

DATA OF CONDUCTION TEST

UL Japan, Inc.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 28HE0080-YK-01-A

Applicant : RICOH COMPANY, LTD.
Kind of Equipment : Full color MFP
Model No. : Aficio MP C2550
Serial No. : V2401000028
Power : AC120V/60Hz
Mode : Transmitting (13.56MHz)
Remarks :
Date : 6/26/2008
Phase : Single Phase
Temperature : 22 °C Engineer : Tatsuya Arai
Humidity : 68 %
Regulation : FCC Part15C § 15.207. (CISPR Pub. 22)

No.	FREQ. [MHz]	READING(N)		READING(L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP [dB μV]	AV	QP [dB μV]	AV				QP [dB]	AV [dB μV]	QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]
1.	0.1500	51.2	22.6	57.3	20.9	0.2	0.1	0.0	57.6	22.9	66.0	56.0	8.4	33.1
2.	0.2593	50.9	44.9	47.9	44.7	0.1	0.1	0.0	51.1	45.1	61.5	51.5	10.4	6.4
3.	0.3893	36.2	27.9	36.3	31.8	0.1	0.1	0.0	36.5	32.0	58.1	48.1	21.6	16.1
4.	0.9081	29.2	-	31.3	-	0.1	0.1	0.0	31.5	-	56.0	46.0	24.5	-
5.	2.2079	35.3	-	32.6	-	0.1	0.2	0.0	35.6	-	56.0	46.0	20.4	-
6.	4.5444	38.0	35.6	32.1	30.5	0.2	0.2	0.0	38.4	36.0	56.0	46.0	17.6	10.0
7.	7.2706	52.3	47.0	50.5	45.3	0.3	0.3	0.0	52.9	47.6	60.0	50.0	7.1	2.4
8.	13.5600	30.0	-	26.2	-	0.4	0.6	0.0	31.0	-	60.0	50.0	29.0	-
9.	27.1200	46.9	46.1	46.7	46.1	0.9	1.1	0.0	48.9	48.1	60.0	50.0	11.1	1.9

CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

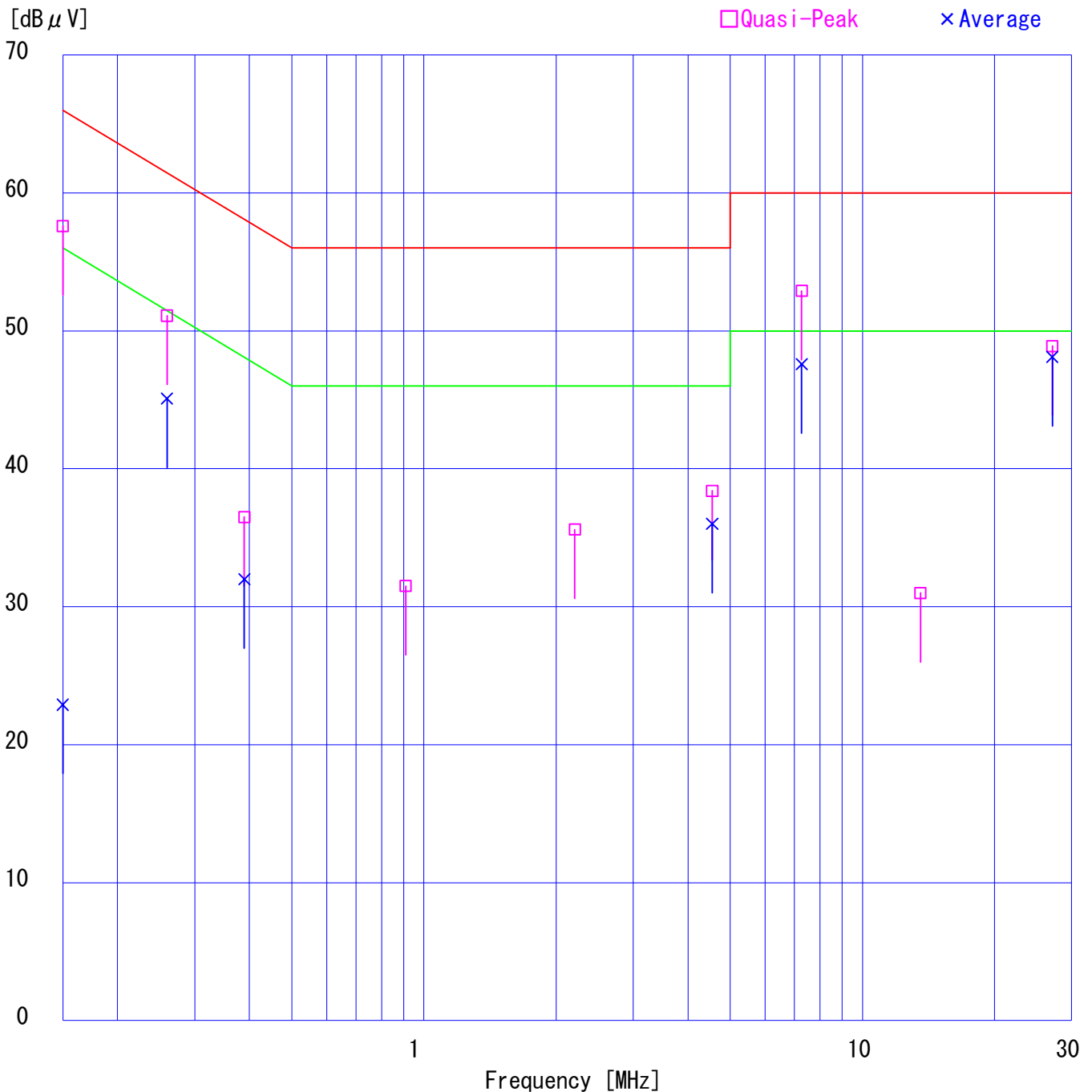
■ LISN: KLS-03 (NSLK8129) ■ COAXIAL CABLE: KCC-33/34
■ EMI RECEIVER: KTR-01 (ES140)

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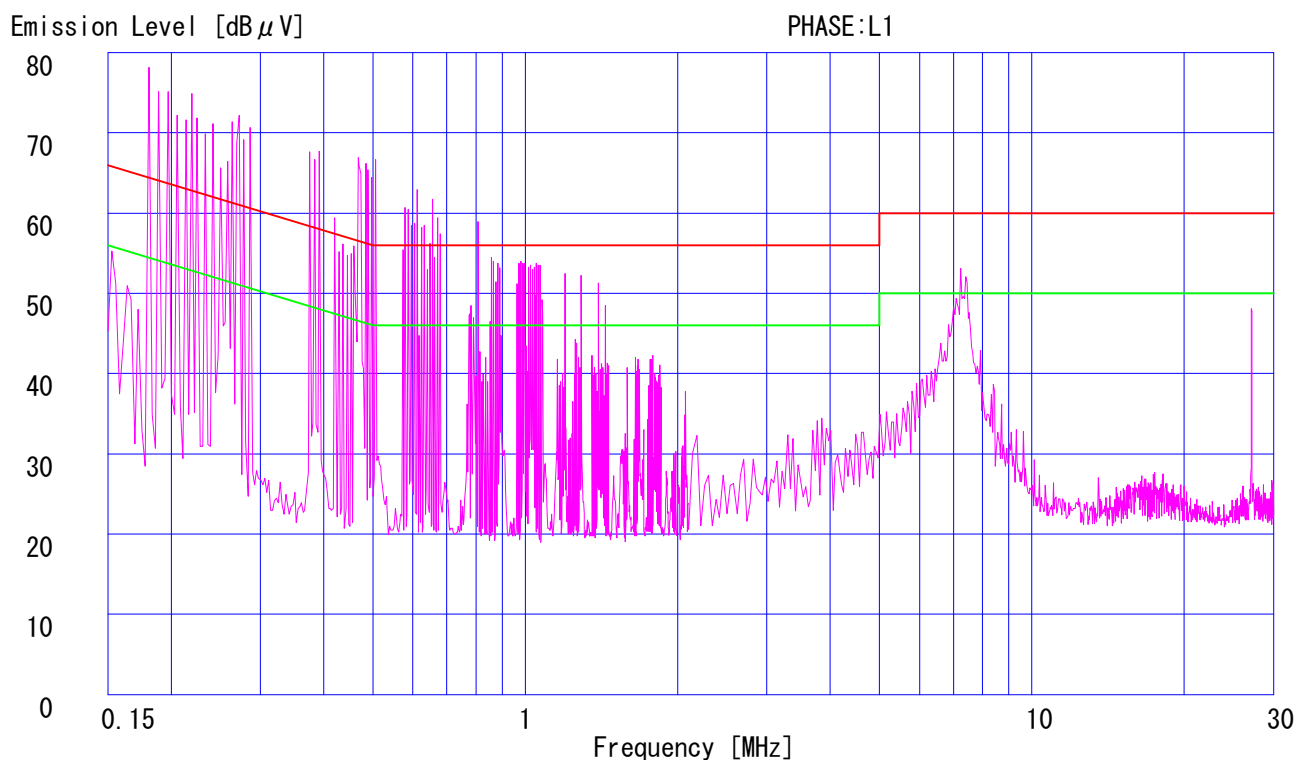
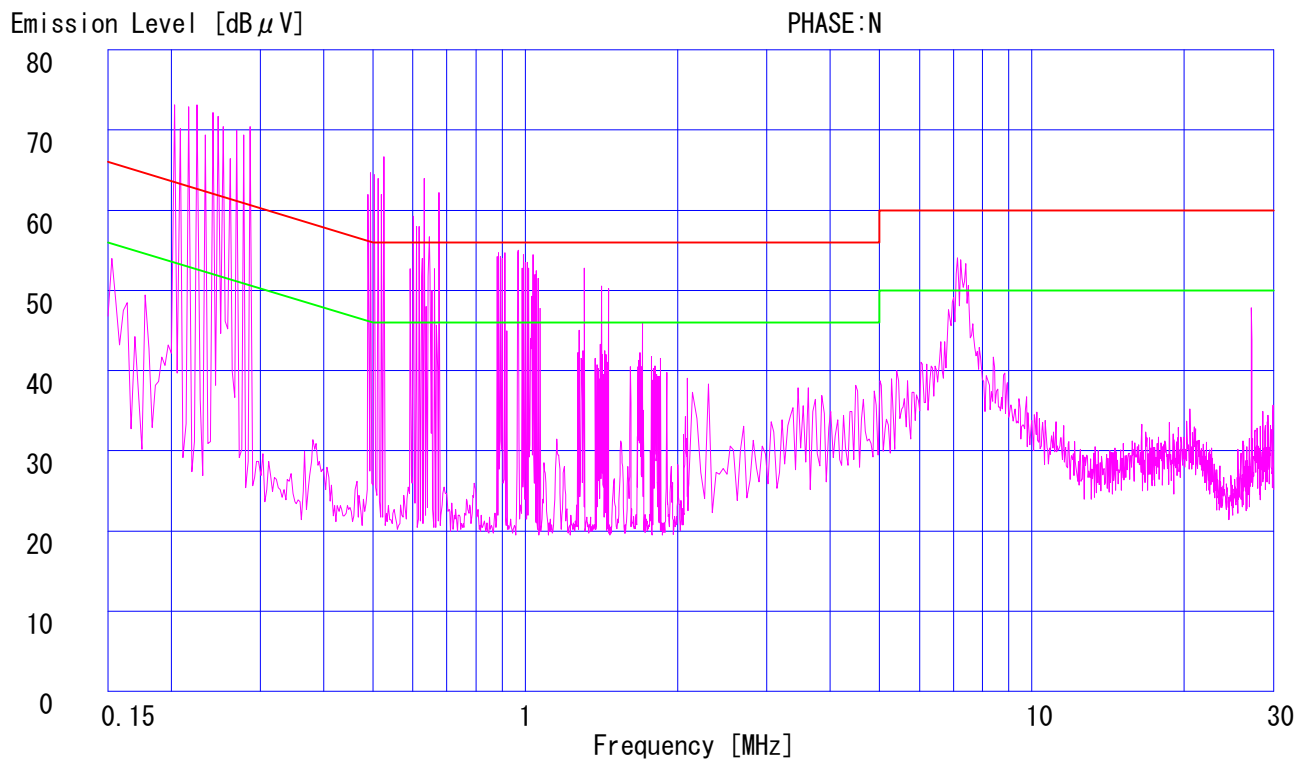
Engineer : Tatsuya Arai



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 28HE0080-YK-01-A

Applicant : RICOH COMPANY, LTD.
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Model No. : Aficio MP C2550
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Power : AC120V/60Hz
Mode : Transmitting (13.56MHz)
Remarks :
Date : 6/26/2008
Phase : Single Phase
Temperature : 22 °C
Humidity : 68 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : None
Engineer : Tatsuya Arai



Data of Field Strength and Outside Filed Strength: FCC15.225

UL Japan, Inc.
YAMAKITA No1 Anechoic Chamber

Company : RICOH COMPANY, LTD.	Report No. : 28HE0080-YK-01-A
Equipment : Full-collor MFP	Regulation : FCC Part15 SupartC 15.225
Model : Aficio MP C2550	Test Distance : 3m
Sample No. : V2401000028	Date : 2008/06/26
Power : AC120V/60Hz	Temperature : 22deg.C
Mode : Transmitting (13.56MHz)	Humidity : 68%

ENGINEER : Tatsuya Arai

Field strength

No.	FREQ [MHz]	T/R Reading		ANT Factor [dB]	ATTEN [dB]	CABLE 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	44.6	40.5	19.7	6.0	0.7	28.4	42.6	38.5	124.0	81.4	85.5

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]	ATTEN [dB]	CABLE 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	41.2	39.0	19.7	6.0	0.7	28.4	39.2	37.0	69.5	30.3	32.5
2	13.410	24.1	26.4	19.7	6.0	0.7	28.4	22.1	24.4	80.5	58.4	56.1
3	13.553	30.3	29.4	19.7	6.0	0.7	28.4	28.3	27.4	90.5	62.2	63.1
4	13.567	29.4	28.5	19.7	6.0	0.7	28.4	27.4	26.5	90.5	63.1	64.0
5	13.710	23.5	26.2	19.8	6.0	0.7	28.4	21.6	24.3	80.5	58.9	56.2
6	14.010	22.3	26.1	19.8	6.0	0.7	28.4	20.4	24.2	69.5	49.1	45.3

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 RADIATION TEST

UL Japan, Inc.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 28HE0080-YK-01-A

Applicant : RICOH COMPANY, LTD.
Kind of Equipment : Full color MFP
Model No. : Aficio MP C2550
Serial No. : V2401000028
Power : AC120V/60Hz
Mode : Transmitting (13.56MHz)
Remarks :
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C
Humidity : 68 %
Regulation : FCC Part15C § 15.209 9KHz-30MHz (3m)
Engineer : Tatsuya Arai

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	11.55	BB	27.7	38.0	19.5	28.5	0.7	6.0	25.4	35.7	69.5	44.1	33.8
2.	27.12	BB	27.8	31.3	21.4	28.4	1.0	6.0	27.8	31.3	69.5	41.7	38.2

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ ANTENNA: KLP-01 (HFH2-Z2) 0.009-30MHz

■ CABLE: KCC-30/31/32/34 ■ PREAMP: KAF-05 (8447D) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 28HE0080-YK-01-A

Applicant : RICOH COMPANY, LTD.
 Kind of Equipment : Full color MFP
 Model No. : Aficio MP C2550
 Serial No. : V2401000028
 Power : AC120V/60Hz
 Mode : Transmitting (13.56MHz)
 Remarks :
 Date : 6/26/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 68 %
 Regulation : FCC Part15C § 15.209

Engineer : Tatsuya Arai

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	40.68	BB	30.4	36.6	13.5	28.5	1.3	6.0	22.7	28.9	40.0	17.3	11.1
2.	137.62	BB	31.0	32.9	14.0	28.2	2.5	6.0	25.3	27.2	43.5	18.2	16.3
3.	157.29	BB	27.2	32.0	15.1	28.1	2.7	6.0	22.9	27.7	43.5	20.6	15.8
4.	481.69	BB	35.3	37.9	18.3	28.9	5.0	6.0	35.7	38.3	46.0	10.3	7.7
5.	550.50	BB	32.5	33.2	19.3	29.1	5.4	6.0	34.1	34.8	46.0	11.9	11.2
6.	825.74	BB	33.4	32.5	21.6	28.8	6.7	6.1	39.0	38.1	46.0	7.0	7.9
7.	842.75	BB	29.0	29.5	21.7	28.9	6.8	6.1	34.7	35.2	46.0	11.3	10.8

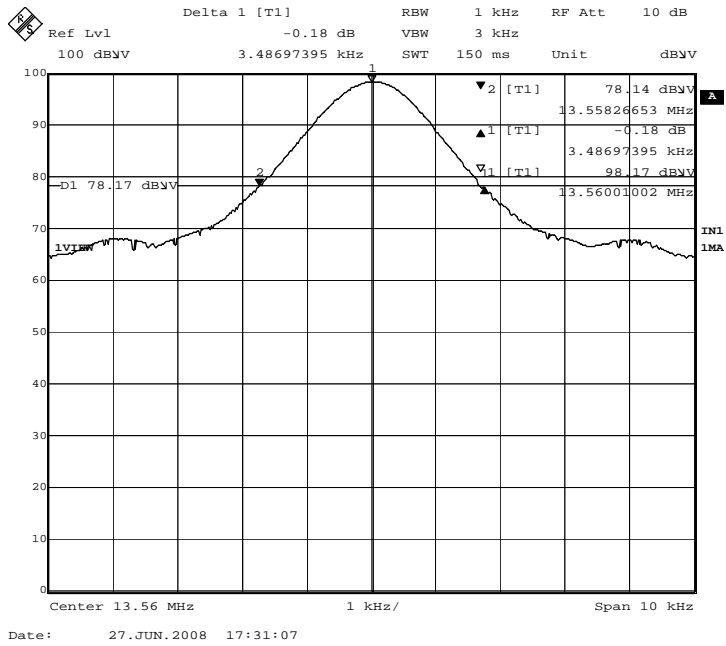
CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ ANTENNA : KBA-03 (BBA9106) 30-299.99MHz / KLA-03 (USLP9143) 300-1000MHz
 ■ CABLE : KCC-30/31/32/34 ■ PREAMP : KAF-05 (8447D) ■ EMI RECEIVER : KTR-01 (ES140)

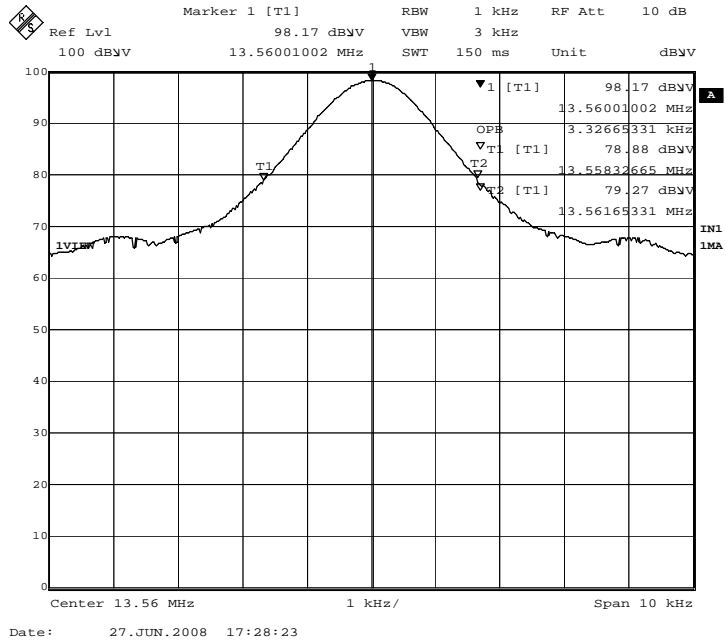
Bandwidth: FCC 15.215(c)

COMPANY	: RICOH COMPANY, LTD.	UL Japan. Inc. Yamakita No4 Shield room
Equipment	: Full-collor MFP	REPORT No. : 28HE0080-YK-01-A
MODEL NUMBER	: Aficio MP C2550	REGULATION : FCC Part15SubpartC 215(c)
SERIAL NUMBER	: V2401000028	DATE : 2008/06/27
POWER	: DC5V	TEMP./HUMI : 26°C/62%
		TEST MODE : Transmitting
		ENGINEER : Tatsuya Arai

20dB Bandwidth: 3.487kHz



OBW(99%): 3.327kHz



Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.
YAMAKITA No4 Shield room

Company : RICOH COMPANY, LTD. Report No. : 28HE0080-YK-01-A
Equipment : Full-collor MFP Regulation : FCC Part15 SupartC 15.225 (e)
Model : Aficio MP C2550
Sample No. : V2401000028 Date : 2008/6/27
Power : DC5V Temperature : 26deg.C
Mode : Transmitting (13.56MHz) Humidity : 61%

ENGINEER : Tatsuya Arai

Temperature Variation: -20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559906	-0.000094	-0.00069	0.01
after 2minutes	13.56	13.559916	-0.000084	-0.00062	0.01
after 5minutes	13.56	13.559916	-0.000084	-0.00062	0.01
after 10minutes	13.56	13.559916	-0.000084	-0.00062	0.01

Temperature Variation: -10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559989	-0.000011	-0.00008	0.01
after 2minutes	13.56	13.559994	-0.000006	-0.00004	0.01
after 5minutes	13.56	13.559994	-0.000006	-0.00004	0.01
after 10minutes	13.56	13.559994	-0.000006	-0.00004	0.01

Temperature Variation: 0deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560031	0.000031	0.00023	0.01
after 2minutes	13.56	13.560032	0.000032	0.00024	0.01
after 5minutes	13.56	13.560032	0.000032	0.00024	0.01
after 10minutes	13.56	13.560032	0.000032	0.00024	0.01

Temperature Variation: 10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560041	0.000041	0.00030	0.01
after 2minutes	13.56	13.560042	0.000042	0.00031	0.01
after 5minutes	13.56	13.560041	0.000041	0.00030	0.01
after 10minutes	13.56	13.560041	0.000041	0.00030	0.01

Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.
YAMAKITA No4 Shield room

Company : RICOH COMPANY, LTD. Report No. : 28HE0080-YK-01-A
Equipment : Full-collor MFP Regulation : FCC Part15 SupartC 15.225 (e)
Model : Aficio MP C2550
Sample No. : V2401000028 Date : 2008/6/27
Power : DC5V Temperature : 26deg.C
Mode : Transmitting (13.56MHz) Humidity : 61%

ENGINEER : Tatsuya Arai

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560032	0.000032	0.00024	0.01
after 2minutes	13.56	13.560031	0.000031	0.00023	0.01
after 5minutes	13.56	13.56003	0.000030	0.00022	0.01
after 10minutes	13.56	13.56003	0.000030	0.00022	0.01

Temperature Variation: 30deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560009	0.000009	0.00007	0.01
after 2minutes	13.56	13.560008	0.000008	0.00006	0.01
after 5minutes	13.56	13.560007	0.000007	0.00005	0.01
after 10minutes	13.56	13.560007	0.000007	0.00005	0.01

Temperature Variation: 40deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559988	-0.000012	-0.00009	0.01
after 2minutes	13.56	13.559986	-0.000014	-0.00010	0.01
after 5minutes	13.56	13.559986	-0.000014	-0.00010	0.01
after 10minutes	13.56	13.559985	-0.000015	-0.00011	0.01

Temperature Variation: 50deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559972	-0.000028	-0.00021	0.01
after 2minutes	13.56	13.559971	-0.000029	-0.00021	0.01
after 5minutes	13.56	13.559971	-0.000029	-0.00021	0.01
after 10minutes	13.56	13.559971	-0.000029	-0.00021	0.01

Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.
YAMAKITA No.4 Shield room

Company : RICOH COMPANY, LTD. Report No. : 28HE0080-YK-01-A
Equipment : Full-collor MFP Regulation : FCC Part15 SupartC 15.225 (e)
Model : Aficio MP C2550
Sample No. : V2401000028 Date : 2008/6/27
Power : DC5V Temperature : 26deg.C
Mode : Transmitting (13.56MHz) Humidity : 61%

ENGINEER : Tatsuya Arai

Input Voltage:DC4.25V (85%)

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560031	0.000031	0.00023	0.01
after 2minutes	13.56	13.560031	0.000031	0.00023	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

Input Voltage:DC5.75V(115%)

Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.560030	0.000030	0.00022	0.01
after 2minutes	13.56	13.560029	0.000029	0.00021	0.01
after 5minutes	13.56	13.560029	0.000029	0.00021	0.01
after 10minutes	13.56	13.560029	0.000029	0.00021	0.01

APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
YA-CE	Conducted emission(software)	UL Japan	CE(Ver.1.6)	CE	-
KCC-33/34/KRM-03	Coaxial Cable/RF Relay Matrix	Fujikura/Suhner/TSJ	5D-2W/S04272B/RFM-E421	CE	2007/11/01 * 12
KLS-03	LISN(AMN)	Schwarzbeck	NNLK8129	CE	2008/05/30 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	CE/RE	2006/07/10 * 24
APSPA04	Spectrum Analyzer	Advantest	R3265	CE/RE	2007/07/03 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	CE/RE/BW	2008/04/18 * 12
KJM-07	Measure	KOMELON	KMC-36	CE/RE	-
YA-RE	Radiated emission(software)	UL Japan	RE(Ver.1.5)	RE	-
KAEC-01	Anechoic Chamber	JSE	Semi 3m	RE	2007/08/26 * 12
KAF-05	Pre Amplifier	Agilent	8447D	RE	2008/04/08 * 12
KAT6-01	Attenuator	INMET	18N-6dB	RE	2008/03/17 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/12/27 * 12
KCC-30/31/32/34/KRM-03	Coaxial Cable/RF Relay Matrix	Fujikura/Suhner/TSJ	5D-2W/S04272B/RFM-E421	RE	2008/05/12 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2007/12/27 * 12
KFC-01	Microwave Counter	Advantest	R5373	FT	2008/04/23 * 12
KCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-1KT	FT	2007/12/26 * 12
KSCA-01	Search coil	TSJ	SC01	FT/BW	Pre Check
KCC-A3	Coaxial Cable	Fujikura	5D-2W	FT/BW	2008/05/29 * 12

The expiration date of the calibration is the end of the expired month .

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

1.model difference specification

Model (RICOH)	Print speed/minutes	Operation Panel Unit type	HDD
Aficio MP C2030	20	4-line LCD panel	No
Aficio MP C2050	20	8.5inch color touch panel	Yes
Aficio MP C2550	25	8.5inch color touch panel	Yes

The difference is printing speed, operation panel unit type, and HDD as above.

Aficio MP C2030 is HDD-less model.

Aficio MP C2550 is chosen as a representative for the test since the model has the highest print speed.

2.model name by brand

Model (RICOH)	Brand name	OEM model
Aficio MP C2030	Lanier	LD520CL
	Savin	C9020L
	Gestetner	MP C2030
Aficio MP C2050	Lanier	LD520C
	Savin	C9020
	Gestetner	MP C2050
Aficio MP C2550	Lanier	LD525C
	Savin	C9025
	Gestetner	MP C2550