

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/02/22

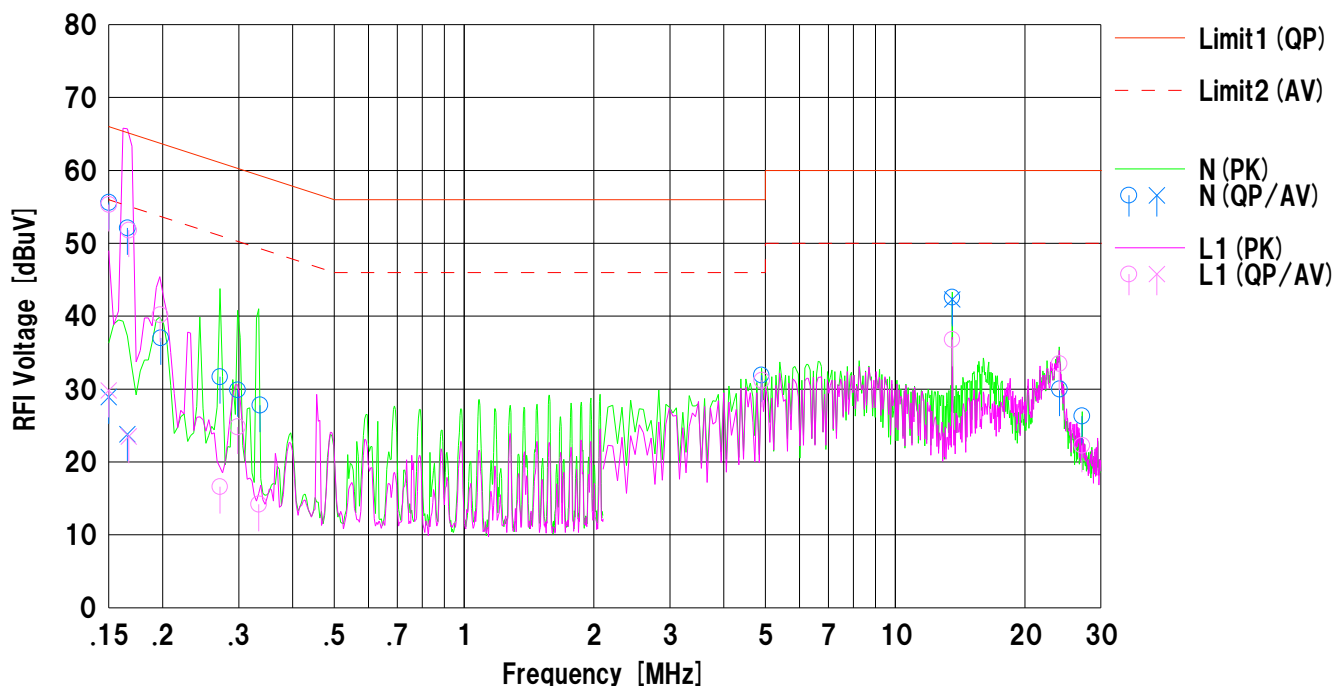
Company : RICOH COMPANY LTD.
Kind of E.U.T. : Copier
Model No. : Aficio SP 5210SR
Serial No. : S17A2100042

Mode : Transmitting (13.56MHz)
Report No. : 31DE0066-SH-01-A
Power : AC120V/60Hz
Temp./Humi. : 25deg.C. / 22%

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Shinichi Takano



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	0.15000	41.6	14.9	14.0	55.6	28.9	66.0	56.0	10.4	27.1	N	
2	0.16563	38.4	10.1	13.7	52.1	23.8	65.1	55.1	13.0	31.3	N	
3	0.19790	24.0	---	13.0	37.0	---	63.6	53.6	26.6	---	N	
4	0.27114	18.8	---	12.9	31.7	---	61.0	51.0	29.3	---	N	
5	0.29850	17.0	---	12.9	29.9	---	60.2	50.2	30.3	---	N	
6	0.33617	14.9	---	12.9	27.8	---	59.2	49.2	31.4	---	N	
7	4.89559	18.9	---	13.0	31.9	---	56.0	46.0	24.1	---	N	
8	13.56000	29.1	28.8	13.5	42.6	42.3	60.0	50.0	17.4	7.7	N	
9	24.05411	15.8	---	14.2	30.0	---	60.0	50.0	30.0	---	N	
10	27.12000	12.1	---	14.2	26.3	---	60.0	50.0	33.7	---	N	
11	0.15000	41.3	15.8	14.0	55.3	29.8	66.0	56.0	10.7	26.2	L1	
12	0.16679	38.1	9.8	13.7	51.8	23.5	65.1	55.1	13.3	31.6	L1	
13	0.19717	27.2	---	13.0	40.2	---	63.7	53.7	23.5	---	L1	
14	0.27114	3.7	---	12.9	16.6	---	61.0	51.0	44.4	---	L1	
15	0.29850	11.9	---	12.9	24.8	---	60.2	50.2	35.4	---	L1	
16	0.33367	1.3	---	12.9	14.2	---	59.3	49.3	45.1	---	L1	
17	4.90862	18.2	---	13.0	31.2	---	56.0	46.0	24.8	---	L1	
18	13.56000	23.3	---	13.5	36.8	---	60.0	50.0	23.2	---	L1	
19	24.01743	19.3	---	14.2	33.5	---	60.0	50.0	26.5	---	L1	
20	27.12000	8.1	---	14.2	22.3	---	60.0	50.0	37.7	---	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+Highpass Filter+ATT) [dB]

Data of Field Strength and Outside Filed Strength: FCC15.225(a)(b)(c)

UL Japan, Inc.
Shonan No3 Semi-Anechoic Chamber

Company	: RICOH COMPANY LTD.	Report No.	: 31DE0066-SH-01-A
Equipment	: Copier	Regulation	: FCC Part15 SupartC 15.225
Model	: Aficio SP 5210SR	Test Distance	: 3m
Sample No.	: S17A2100042	Date	: 2011/2/22
Power	: AC120V/60Hz	Temperature	: 20deg.C
Mode	: Transmitting (13.56MHz)	Humidity	: 25%
Remarks	: Vertical polarization (antenna angle) of the worst case: 0deg		

ENGINEER : Shinichi Takano

Field strength

No.	FREQ [MHz]	T/R Reading		ANT Factor [dB/m]	LOSS [dB]	AMP GAIN [dB]	RESULT		LIMIT (3m) [dBuV/m]	MARGIN	
		Hor [dBuV]	Ver [dBuV]				Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.560	39.3	48.7	19.6	6.3	32.2	33.0	42.4	123.9	90.9	81.5

Calculation: Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[dB]-Gain(AMP)[dB]

Field strength of 13.553MHz to 13.567MHz Limit(3m) = 84dBuV/m + 40log 30m/3m
= 124dBuV/m (FCC15.225(a))

Outside Field strength

No.	FREQ [MHz]	T/R Reading		ANT Factor [dB/m]	LOSS [dB]	AMP GAIN [dB]	RESULT		LIMIT (3m) [dBuV/m]	MARGIN	
		Hor [dBuV]	Ver [dBuV]				Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.110	30.8	30.7	19.6	6.3	32.2	24.5	24.4	69.5	45.0	45.1
2	13.410	30.6	30.7	19.6	6.3	32.2	24.3	24.4	80.5	56.2	56.1
3	13.553	31.7	38	19.6	6.3	32.2	25.4	31.7	90.4	65.0	58.7
4	13.567	31.5	36.9	19.6	6.3	32.2	25.2	30.6	90.5	65.3	59.9
5	13.710	30.6	30.9	19.6	6.3	32.2	24.3	24.6	80.5	56.2	55.9
6	14.010	30.7	31.6	19.6	6.3	32.2	24.4	25.3	69.5	45.1	44.2

Calculation: Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[dB]-Gain(AMP)[dB]

Outside filed strength frequencies

- filed strength band $F_c \pm 7\text{kHz}$: 13.553MHz to 13.567MHz
 - Outside filde strength $F_c \pm 150\text{kHz}$: 13.410MHz to 13.710MHz
 - Outside filde strength $F_c \pm 450\text{kHz}$: 13.110MHz to 14.010MHz
- $F_c = 13.56\text{MHz}$

Limits (3m)

- 13.410MHz to 13.553MHz and 13.567MHz to 13.710MHz : $50.5\text{dBuV/m} + 40\log 30\text{m}/3\text{m} = 90.5\text{dBuV/m}$ (FCC15.225(b))
- 13.110MHz to 14.010MHz and 13.710MHz to 14.010MHz : $40.5\text{dBuV/m} + 40\log 30\text{m}/3\text{m} = 80.5\text{dBuV/m}$ (15.225(c))
- Below 13.110MHz and Above 14.010MHz : $29.5\text{dBuV/m} + 40\log 30\text{m}/3\text{m} = 69.5\text{dBuV/m}$ (FCC15.225(d)and FCC15.209)

DATA OF MAGNETIC EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/02/22 10:50:29

Company : RICOH COMPANY LTD.
Kind of E.U.T. : Copier
Model No. : Aficio SP 5210SR
Serial No. : S17A2100042

Mode : Transmitting (13.56MHz)
Report No. : 31DE0066-SH-01-A
Power : AC120V/60Hz
Temp./Humi. : 20deg.C. / 25%

Remarks : -

Limit1 : FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP

Tested by : Shinichi Takano

<< QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result <QP>	Limit <QP>	Margin <QP>	Antenna	Table	Comment
		[dBuV]				[dBuV/m]	[dB]	[deg]			
1	27.12000	39.1	20.5	6.5	32.2	33.9	69.5	35.6	Odeg	98	Vertical
2	27.12000	32.6	20.5	6.5	32.2	27.4	69.5	42.1	-	103	Horizontal

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/02/22

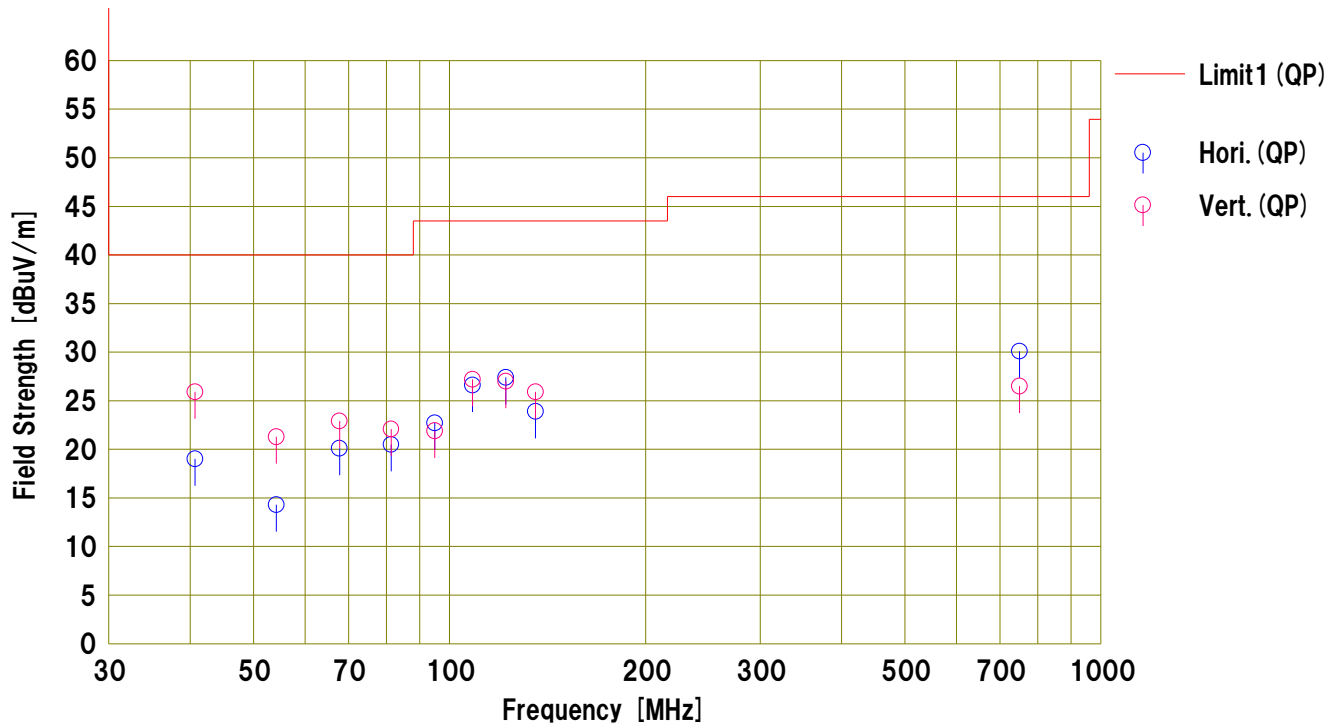
Company : RICOH COMPANY LTD.
Kind of E.U.T. : Copier
Model No. : Aficio SP 5210SR
Serial No. : S17A2100042

Mode : Transmitting (13.56MHz)
Report No. : 31DE0066-SH-01-A
Power : AC120V/60Hz
Temp./Humi : 20deg.C. / 25%

Remarks : -

Limit1 : FCC15C_209 3m_above13GHz_1.0m_AV

Engineer : Shinichi Takano



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<QP> [dBuV]				<QP> [dBuV/m]	<QP> [dB]						
1	40.680	30.0	14.4	6.7	32.1	19.0	40.0	21.0	Hori.	302	105	BC	
2	54.240	29.9	9.7	6.8	32.1	14.3	40.0	25.7	Hori.	304	354	BC	
3	67.800	38.5	6.8	6.9	32.1	20.1	40.0	19.9	Hori.	312	67	BC	
4	81.360	39.2	6.4	7.0	32.1	20.5	40.0	19.5	Hori.	198	124	BC	
5	94.920	38.7	8.9	7.2	32.1	22.7	43.5	20.8	Hori.	320	138	BC	
6	108.480	40.4	11.0	7.3	32.1	26.6	43.5	16.9	Hori.	150	242	BC	
7	122.040	39.7	12.4	7.4	32.1	27.4	43.5	16.1	Hori.	303	210	BC	
8	135.600	35.2	13.3	7.5	32.1	23.9	43.5	19.6	Hori.	150	186	BC	
9	750.255	31.6	20.0	10.2	31.7	30.1	46.0	15.9	Hori.	105	349	LP	
10	40.680	36.9	14.4	6.7	32.1	25.9	40.0	14.1	Vert.	100	359	BC	
11	54.240	36.9	9.7	6.8	32.1	21.3	40.0	18.7	Vert.	100	277	BC	
12	67.800	41.3	6.8	6.9	32.1	22.9	40.0	17.1	Vert.	100	156	BC	
13	81.360	40.8	6.4	7.0	32.1	22.1	40.0	17.9	Vert.	100	256	BC	
14	94.920	37.9	8.9	7.2	32.1	21.9	43.5	21.6	Vert.	100	183	BC	
15	108.480	41.0	11.0	7.3	32.1	27.2	43.5	16.3	Vert.	100	276	BC	
16	122.040	39.3	12.4	7.4	32.1	27.0	43.5	16.5	Vert.	100	342	BC	
17	135.600	37.2	13.3	7.5	32.1	25.9	43.5	17.6	Vert.	100	283	BC	
18	750.010	28.0	20.0	10.2	31.7	26.5	46.0	19.5	Vert.	160	171	LP	

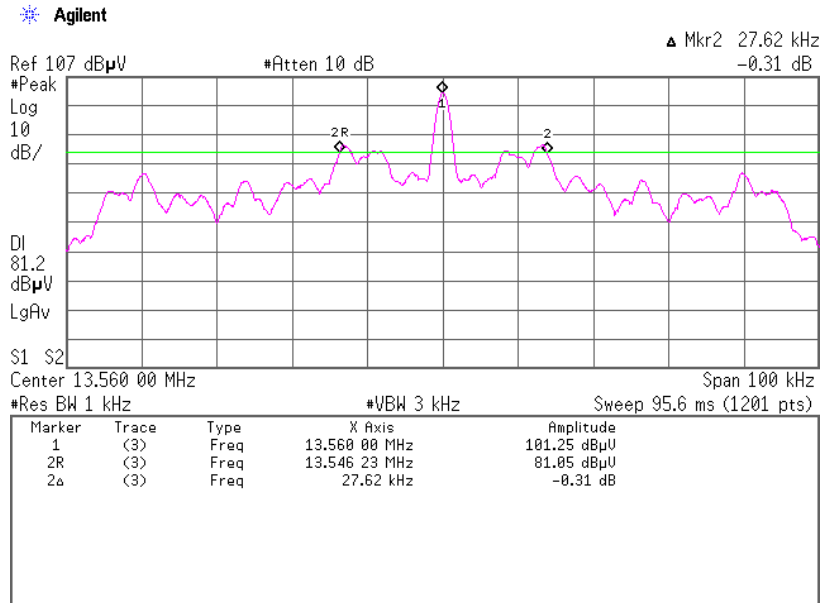
20dB bandwidth & Occupied bandwidth (99%): FCC 15.215(c)

UL Japan. Inc. Shonan No5 Shield room

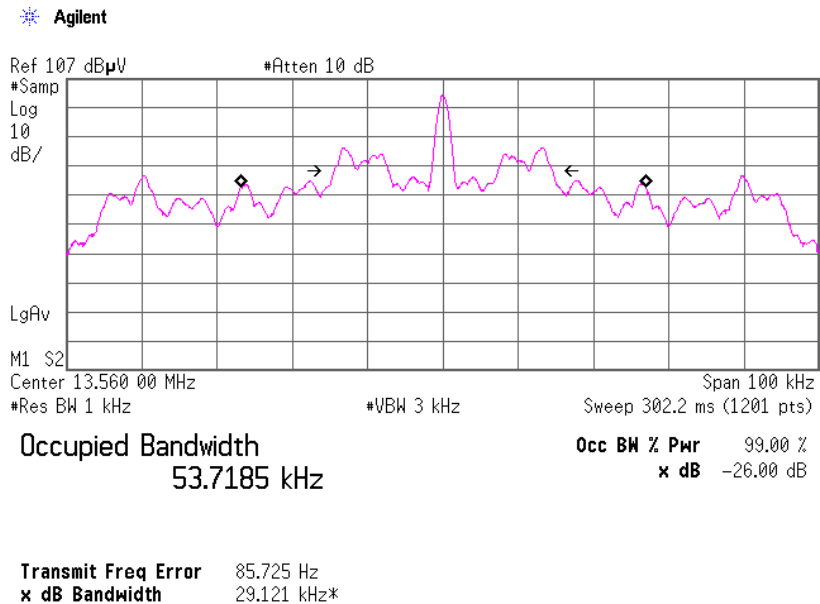
COMPANY : RICOH COMPANY LTD.
 REPORT No. : 31DE0066-SH-01-A
 Equipment : Copier
 MODEL NUMBER: Aficio SP 5210SR
 SERIAL NUMBER: S17A2100042
 POWER : DC5V

REGULATION : FCC Part15SubpartC 215(c)
 DATE : 2011/02/24
 TEMP./HUMI : 21°C/34%
 TEST MODE : Transmitting(13.56MHz)
 ENGINEER : Shinichi Takano

20dB Bandwidth: 27.62kHz



OBW(99%): 53.7185kHz



Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.
Shonan No5 Shield room

Company : RICOH COMPANY LTD.	Report No. : 31DE0066-SH-01-A
Equipment : Copier	Regulation : FCC Part15 SupartC 15.225 (c)
Model : Aficio SP 5210SR	
Sample No. : S17A2100042	Date : 2011/02/24
Power : DC5V	Temperature : 21deg.C
Mode : Transmitting (13.56MHz)	Humidity : 34%

ENGINEER : Shinichi Takano

Temperature Variation: -30deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559837	-0.000163	-0.00120	0.01
after 2minutes	13.56	13.559837	-0.000163	-0.00120	0.01
after 5minutes	13.56	13.559839	-0.000161	-0.00119	0.01
after 10minutes	13.56	13.559844	-0.000156	-0.00115	0.01

Temperature Variation: -20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559947	-0.000053	-0.00039	0.01
after 2minutes	13.56	13.559955	-0.000045	-0.00033	0.01
after 5minutes	13.56	13.559956	-0.000044	-0.00032	0.01
after 10minutes	13.56	13.559957	-0.000043	-0.00032	0.01

Temperature Variation: -10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560019	0.000019	0.00014	0.01
after 2minutes	13.56	13.560024	0.000024	0.00018	0.01
after 5minutes	13.56	13.560024	0.000024	0.00018	0.01
after 10minutes	13.56	13.560024	0.000024	0.00018	0.01

Temperature Variation: 0deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560050	0.000050	0.00037	0.01
after 2minutes	13.56	13.560053	0.000053	0.00039	0.01
after 5minutes	13.56	13.560052	0.000052	0.00038	0.01
after 10minutes	13.56	13.560052	0.000052	0.00038	0.01

Temperature Variation: 10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560057	0.000057	0.00042	0.01
after 2minutes	13.56	13.560057	0.000057	0.00042	0.01
after 5minutes	13.56	13.560056	0.000056	0.00041	0.01
after 10minutes	13.56	13.560056	0.000056	0.00041	0.01

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560050	0.000050	0.00037	0.01
after 2minutes	13.56	13.560048	0.000048	0.00035	0.01
after 5minutes	13.56	13.560046	0.000046	0.00034	0.01
after 10minutes	13.56	13.560046	0.000046	0.00034	0.01

Temperature Variation: 30deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560035	0.000035	0.00026	0.01
after 2minutes	13.56	13.560032	0.000032	0.00024	0.01
after 5minutes	13.56	13.560030	0.000030	0.00022	0.01
after 10minutes	13.56	13.560030	0.000030	0.00022	0.01

Temperature Variation: 40deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560022	0.000022	0.00016	0.01
after 2minutes	13.56	13.560020	0.000020	0.00015	0.01
after 5minutes	13.56	13.560019	0.000019	0.00014	0.01
after 10minutes	13.56	13.560018	0.000018	0.00013	0.01

Temperature Variation: 50deg.C

Test Conditions	Original Frequency (MHz)	Mesure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560016	0.000016	0.00012	0.01
after 2minutes	13.56	13.560170	0.000170	0.00125	0.01
after 5minutes	13.56	13.560017	0.000017	0.00013	0.01
after 10minutes	13.56	13.560016	0.000016	0.00012	0.01

Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.
Shonan No5 Shield room

Company : RICOH COMPANY LTD. Report No. : 31DE0066-SH-01-A
Equipment : Copier Regulation : FCC Part15 SupartC 15.225 (c)
Model : Aficio SP 5210SR
Sample No. : S17A2100042 Date : 2011/02/24
Power : DC5V Temperature : 21deg.C
Mode : Transmitting (13.56MHz) Humidity : 34%

ENGINEER : Shinichi Takano

Input Voltage:DC4.25V (85%)

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560047	0.000047	0.00035	0.01
after 2minutes	13.56	13.560047	0.000047	0.00035	0.01
after 5minutes	13.56	13.560047	0.000047	0.00035	0.01
after 10minutes	13.56	13.560046	0.000046	0.00034	0.01

Input Voltage:DC5.75V (115%)

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (MHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560047	0.000047	0.00035	0.01
after 2minutes	13.56	13.560045	0.000045	0.00033	0.01
after 5minutes	13.56	13.560044	0.000044	0.00032	0.01
after 10minutes	13.56	13.560043	0.000043	0.00032	0.01

APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2010/04/02 * 12
SLS-08	LISN	Schwarzbeck	NSLK8126	8126442	CE(EUT)	2010/09/02 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE(AE)	2010/02/19 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE,RE	2010/02/17 * 12
STM-05	Terminator	TME	CT-01 BP	-	CE	2011/01/07 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	CE,RE	2010/07/21 * 12
SJM-10	Measure	PROMART	SEN1935	-	CE,RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV	-	CE,RE	-
SHF-01	Highpass Filter	Rohde & Schwarz	EZ-25	100021	CE	2010/03/29 * 12
SCC-01	Coaxial Cable	Fujikura	5D2W	-	CE	2011/01/07 * 12
SAT3-05	Attenuator	JFW	50HF-003N	-	CE	2010/02/06 * 12
SLP-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	100218	RE	2010/10/15 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2011/02/17 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2010/02/06 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2010/10/15 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2010/04/02 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A0901	RE	2010/10/15 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2010/02/09 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2010/09/13 * 12
STF-01	Test Fixture	-	-	-	FT	-
SCH-01	Temperature and Humidity Chamber	Espec	PL-1KT	14020837	FT	2010/04/24 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	BW,FT	2010/11/16 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	FT	2010/02/17 * 12

The expiration date of the calibration is the end of the expired month .
As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with traceable calibrations . Each calibration is traceable to the national or international standards .

Test Item :

CE: Conducted emission,
RE: Radiated emission,
BW: Bandwidth,
FT: Frequency Tolerance

APPENDIX 4: Similar model description

1. model difference specification

Model (RICOH)	Copier / Printer	Print speed/ minutes	Fax	Finisher	Scanner
Aficio SP 5200S	Copier	47	option	No	Yes
Aficio SP 5210SF	Copier	52	Yes	No	Yes
Aficio SP 5210SR	Copier	52	option	Yes	Yes
Aficio SP 5200DN	Laser Printer	47	No	No	No
Aficio SP 5210DN	Laser Printer	52	No	No	No

2.model name by brand

Model (RICOH)	Brand name	OEM model
Aficio SP 5200S	Savin	SP 5200S
	Lanier	
Aficio SP 5210SF	Savin	SP 5210SF
	Lanier	
Aficio SP 5210SR	Savin	SP 5210SR
	Lanier	
Aficio SP 5200DN	Savin	SP 5200DN
	Lanier	
Aficio SP 5210DN	Savin	SP 5210DN
	Lanier	