

# DATA OF CONDUCTION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 28HE0081-YK-01-D

Applicant : Ricoh Company, Ltd.  
 Kind of Equipment : Full-collor MFP  
 Model No. : Aficio MP C5000  
 Serial No. : 3B51-001011  
 Power : AC120V/60Hz  
 Mode : Transmitting (13.56MHz)  
 Remarks :  
 Date : 5/7/2008  
 Phase : Single Phase  
 Temperature : 20 °C  
 Humidity : 58 %  
 Regulation : FCC Part15C § 15.207. (CISPR Pub. 22 )

Engineer : Tatsuya Arai

No.	FREQ. [MHz]	READING(N)		READING(L1)		LISN FACTOR	CABLE LOSS	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.	0.1953	45.1	37.5	43.5	36.1	0.0	0.1	0.0	45.2	37.6	63.8	53.8	18.6	16.2
2.	0.2939	24.5	-	25.4	-	0.0	0.1	0.0	25.5	-	60.4	50.4	34.9	-
3.	0.6871	22.2	-	22.9	-	0.0	0.1	0.0	23.0	-	56.0	46.0	33.0	-
4.	1.0793	22.4	-	22.5	-	0.1	0.1	0.0	22.7	-	56.0	46.0	33.3	-
5.	1.9630	21.3	-	21.5	-	0.1	0.2	0.0	21.8	-	56.0	46.0	34.2	-
6.	3.6337	23.0	-	21.9	-	0.1	0.2	0.0	23.3	-	56.0	46.0	32.7	-
7.	9.5156	31.2	-	30.4	-	0.3	0.5	0.0	32.0	-	60.0	50.0	28.0	-
8.	13.5600	22.1	-	24.6	-	0.5	0.6	0.0	25.7	-	60.0	50.0	34.3	-
9.	27.1200	10.9	-	10.4	-	1.0	0.8	0.0	12.7	-	60.0	50.0	47.3	-

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

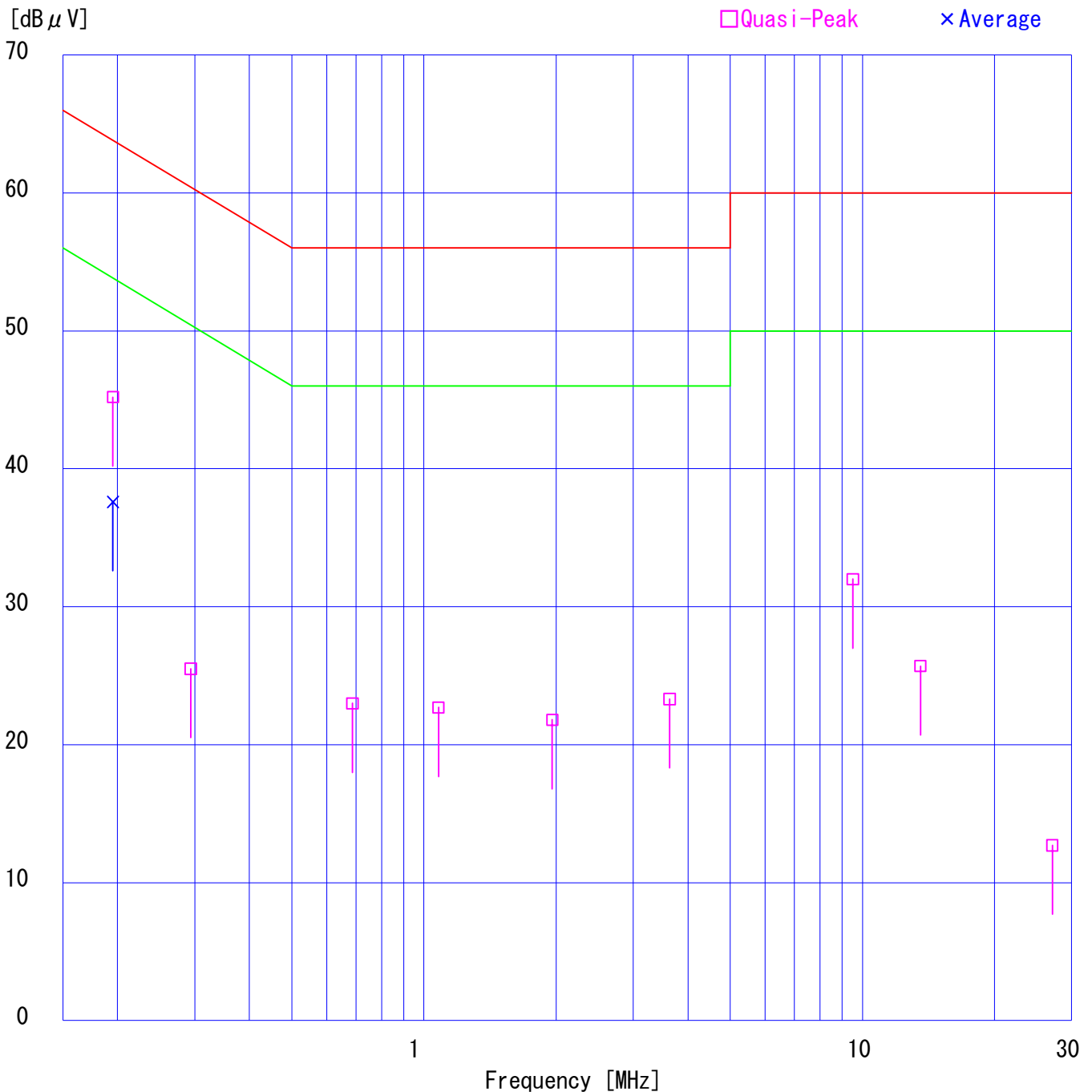
■ LISN: KLS-03 (NNLK8129) ■ COAXIAL CABLE: KCC-33/34  
 ■ EMI RECEIVER: KTR-03 (ESHS10)

# DATA OF CONDUCTION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 28HE0081-YK-01-D

Applicant : Ricoh Company, Ltd.  
Kind of Equipment : Full-collor MFP  
Model No. : Aficio MP C5000  
Serial No. : 3B51-001011  
Power : AC120V/60Hz  
Mode : Transmitting (13.56MHz)  
Remarks :  
Date : 5/7/2008  
Phase : Single Phase  
Temperature : 20 °C  
Humidity : 58 %  
Regulation : FCC Part15C § 15. 207. (CISPR Pub. 22 )

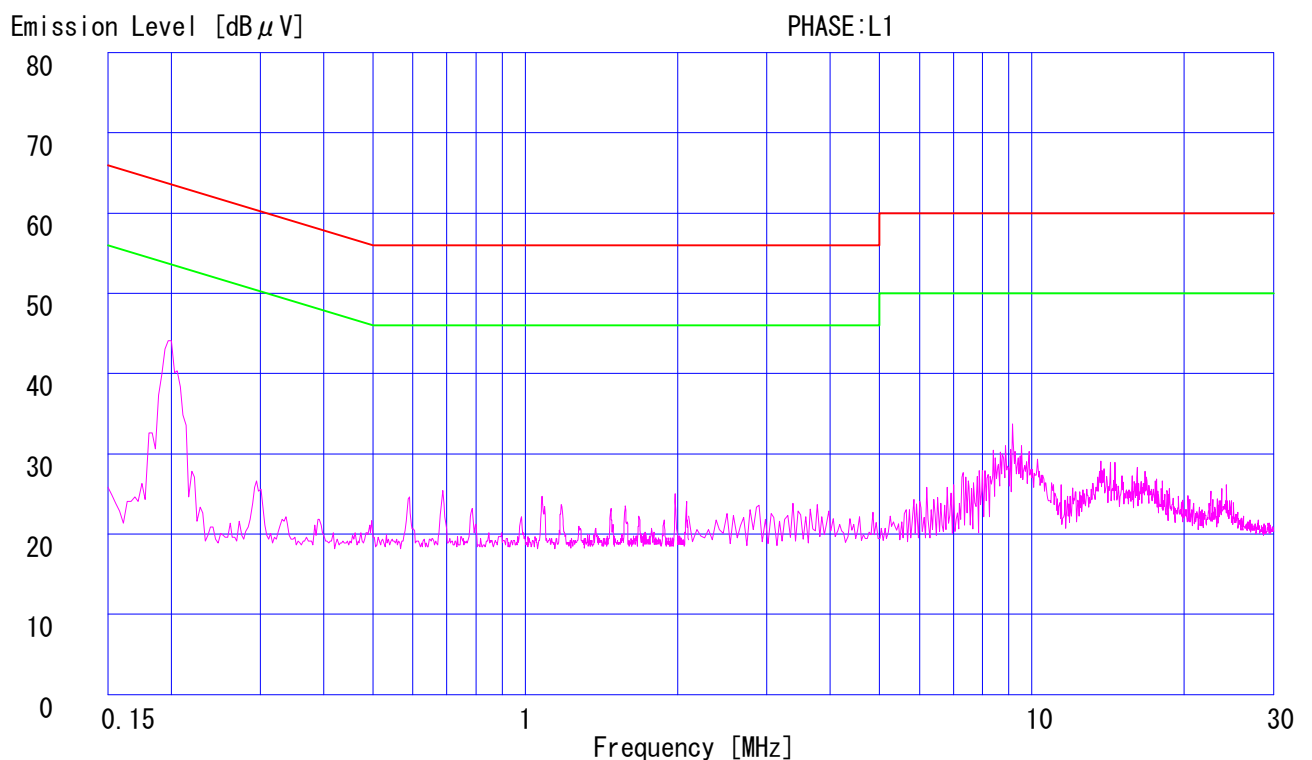
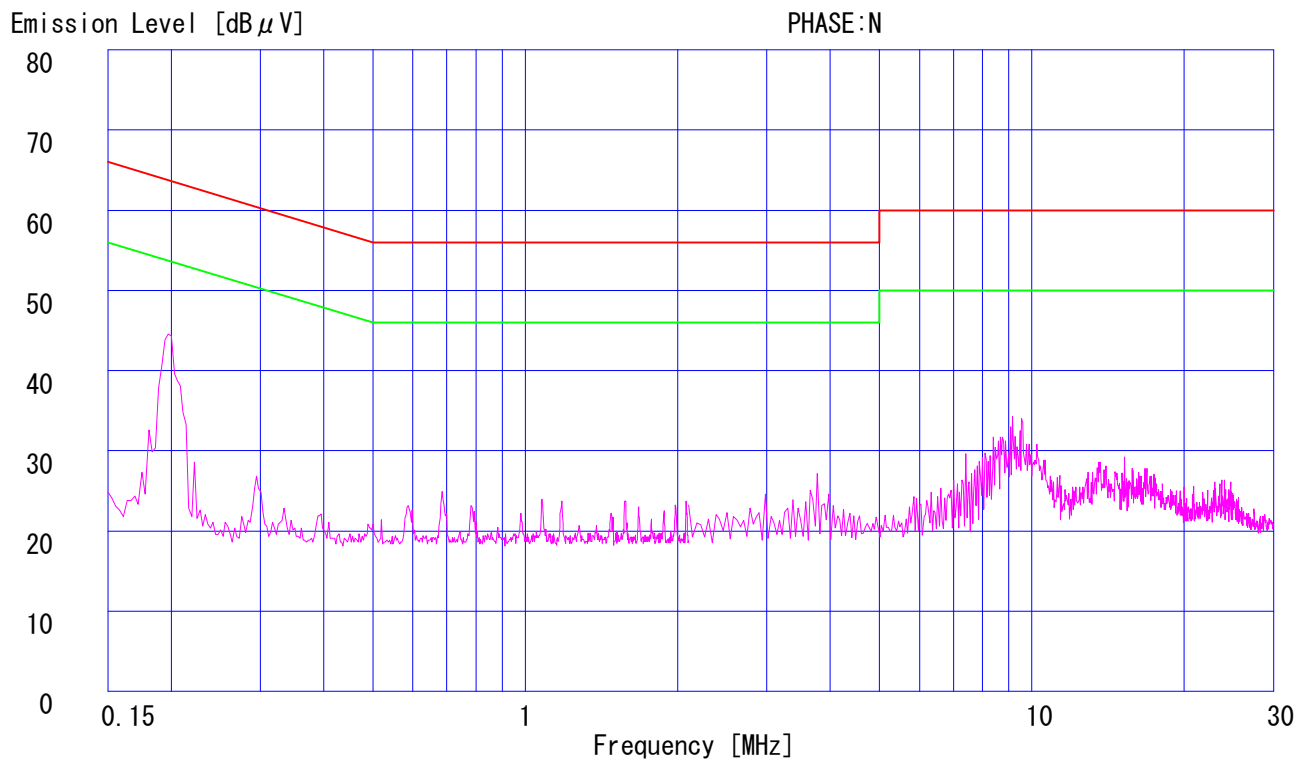
Engineer : Tatsuya Arai



# DATA OF CONDUCTION TEST CHART

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 28HE0081-YK-01-D

Applicant : Ricoh Company, Ltd.  
Kind of Equipment : Full-collar MFP  
Model No. : Aficio MP C5000  
Serial No. : 3B51-001011  
Power : AC120V/60Hz  
Mode : Transmitting (13.56MHz)  
Remarks :  
Date : 5/7/2008  
Phase : Single Phase  
Temperature : 20 °C  
Humidity : 58 %  
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. : 28HE0081-YK-01-D
Equipment : Full-collor MFP	Regulation : FCC Part15 SupartC 15.225
Model : Aficio MP C5000	Test Distance : 3m
Sample No. : 3B51-001011	Date : 2008/05/07
Power : AC120V/60Hz	Temperature : 20deg.C
Mode : Transmitting (13.56MHz)	Humidity : 58%

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	43.1	38.3	19.2	6.0	0.6	28.4	40.5	35.7	124.0	83.5	88.3

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	27.0	26.8	19.2	6.0	0.6	28.4	24.4	24.2	69.5	45.10	45.30
2	13.410	27.6	27.1	19.2	6.0	0.6	28.4	25.0	24.5	80.5	55.50	56.00
3	13.553	32.5	29.6	19.2	6.0	0.6	28.4	29.9	27.0	90.5	60.60	63.50
4	13.567	30.4	28.3	19.2	6.0	0.6	28.4	27.8	25.7	90.5	62.70	64.80
5	13.710	28.3	27.6	19.2	6.0	0.6	28.4	25.7	25.0	80.5	54.80	55.50
6	14.010	27.7	27.3	19.2	6.0	0.6	28.4	25.1	24.7	69.5	44.40	44.80

#### 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 : 50.5dBuV/m + 40log30m/3m = 90.5dBuV/m (FCC15.225(b))
- 13.110MHz to 14.010MHz and 13.710MHz to 14.010MHz : 40.5dBuV/m + 40log30m/3m = 80.5dBuV/m (15.225(c))
- Below 13.110MHz and Above 14.010MHz : 29.5dBuV/m + 40log30m/3m = 69.5dBuV/m (FCC15.225(d)and FCC15.209)

# DATA OF RADIATION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 28HE0081-YK-01-D

Applicant : Ricoh Company, Ltd.  
Kind of Equipment : Full-collor MFP  
Model No. : Aficio MP C5000  
Serial No. : 3B51-001011  
Power : AC120V/60Hz  
Mode : Transmitting (13.56MHz)  
Remarks : -  
Date : 5/7/2008  
Test Distance : 3 m  
Temperature : 20 °C  
Humidity : 58 %  
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		MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]	HOR [dB]	VER [dB]		
1.	1.32	BB	41.4	33.5	19.1	28.4	0.2	6.0	38.3	30.4	65.2	26.9	34.8	
2.	27.12	BB	25.7	25.6	20.4	28.4	0.8	6.0	24.5	24.4	69.5	45.0	45.1	

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

■ ANTENNA: KLP-01 (HFH2-Z2)

■ CABLE: KCC-A2/A3 ■ PREAMP: KAF-05 (8447D) ■ EMI RECEIVER: KTR-04 (ESVS10)

# DATA OF RADIATION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 28HE0081-YK-01-D

Applicant : Ricoh Company, Ltd.  
 Kind of Equipment : Full-collor MFP  
 Model No. : Aficio MP C5000  
 Serial No. : 3B51-001011  
 Power : AC120V/60Hz  
 Mode : Transmitting (13.56MHz)  
 Remarks : -  
 Date : 5/7/2008  
 Test Distance : 3 m  
 Temperature : 20 °C  
 Humidity : 58 %  
 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.	33.10	BB	24.5	33.2	17.4	28.5	0.9	6.0	20.3	29.0	40.0	19.7	11.0
2.	38.08	BB	27.1	35.3	14.8	28.5	1.0	6.0	20.4	28.6	40.0	19.6	11.4
3.	78.64	BB	37.1	41.4	6.4	28.3	1.5	6.0	22.7	27.0	40.0	17.3	13.0
4.	137.63	BB	33.2	37.6	14.0	28.2	2.1	6.0	27.1	31.5	43.5	16.4	12.0
5.	203.40	BB	38.3	34.2	16.9	27.8	2.6	6.0	36.0	31.9	43.5	7.5	11.6
6.	350.03	BB	34.6	31.7	15.9	27.9	3.7	6.0	32.3	29.4	46.0	13.7	16.6
7.	390.02	BB	34.7	28.8	16.9	28.3	3.9	6.0	33.2	27.3	46.0	12.8	18.7
8.	430.04	BB	33.7	25.2	17.6	28.5	4.2	6.0	33.0	24.5	46.0	13.0	21.5
9.	619.30	BB	36.7	30.5	20.1	29.3	5.3	6.0	38.8	32.6	46.0	7.2	13.4
10.	756.95	BB	34.9	30.3	21.0	29.0	5.8	6.1	38.8	34.2	46.0	7.2	11.8

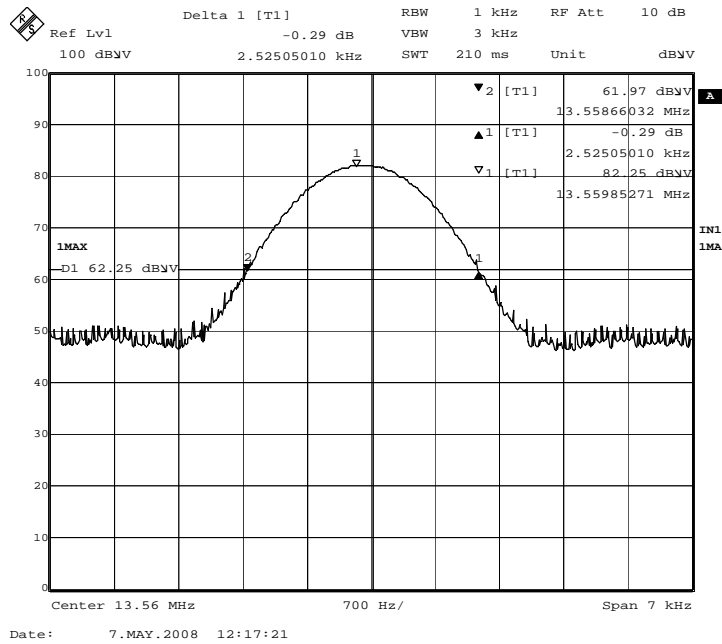
CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz/KLA-03 (USLP9143) 300-1000MHz  
 ■ CABLE: KCC-A2/A3 ■ PREAMP: KAF-05 (8447D) ■ EMI RECEIVER: KTR-04 (ESVS10)

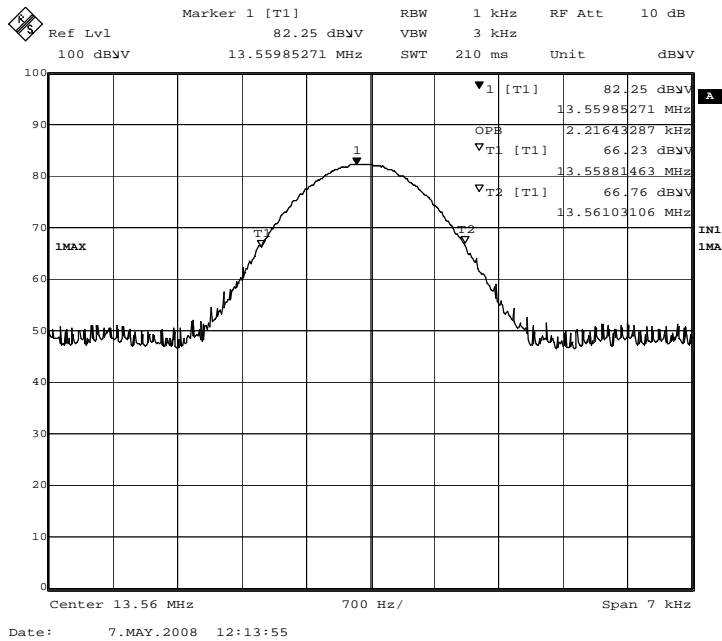
**Bandwidth: FCC 15.215(c)**

<b>COMPANY</b>	: Ricoh Company, Ltd.	<b>UL Japan, Inc. Yamakita No1 Anechoic chamber</b>
<b>Equipment</b>	: Full-collor MFP	<b>REPORT No.</b> : 28HE0081-YK-01-D
<b>MODEL NUMBER</b>	: Aficio MP C5000	<b>REGULATION</b> : FCC Part15SubpartC 215(c)
<b>SERIAL NUMBER</b>	: 3B51-001011	<b>DATE</b> : 2008/05/07
<b>POWER</b>	: DC5V (PC: AC120V/60Hz)	<b>TEMP./HUMI</b> : 20°C/58%
		<b>TEST MODE</b> : Transmitting
		<b>ENGINEER</b> : Tatsuya Arai

**20dB Bandwidth: 2.525kHz**



**OBW(99%): 2.216kHz**



# Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.  
YAMAKITA No4 Shield room

Company : Ricoh Company, Ltd.  
Equipment : Full-collor MFP  
Model : Aficio MP C5000  
Sample No. : 3B51-001011  
Power : DC5V  
Mode : Transmitting (13.56MHz)

Report No. : 28HE0081-YK-01-D  
Regulation : FCC Part15 SupartC 15.225 (e)

Date : 2008/5/8  
Temperature : 22deg.C  
Humidity : 35%

ENGINEER : Makoto Hosaka

## Temperature Variation: -20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559915	-0.000085	-0.00063	0.01
after 2minutes	13.56	13.559851	-0.000149	-0.00110	0.01
after 5minutes	13.56	13.559841	-0.000159	-0.00117	0.01
after 10minutes	13.56	13.559843	-0.000157	-0.00116	0.01

## Temperature Variation: -10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559943	-0.000057	-0.00042	0.01
after 2minutes	13.56	13.559940	-0.000060	-0.00044	0.01
after 5minutes	13.56	13.559938	-0.000062	-0.00046	0.01
after 10minutes	13.56	13.559938	-0.000062	-0.00046	0.01

## Temperature Variation: 0deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559977	-0.000023	-0.00017	0.01
after 2minutes	13.56	13.559976	-0.000024	-0.00018	0.01
after 5minutes	13.56	13.559975	-0.000025	-0.00018	0.01
after 10minutes	13.56	13.559975	-0.000025	-0.00018	0.01

## Temperature Variation: 10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559982	-0.000018	-0.00013	0.01
after 2minutes	13.56	13.559982	-0.000018	-0.00013	0.01
after 5minutes	13.56	13.559981	-0.000019	-0.00014	0.01
after 10minutes	13.56	13.559980	-0.000020	-0.00015	0.01



# Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.  
YAMAKITA No4 Shield room

Company : Ricoh Company, Ltd.  
Equipment : Full-collor MFP  
Model : Aficio MP C5000  
Sample No. : 3B51-001011  
Power : DC5V  
Mode : Transmitting (13.56MHz)

Report No. : 28HE0081-YK-01-D  
Regulation : FCC Part15 SupartC 15.225 (e)

Date : 2008/5/8  
Temperature : 22deg.C  
Humidity : 35%

ENGINEER : Makoto Hosaka

## Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559967	-0.000033	-0.00024	0.01
after 2minutes	13.56	13.559965	-0.000035	-0.00026	0.01
after 5minutes	13.56	13.559964	-0.000036	-0.00027	0.01
after 10minutes	13.56	13.559963	-0.000037	-0.00027	0.01

## Temperature Variation: 30deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559943	-0.000057	-0.00042	0.01
after 2minutes	13.56	13.559939	-0.000061	-0.00045	0.01
after 5minutes	13.56	13.559937	-0.000063	-0.00046	0.01
after 10minutes	13.56	13.559936	-0.000064	-0.00047	0.01

## Temperature Variation: 40deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559911	-0.000089	-0.00066	0.01
after 2minutes	13.56	13.559908	-0.000092	-0.00068	0.01
after 5minutes	13.56	13.559906	-0.000094	-0.00069	0.01
after 10minutes	13.56	13.559905	-0.000095	-0.00070	0.01

## Temperature Variation: 50deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559885	-0.000115	-0.00085	0.01
after 2minutes	13.56	13.559885	-0.000115	-0.00085	0.01
after 5minutes	13.56	13.559883	-0.000117	-0.00086	0.01
after 10minutes	13.56	13.559883	-0.000117	-0.00086	0.01

## Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.  
YAMAKITA No.4 Shield room

Company : Ricoh Company, Ltd.  
Equipment : Full-collor MFP  
Model : Aficio MP C5000  
Sample No. : 3B51-001011  
Power : DC5V  
Mode : Transmitting (13.56MHz)

Report No. : 28HE0081-YK-01-D  
Regulation : FCC Part15 SupartC 15.225 (e)

Date : 2008/5/8  
Temperature : 22deg.C  
Humidity : 35%

ENGINEER : Makoto Hosaka

**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	13.559940	-0.000060	-0.00044	0.01
after 2minutes	13.56	13.559942	-0.000058	-0.00043	0.01
after 5minutes	13.56	13.559944	-0.000056	-0.00041	0.01
after 10minutes	13.56	13.559944	-0.000056	-0.00041	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	13.559940	-0.000060	-0.00044	0.01
after 2minutes	13.56	13.559942	-0.000058	-0.00043	0.01
after 5minutes	13.56	13.559943	-0.000057	-0.00042	0.01
after 10minutes	13.56	13.559943	-0.000057	-0.00042	0.01

### APPENDIX 3 Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
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-A2/A3	Coaxial Cable	Fujikura	5D-2W	RE	2007/05/15 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2007/12/27 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	RE	2006/07/10 * 24
KSA-04	Spectrum Analyzer	Advantest	R3271A	RE, CE	2007/09/25 * 12
KTR-03	Test Receiver	Rohde & Schwarz	ESHS10	RE, CE	2008/02/18 * 12
KTR-04	Test Receiver	Rohde & Schwarz	ESVS10	RE	2007/10/30 * 12
KJM-07	Measure	KOMELON	KMC-36	RE, CE	-
KLP-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2007/06/11 * 12
KCC-B1	Coaxial Cable/Pulse Limitter/RF Relay Matrix	Fujikura/Suhner/PMM/TSJ	5D-2W/S04272B/12D-SFA/S04272B/PL01/-	FT, BW	2008/05/15 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	BW	2008/04/18 * 12
KFC-01	Microwave Counter	Advantest	R5373	FT	2008/04/23 * 12
KOS-07	Humidity Indicator	Custom	CTH-190	FT	2006/10/06 * 24
KCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-1KT	FT	2007/12/26 * 12
KCC-33/34	Coaxial Cable/RF Relay Matrix	Fujikura/Suhner/TSJ	5D-2W/S04272B/RFM-E421	CE	2007/11/01 * 12
KLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE (AE)	2007/08/02 * 12
KLS-03	LISN(AMN)	Schwarzbeck	NNLK8129	CE (EUT)	2007/05/15 * 12
KOS-01	Humidity Indicator	Custom	CTH-190	CE	2006/07/14 * 24

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

\*Some calibrations were performed after the tested dates , however those EMI test equipment have been controlled by means of an unbroken chains of calibrations .

## 1. Model difference specification

Model (RICOH)	Print speed/minutes	Fusing by induction heater
Aficio MP C2800 Aficio MP C2800G	28	No
Aficio MP C3300 Aficio MP C3300G	33	No
Aficio MP C4000 Aficio MP C4000G	40	Yes
Aficio MP C5000 Aficio MP C5000G	50	Yes

The differences are fusing method and printing speed as above.

Aficio MP C5000 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 C2800 Aficio MP C2800G	Lanier	LD528C LD528CG
	Savin	C2828 C2828G
	Gestetner	MP C2800
Aficio MP C3300 Aficio MP C3300G	Lanier	LD533C LD533CG
	Savin	C3333 C3333G
	Gestetner	MP C3300
Aficio MP C4000 Aficio MP C4000G	Lanier	LD540C LD540CG
	Savin	C4040 C4040G
	Gestetner	MP C4000
Aficio MP C5000 Aficio MP C5000G	Lanier	LD550C LD550CG
	Savin	C5050 C5050G
	Gestetner	MP C5000