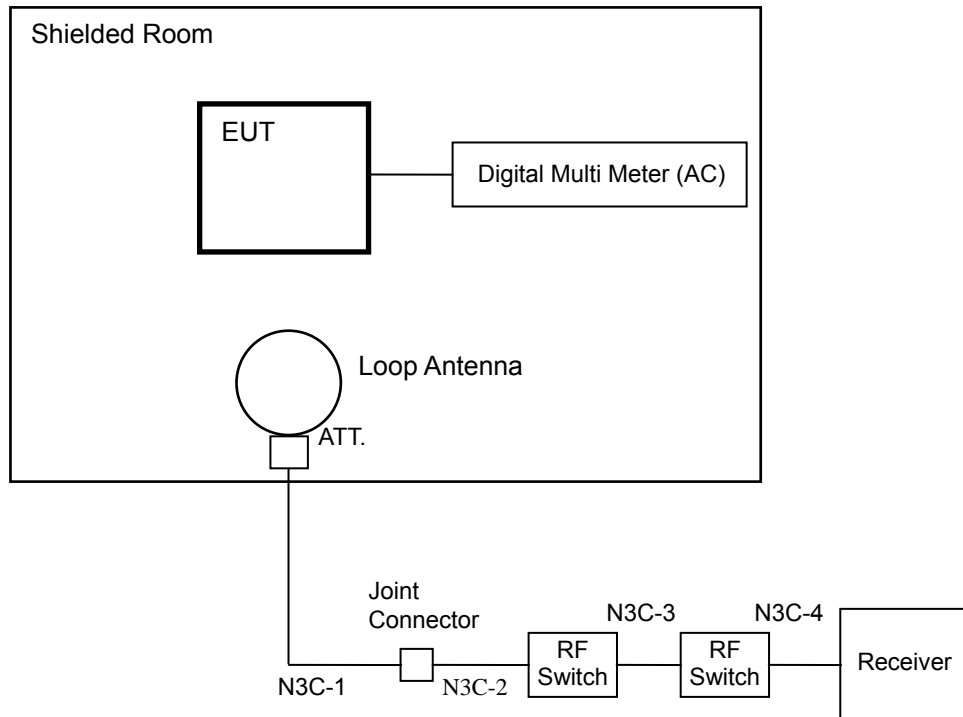
[ Final Measurement ]

The EUT operated in the worst emission condition found by the preliminary test.

The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. At least six highest spectrums are measured by the test receiver (quasi-peak) and spectrum analyzer (peak and average). When the uncertain result was obtained (30 – 1000 MHz), the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

**Voltage Varied**



[ Preliminary Measurement ]

EUT is tested on all operating conditions.

The power supply voltage to the EUT was varied from 85% to 115% of the normal value measured at the input to the EUT.

[ Final Measurement ]

The EUT operated in the worst emission condition found by the preliminary test.

The power supply voltage to the EUT was varied from 85% to 115% of the normal value measured at the input to the EUT.

**SECTION 9. MEASUREMENT UNCERTAINTY**

<b>Radiated disturbance at 3m</b>	$U_{lab}$	$U_{cispr}$
30 MHz – 1000 MHz	+/- 4.48 dB	5.2 dB
Above 1 GHz CISPR22	+/- 4.20 dB	
ANCI 63.4	+/- 4.20 dB	
<b>Radiated disturbance at 10m</b>		
30 MHz – 1000 MHz	+/- 4.75 dB	5.1 dB
Above 1 GHz	+/- 4.48 dB	
<b>Radiated disturbance at 30m</b>		
	N/A	5.2 dB
<b>Radiated disturbance (power)</b>		
11.7 GHz – 12.7 GHz	N/A	Nil
<b>Conducted disturbance at mains terminals</b>		
9 kHz – 150 kHz	+/- 2.87 dB	4.0 dB
150 kHz – 30 MHz		3.6 dB
<b>Conducted disturbance at telecommunication ports (voltage)</b>		
9 kHz – 30 MHz	+/- 3.02 dB	Nil
<b>Conducted disturbance at telecommunication ports (current)</b>		
9 kHz – 30 MHz	+/- 3.31 dB	Nil
<b>Conducted disturbance at terminals</b>		
150 kHz – 30 MHz	+/- 3.07 dB	Nil
<b>Disturbance power</b>		
30 MHz – 300 MHz	+/- 4.21 dB	4.5 dB
<b>Radiated Magnetic Field</b>		
9 kHz – 30 MHz	+/- 3.30 dB	Nil

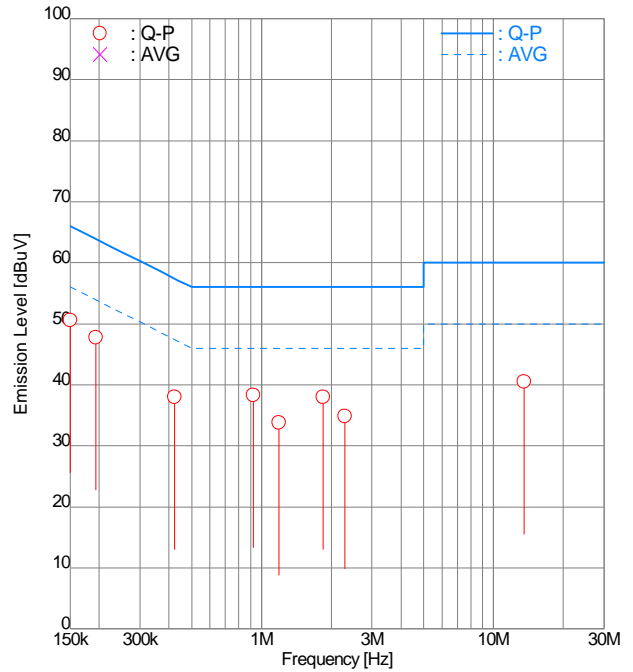
The above expanded instrumentation uncertainty,  $U_{lab}$ , is estimated in accordance with CISPR 16-4-2. Traceability to national standard in SI units is ensured with these values. Compliance with the limits in this standard are determined without in consideration of the measurement uncertainty of the measurement instrumentation.

**SECTION 10. EVALUATION OF TEST RESULTS**

**10.1 Conducted disturbance at mains terminals (Section15.207)**

**Intertek Japan K.K.**  
**Nagano No.3 Test Site**  
**AC Conducted Emission Test**

APPLICANT : NIDEC SANKYO CORPORATION  
 EUT NAME : ID card reader  
 MODEL NO. : ISI220-0332  
 SERIAL NO. : DSR-002-0001  
 TEST MODE : Continuous test mode  
 POWER SOURCE : AC120 V, 60 Hz  
 DATE TESTED : Dec 08 2010  
 FILE NO. : -  
 REGULATION : FCC Part15C (15.207)  
 TEST METHOD : ANSI C63.4 :2003  
 TEMPERATURE : 22.0 [degC]  
 HUMIDITY : 42.0 [%]  
 NOTE :



ENGINEER : Naohei Murakami

FREQUENCY [No]	MODE [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]		
		Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2	
1	0.1500	Q-P	40.3	<u>40.5</u>	10.1	10.1	50.4	<u>50.6</u>	66.0	15.6	<u>15.4</u>
2	0.1931	Q-P	37.0	<u>37.7</u>	10.1	10.1	47.1	<u>47.8</u>	63.9	16.8	<u>16.1</u>
3	0.4232	Q-P	27.3	<u>27.9</u>	10.2	10.1	37.5	<u>38.0</u>	57.4	19.9	<u>19.4</u>
4	0.9244	Q-P	<u>28.0</u>	28.0	10.3	10.3	<u>38.3</u>	38.3	56.0	<u>17.7</u>	17.7
5	1.1921	Q-P	23.5	23.4	10.3	10.3	33.8	33.7	56.0	22.2	22.3
6	1.8491	Q-P	27.1	<u>27.7</u>	10.3	10.3	37.4	<u>38.0</u>	56.0	18.6	<u>18.0</u>
7	2.2898	Q-P	23.7	24.4	10.4	10.4	34.1	34.8	56.0	21.9	21.2
8	13.5600	Q-P	<u>29.6</u>	29.3	10.9	10.9	<u>40.5</u>	40.2	60.0	<u>19.5</u>	19.8

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15C (15.207) limit  
 Emission Level = Read + Factor(LISN,Pad,Cable)

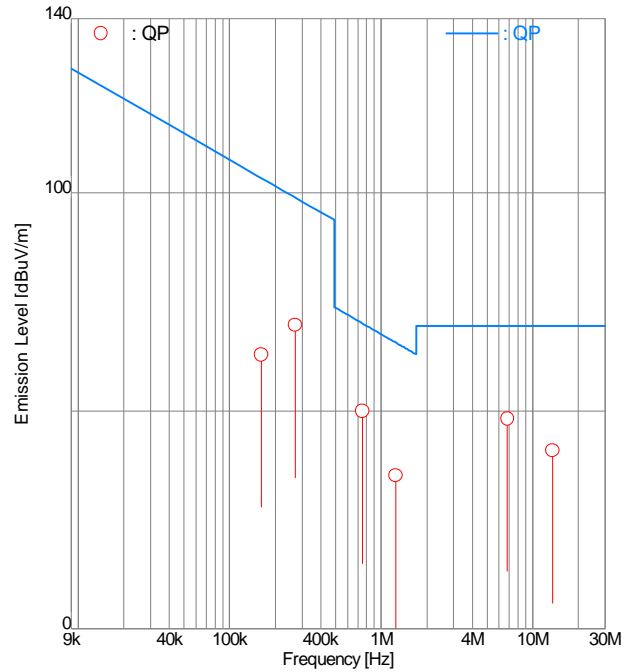
emiT 3, 0, 0, 0

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**10.2 Radiated disturbance (Section15.209)**  
 (0.009 – 30 MHz)

**Intertek Japan K.K.**  
**Nagano No.3 Test Site**  
 Radiated Magnetic Field

APPLICANT : NIDEC SANKYO CORPORATION  
 EUT NAME : ID card reader  
 MODEL NO. : ISI220-0332  
 SERIAL NO. : DSR-002-0001  
 TEST MODE : Continuous test mode  
 POWER SOURCE : AC120 V, 60 Hz  
 DATE TESTED : Dec 08 2010  
 FILE NO. : -  
 REGULATION : FCC Part15C (15.209)  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.00 [m]  
 TEMPERATURE : 22.0 [degC]  
 HUMIDITY : 42.0 [%]  
 NOTE :



ENGINEER : Naohei Murakami

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	0.1620	<u>53.3</u>	44.8	9.6	9.6	<u>62.9</u>	54.4	103.4	<u>40.5</u>	49.0
2	0.2698	<u>60.1</u>	50.8	9.6	9.6	<u>69.7</u>	60.4	99.0	<u>29.3</u>	38.6
3	0.7540	<u>40.2</u>	32.1	9.8	9.8	<u>50.0</u>	41.9	70.1	<u>20.1</u>	28.2
4	1.2439	22.8	<u>25.3</u>	9.9	9.9	32.7	<u>35.2</u>	65.7	33.0	<u>30.5</u>
5	6.8198	22.3	<u>38.0</u>	10.2	10.2	32.5	<u>48.2</u>	69.5	37.0	<u>21.3</u>
6	13.5600	24.8	<u>30.5</u>	10.4	10.4	35.2	<u>40.9</u>	69.5	34.3	<u>28.6</u>

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15C (15.209) limit  
 "The frequencies that exceed 40.9dBuV/m of the fundamental level are not emission from the RF circuit.  
 Please refer to the Annex B Spectrum Data."  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

emiT 3, 0, 0, 0

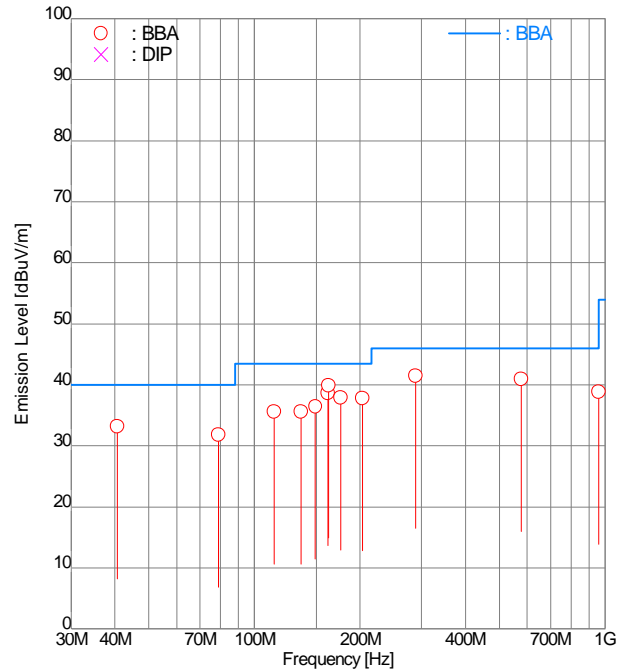
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(30 – 1000 MHz)

**Intertek Japan K.K.**  
**Nagano No.3 Test Site**  
Spurious Emissions - Radiated Test

APPLICANT : NIDEC SANKYO CORPORATION  
EUT NAME : ID card reader  
MODEL NO. : ISI220-0332  
SERIAL NO. : DSR-002-0001  
TEST MODE : Continuous test mode  
POWER SOURCE : AC120 V, 60 Hz  
DATE TESTED : Dec 08 2010  
FILE NO. : -  
REGULATION : FCC Part15C (15.209)  
TEST METHOD : ANSI C63.4:2003  
DISTANCE : 3.00 [m]  
TEMPERATURE : 22.0 [degC]  
HUMIDITY : 42.0 [%]  
NOTE :



ENGINEER : Naohei Murakami

FREQUENCY [No]	FREQ. [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	40.68	BBA	-	40.7	-7.5	-7.5	-	33.2	40.0	-	6.8
2	78.84	BBA	-	47.7	-15.9	-15.9	-	31.8	40.0	-	8.2
3	114.00	BBA	-	47.2	-11.6	-11.6	-	35.6	43.5	-	7.9
4	135.60	BBA	43.8	48.0	-12.4	-12.4	31.4	35.6	43.5	12.1	7.9
5	149.16	BBA	-	49.4	-13.0	-13.0	-	36.4	43.5	-	7.1
6	162.01	BBA	49.8	<u>51.7</u>	-13.1	-13.1	36.7	<u>38.6</u>	43.5	6.8	<u>4.9</u>
7	162.72	BBA	48.2	<u>53.0</u>	-13.1	-13.1	35.1	<u>39.9</u>	43.5	8.4	<u>3.6</u>
8	176.28	BBA	-	<u>50.2</u>	-12.3	-12.3	-	<u>37.9</u>	43.5	-	<u>5.6</u>
9	203.40	BBA	<u>48.5</u>	47.8	-10.7	-10.7	<u>37.8</u>	37.1	43.5	<u>5.7</u>	6.4
10	288.01	BBA	<u>48.5</u>	-	-7.0	-7.0	<u>41.5</u>	-	46.0	<u>4.5</u>	-
11	576.02	BBA	37.7	<u>42.2</u>	-1.3	-1.3	36.4	<u>40.9</u>	46.0	9.6	<u>5.1</u>
12	960.00	BBA	-	33.3	5.5	5.5	-	38.8	46.0	-	7.2

Higher six points are underlined.  
Other frequencies : Below the FCC Part15C (15.209) limit  
"The frequencies that exceed 40.9dBuV/m of the fundamental level are not emission from the RF circuit.  
Please refer to the Annex B Spectrum Data."  
Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)  
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

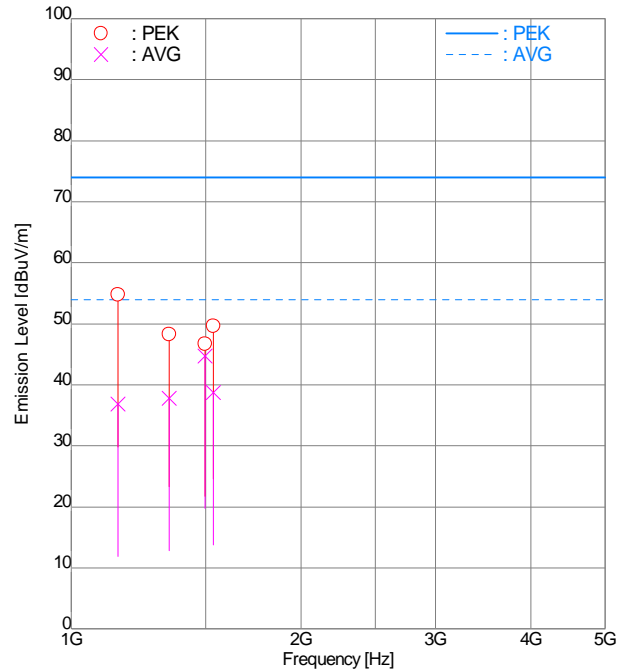
emiT 3, 0, 0, 0

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(30 – 1000 MHz)

**Intertek Japan K.K.**  
**Nagano No.3 Test Site**  
 Radiated Electric Field

APPLICANT : NIDEC SANKYO CORPORATION  
 EUT NAME : ID card reader  
 MODEL NO. : ISI220-0332  
 SERIAL NO. : DSR-002-0001  
 TEST MODE : Continuous test mode  
 POWER SOURCE : AC120 V, 60 Hz  
 DATE TESTED : Dec 08 2010  
 FILE NO. : -  
 REGULATION : FCC Part15C  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.00 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 40.0 [%]  
 NOTE :



ENGINEER : Naohei Murakami

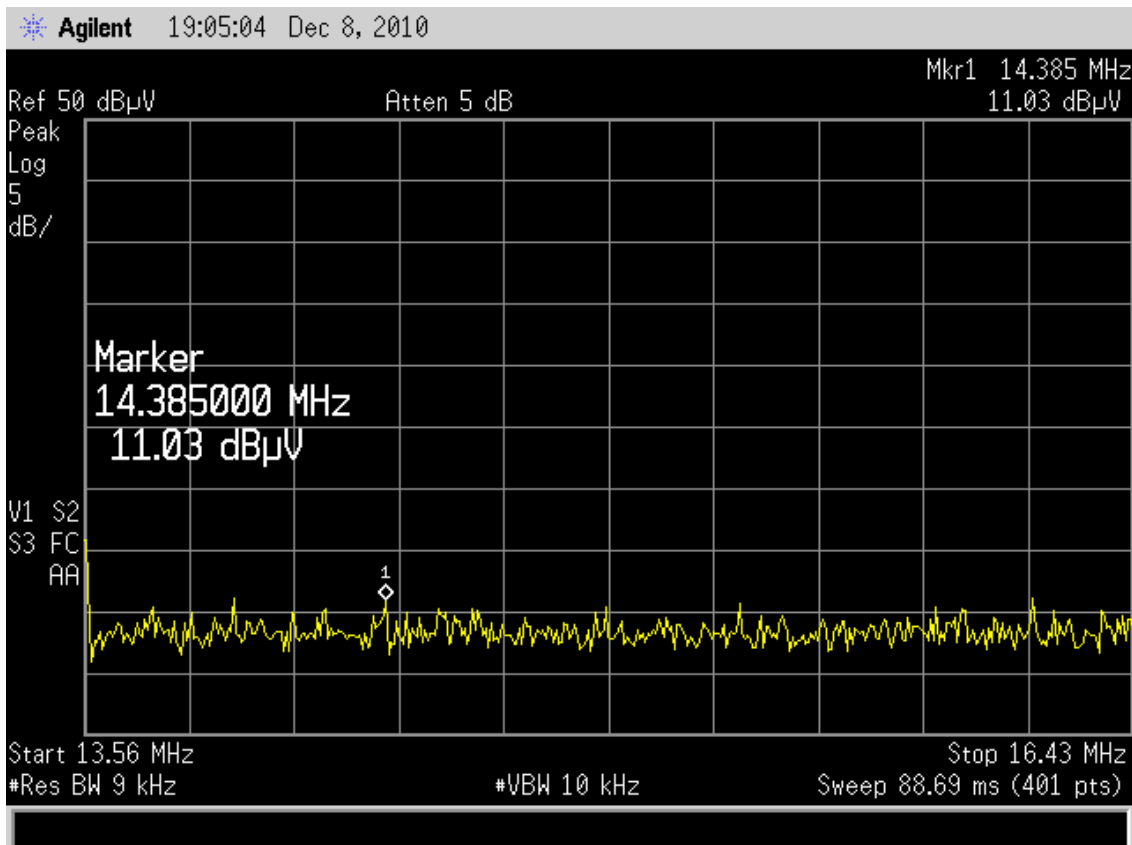
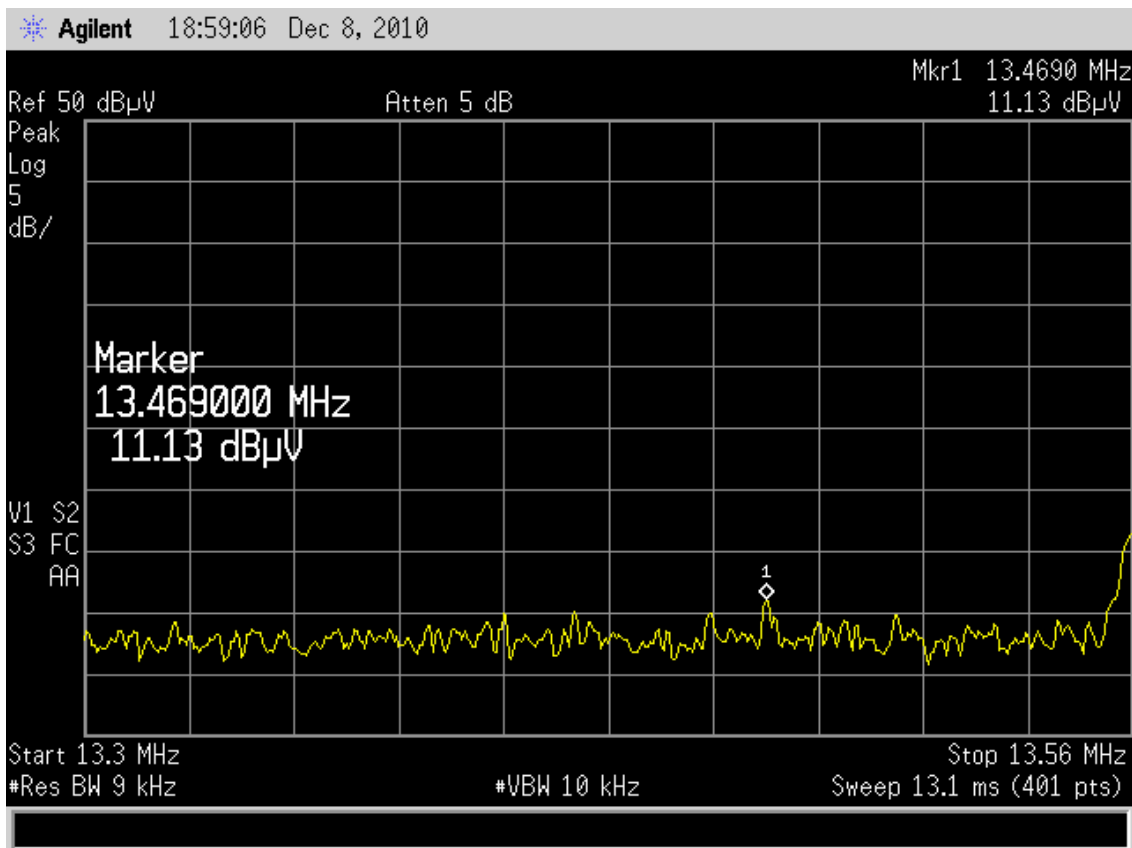
FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1152.04	PEK	-	<u>56.3</u>	-1.5	-1.5	-	<u>54.8</u>	74.0	-	<u>19.2</u>
2	1152.04	AVG	-	<u>38.3</u>	-1.5	-1.5	-	<u>36.8</u>	54.0	-	<u>17.2</u>
3	1344.04	PEK	-	48.7	-0.4	-0.4	-	48.3	74.0	-	25.7
4	1344.04	AVG	-	<u>38.2</u>	-0.4	-0.4	-	<u>37.8</u>	54.0	-	<u>16.2</u>
5	1496.63	PEK	47.5	-	-0.8	-0.8	46.7	-	74.0	27.3	-
6	1496.63	AVG	<u>45.5</u>	-	-0.8	-0.8	<u>44.7</u>	-	54.0	<b>9.3</b>	-
7	1536.10	PEK	-	<u>50.5</u>	-0.9	-0.9	-	<u>49.6</u>	74.0	-	<u>24.4</u>
8	1536.10	AVG	-	<u>39.6</u>	-0.9	-0.9	-	<u>38.7</u>	54.0	-	<u>15.3</u>

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15C limit  
 "The frequencies that exceed 40.9dBuV/m of the fundamental level are not emission from the RF circuit.  
 Please refer to the Annex B Spectrum Data."  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)  
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

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### 10.3 Restricted bands of operation



#### 10.4 Voltage Varied

Tested Date : December 8, 2010  
              : + 50ppm = 13.560678 [MHz]  
              : - 50ppm = 13.559322 [MHz]  
Engineer : Naohei Murakami

Supply Voltage [V]		Operation Frequency [MHz]	Meter Reading [dB $\mu$ V/m]	Result
85%	102	13.56003	28.2	Pass
100%	120	13.56003	28.4	Pass
115%	138	13.56003	28.2	Pass

**SECTION 11. LIST OF MEASURING INSTRUMENTS**

Instrument	Model No.	Serial No.	Manufacturer	Cal. Date	Due date
<b>Conducted disturbance at mains terminals</b>					
LISN (EUT)	ESH2-Z5	892377/022	ROHDE & SCHWARZ	Dec. 02, 09	Dec. 31, 10
10 dB Attenuator	CFA-01	CEC052	TAMAGAWA	Apr. 07, 10	Apr. 30, 11
LISN (Peripheral)	ESH3-Z5	844982/001	ROHDE & SCHWARZ	Nov. 02, 10	Nov. 30, 11
50 Ω Termination	CT-01	CE1012	TAMAGAWA	Nov. 02, 10	Nov. 30, 11
Coaxial cable	5D-2W(5.5 m)	N3C-1	Intertek	Apr. 07, 10	Apr. 30, 11
Coaxial cable	5D-2W(1.6 m)	N3C-2	Intertek		
Coaxial cable	5D-2W(0.7 m)	N3C-3	Intertek		
Coaxial cable	5D-2W(1.6 m)	N3C-4	Intertek		
Digital Multimeter	10	68481798	FLUKE	Jun. 29, 2010	Jun..30,2011
<b>Radiated disturbance</b>					
Broad Band antenna	LPB-2513/A	1092	A.R.A.	Jun 03, 10	Jun. 30, 11
Loop antenna	HFH2-Z2	892665/008	ROHDE & SCHWARZ	May 17, 10	May 31, 11
6 dB Attenuator	8491A	36306	HEWLETT PACKARD	Apr. 07, 10	Apr. 30, 11
Step Attenuator	8494B	2812A15596	HEWLETT PACKARD		
Amplifier	8447D	2727A05731	HEWLETT PACKARD		
Coaxial cable	5D-SFA(9.8 m)	N3R-1	Intertek		
Coaxial cable	12D-SFA(8.0 m)	N3R-2	Intertek		
Coaxial cable	5D-2W(1.6 m)	N3R-3	Intertek		
Coaxial cable	5D-2W(0.4 m)	N3R-4	Intertek		
Coaxial cable	5D-2W(0.4 m)	N3R-5	Intertek		
Coaxial cable	5D-2W(0.7 m)	N3R-6	Intertek		
Coaxial cable	5D-2W(1.6 m)	N3R-7	Intertek		
Double Ridged antenna	BBHA9120D	278	Schwarzbeck	Apr. 21, 10	Apr. 30, 11
6 dB Attenuator	SFA-01A 6 dB	CEC039	TAMAGAWA	Apr. 22, 10	Apr. 30, 11
3 dB Attenuator	SFA-01A 3 dB	CEC051	TAMAGAWA		
Amplifier (1-18 GHz)	EAU-3018GXA	10315	ELENA		
Coaxial cable	SUCOFLEX104 (15.0 m)	G1 (242241/4)	SUHNER		
Coaxial cable	S04272B (0.7m)	G3 (11SMA/0.7N)	SUHNER	Sep. 16, 10	Sep. 30, 11
EMC Analyzer	8563E (ROM revision 960830)	3650A06436	Agilent	Jun. 11, 10	Jun. 30, 11
Site Attenuation				Apr. 05, 10	Apr. 30, 11
<b>Common</b>					
RF Switch	ACX-150-1	CE3010	Intertek	Apr. 07, 10	Apr. 30, 11
Test receiver	ESS (Firmware Version 1.08)	845637/008	ROHDE & SCHWARZ	Mar. 04, 10	Mar. 31, 11
Testing Software	: emiT (Version 3,0,0,0)				

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.