

DATA OF CONDUCTION TEST

UL Japan, Inc.
YAMAKITA No.1 SHIELD ROOM
Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation : FCC Part15C § 15. 207. (CISPR Pub. 22)
Engineer : Go Ishiwata

No.	FREQ. [MHz]	READING(N)		READING(L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP [dB μ V]	AV	QP [dB μ V]	AV				QP [dB]	AV [dB μ V]	QP [dB μ V]	AV [dB μ V]	QP [dB]	AV [dB]
1.	0.1500	35.1	-	34.0	-	0.1	0.1	0.0	35.3	-	66.0	56.0	30.7	-
2.	0.1730	32.3	-	31.8	-	0.1	0.1	0.0	32.5	-	64.8	54.8	32.3	-
3.	0.2258	27.3	-	24.6	-	0.1	0.1	0.0	27.5	-	62.6	52.6	35.1	-
4.	0.5736	28.8	-	28.6	-	0.2	0.2	0.0	29.2	-	56.0	46.0	26.8	-
5.	1.0089	16.2	-	15.7	-	0.2	0.2	0.0	16.6	-	56.0	46.0	39.4	-
6.	15.4723	18.1	-	17.5	-	0.7	1.5	0.0	20.3	-	60.0	50.0	39.7	-

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

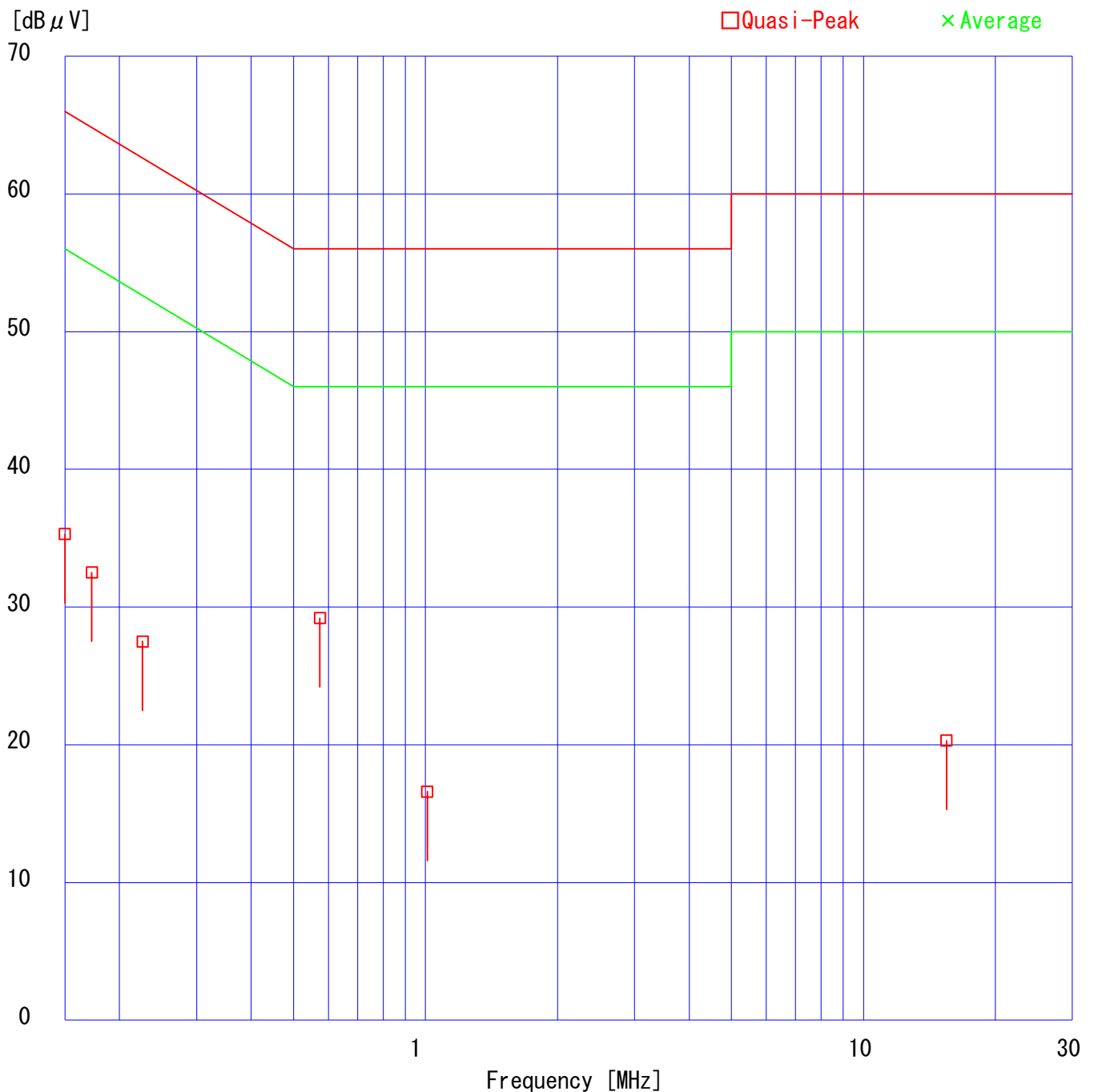
■ LISN: KLS-01 (NSLK8126) ■ COAXIAL KCC-14/15/16/18
■ PULSE LIMITTER: KPL-01 (PL01) ■ EMI RECEIVER: KTR-02 (ESCS30)

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Engineer : Go Ishiwata



DATA OF CONDUCTION TEST CHART

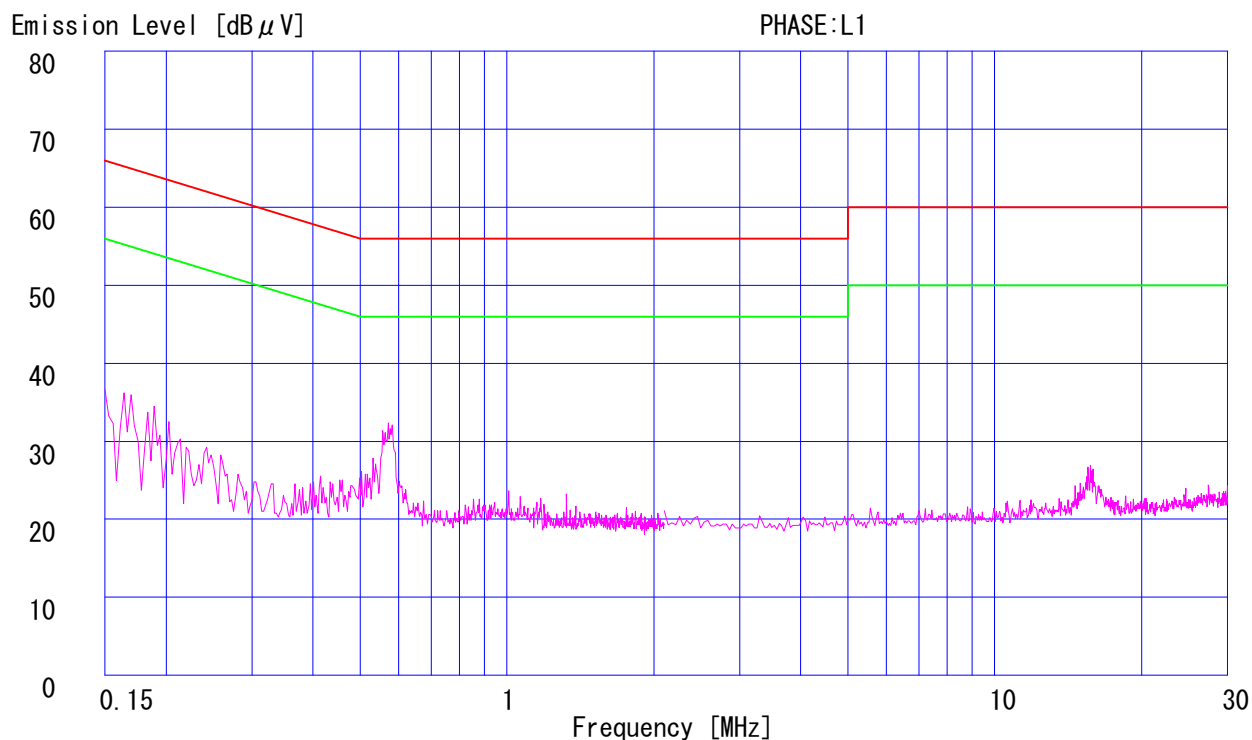
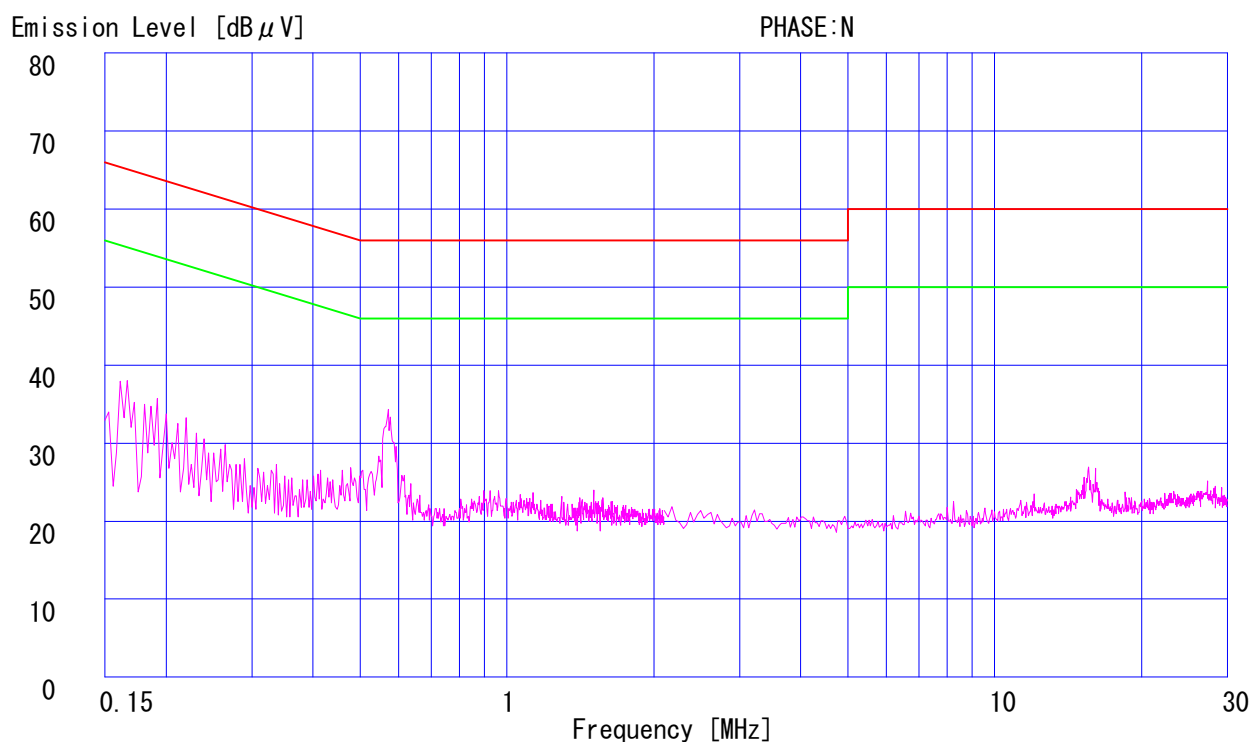
UL Japan, Inc.

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Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : None

Engineer : Go Ishiwata



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UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

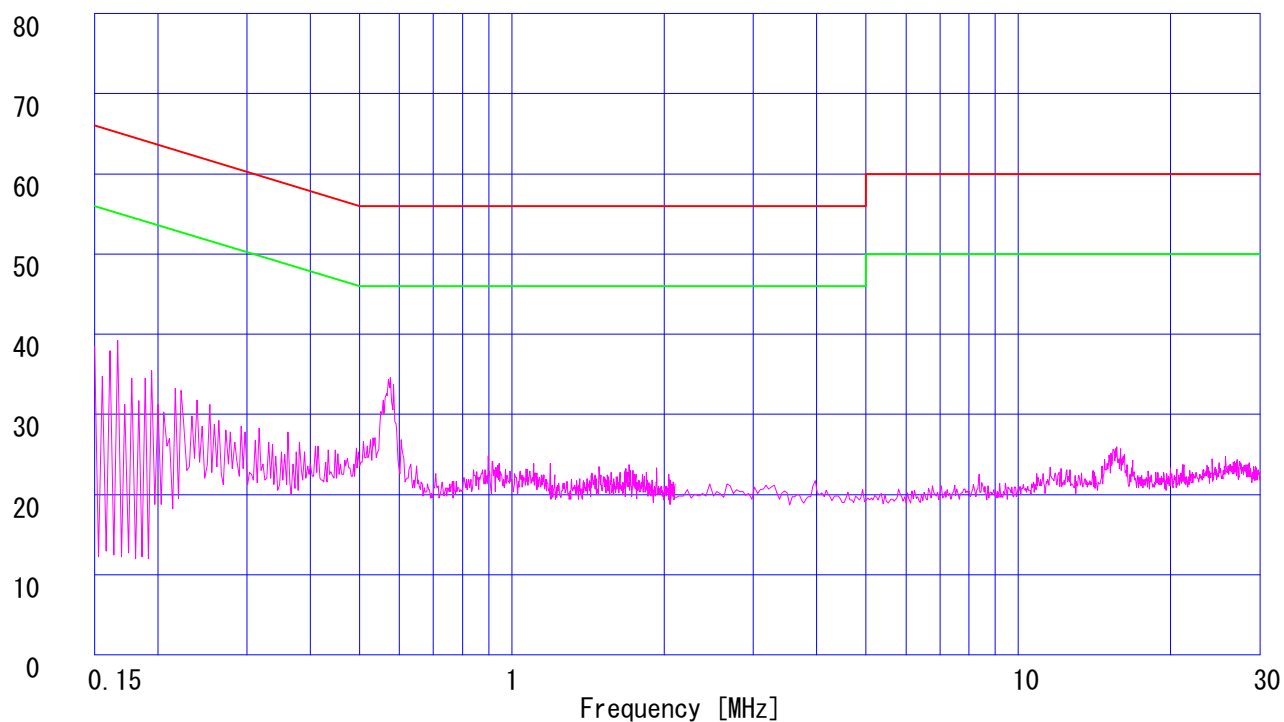
Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2402MHz) DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2 : None

Engineer : Go Ishiwata

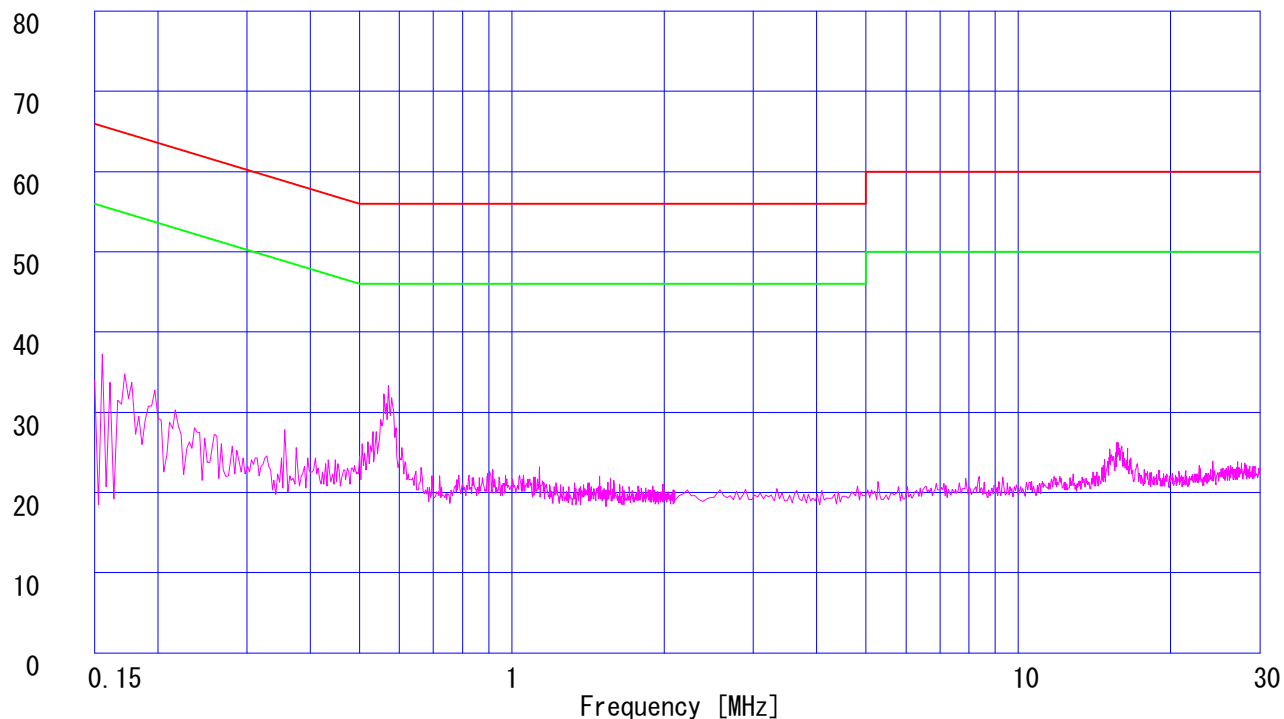
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

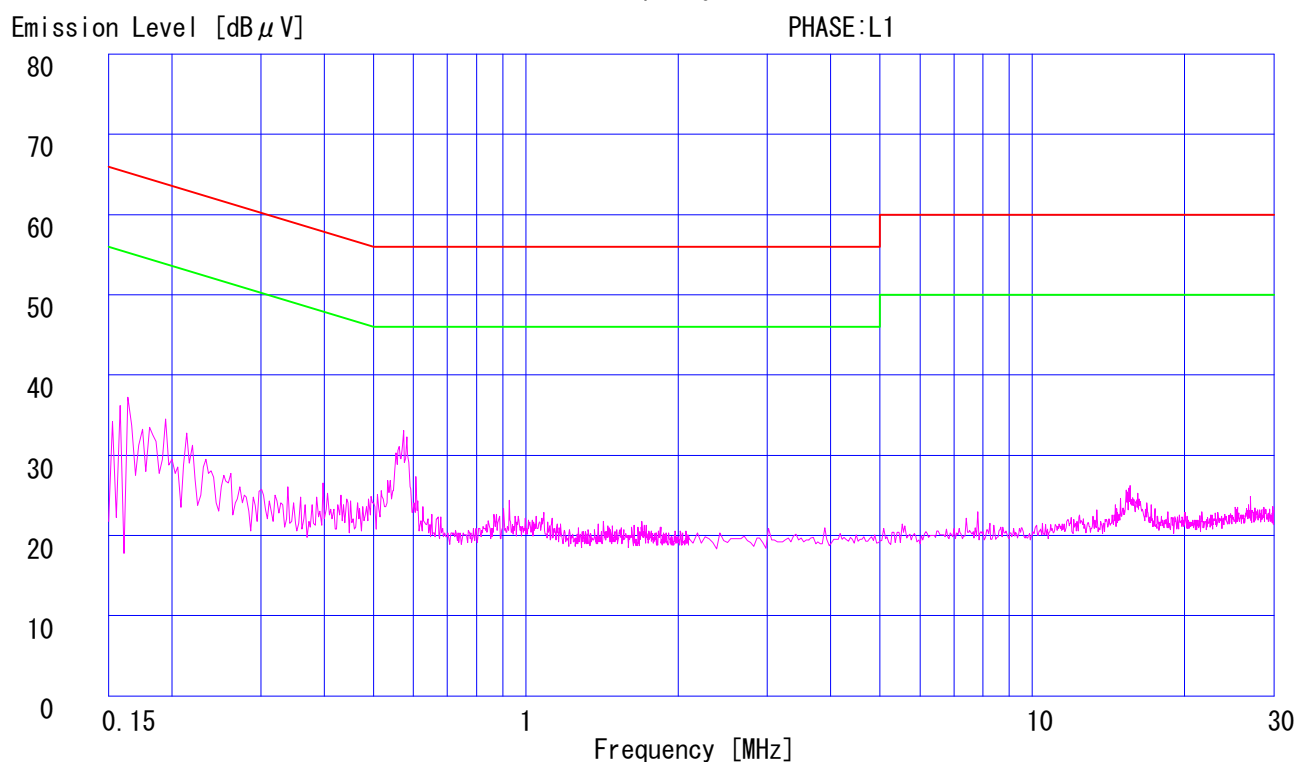
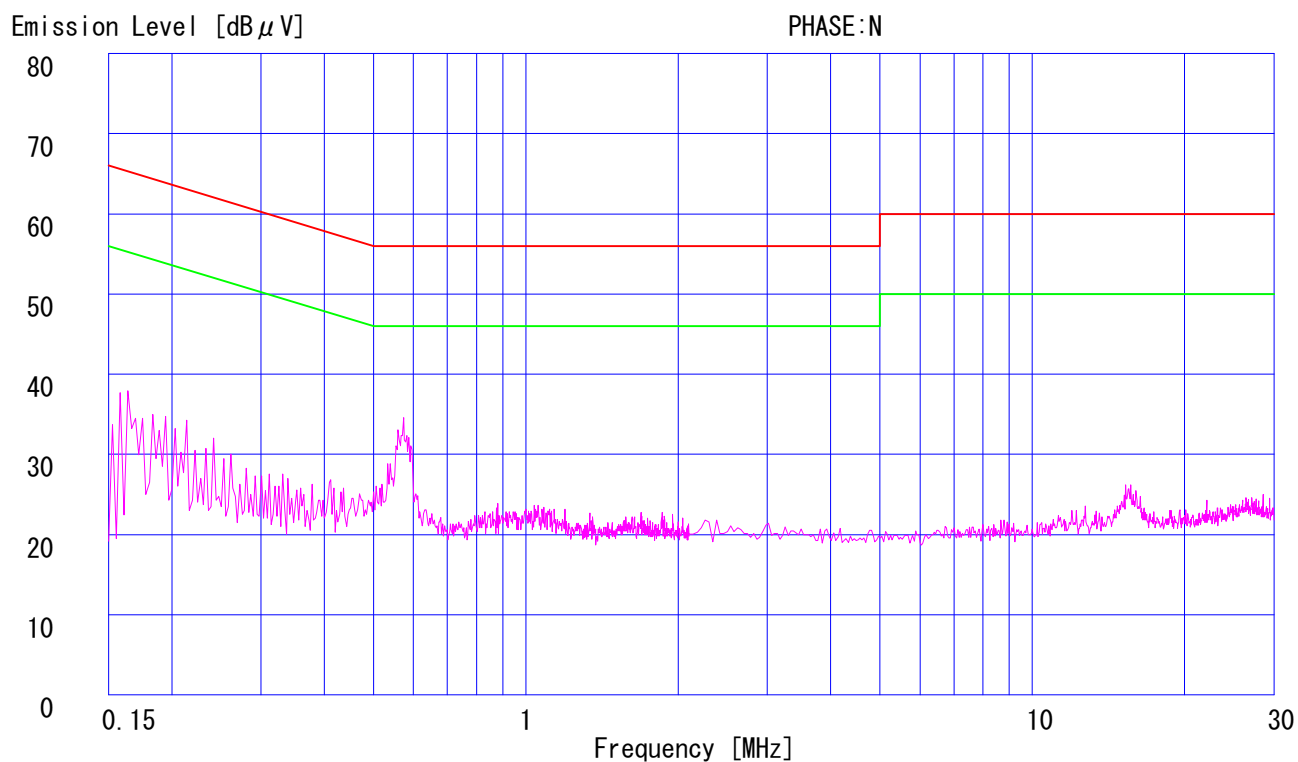
UL Japan, Inc.

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Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2480MHz) DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2 : None

Engineer : Go Ishiwata



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Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) 3DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C Engineer : Go Ishiwata
Humidity : 59 %
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 μ V]	AV	QP [dB μ V]	AV				QP [dB]	AV [dB μ V]	QP [dB μ V]	AV [dB μ V]	QP [dB]	AV [dB]
1.	0.1500	32.9	-	34.3	-	0.1	0.1	0.0	34.5	-	66.0	56.0	31.5	-
2.	0.1748	31.7	-	31.8	-	0.1	0.1	0.0	32.0	-	64.7	54.7	32.7	-
3.	0.1977	29.9	-	29.4	-	0.1	0.1	0.0	30.1	-	63.7	53.7	33.6	-
4.	0.2493	25.8	-	23.7	-	0.1	0.1	0.0	26.0	-	61.8	51.8	35.8	-
5.	0.5858	30.3	-	29.2	-	0.2	0.2	0.0	30.7	-	56.0	46.0	25.3	-
6.	15.8613	17.8	-	17.8	-	0.7	1.5	0.0	20.0	-	60.0	50.0	40.0	-

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

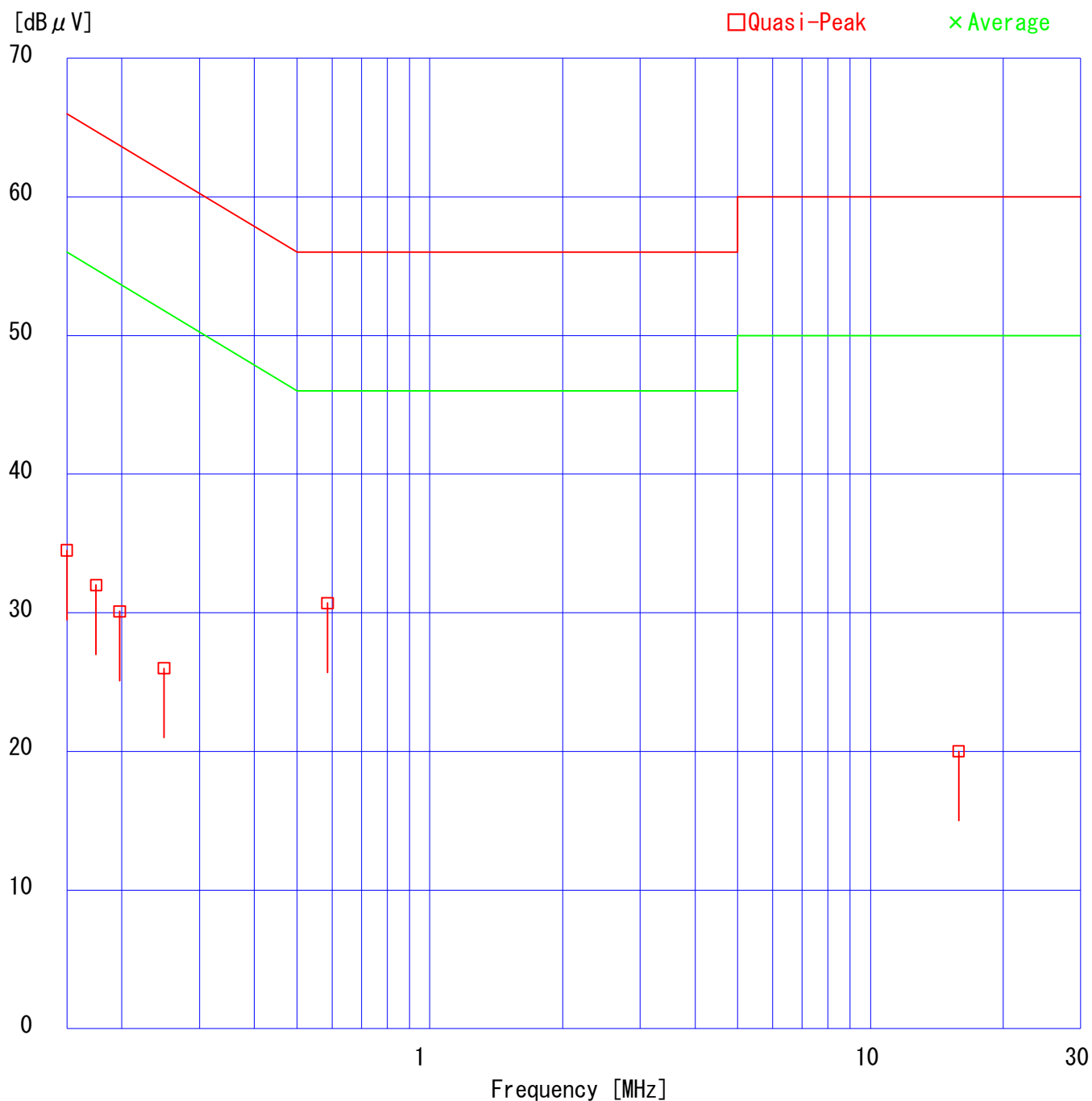
■ LISN: KLS-01 (NSLK8126) ■ COAXIAL KCC-14/15/16/18
■ PULSE LIMITTER: KPL-01 (PL01) ■ EMI RECEIVER: KTR-02 (ESCS30)

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Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) 3DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation : FCC Part15C § 15. 207. (CISPR Pub. 22)

Engineer : Go Ishiwata



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

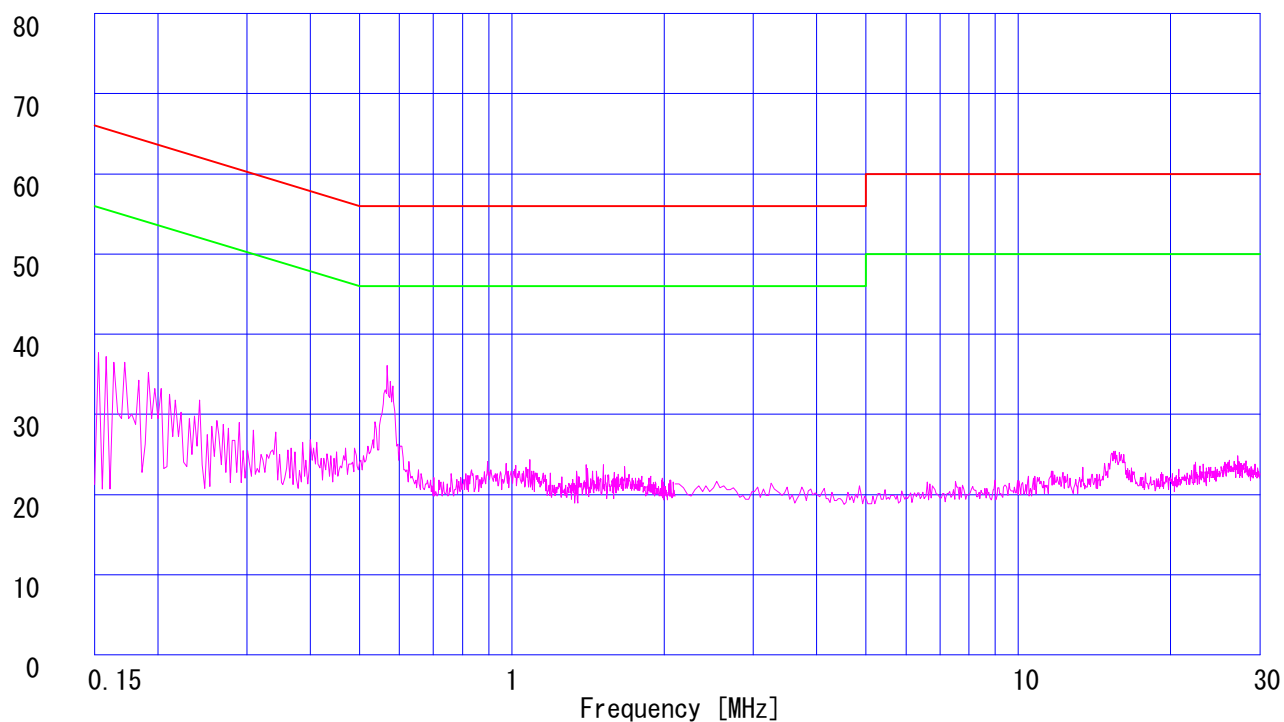
Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) 3DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2 : None

Engineer : Go Ishiwata

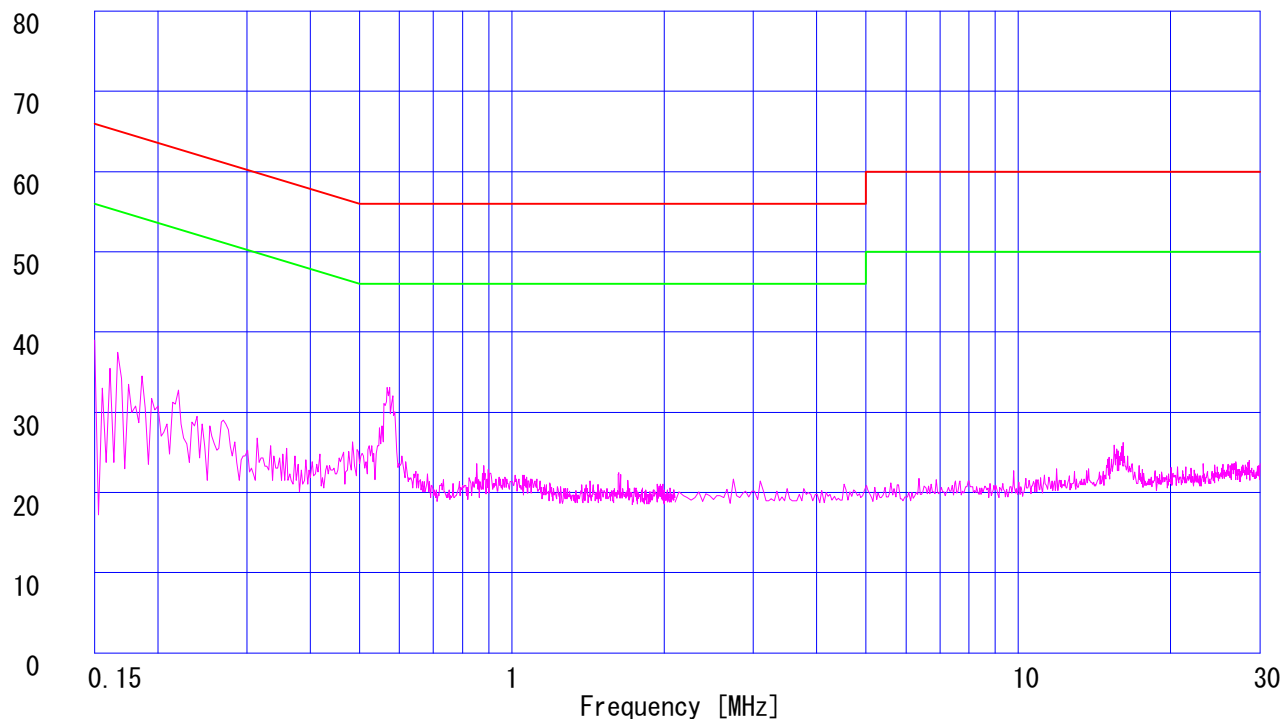
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

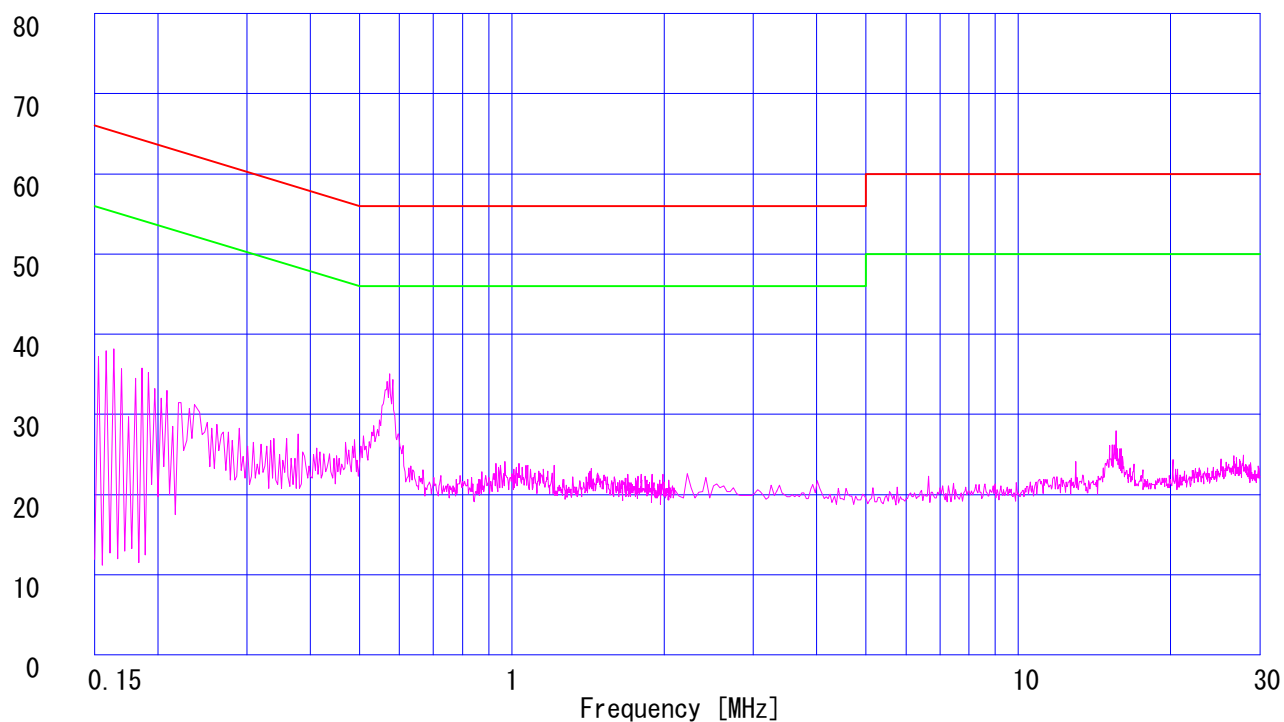
Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2402MHz) 3DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2 : None

Engineer : Go Ishiwata

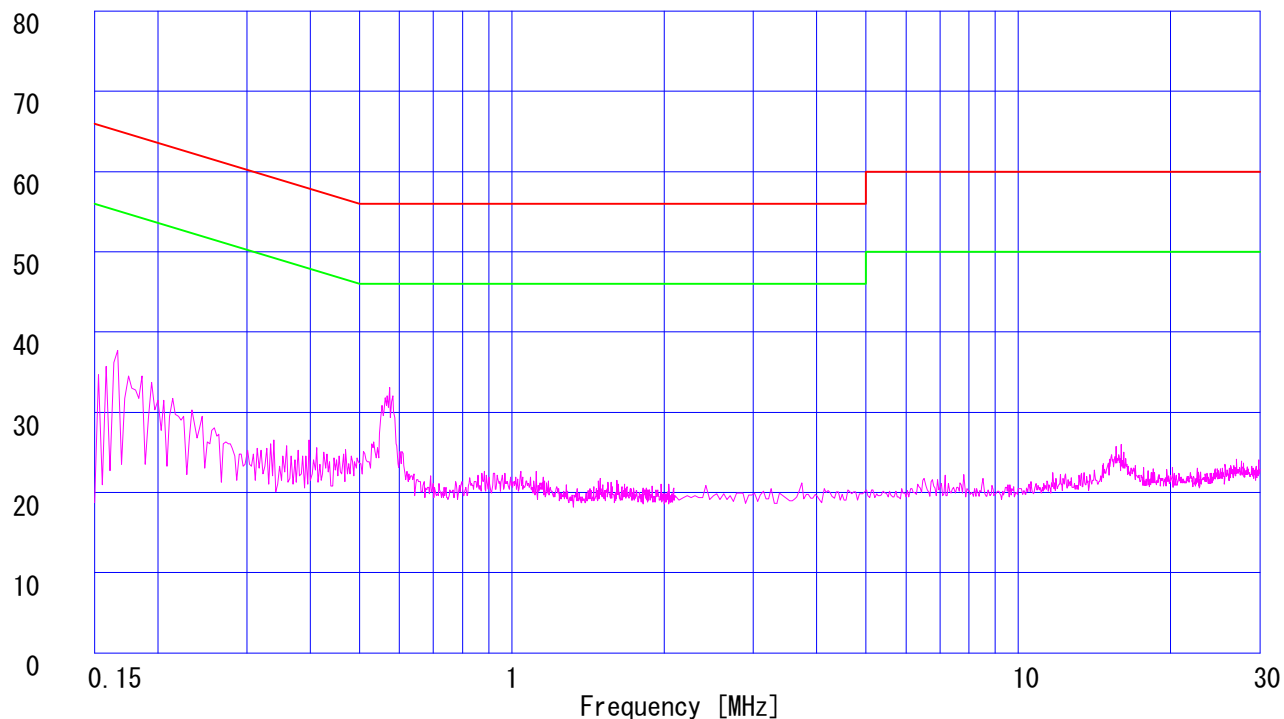
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

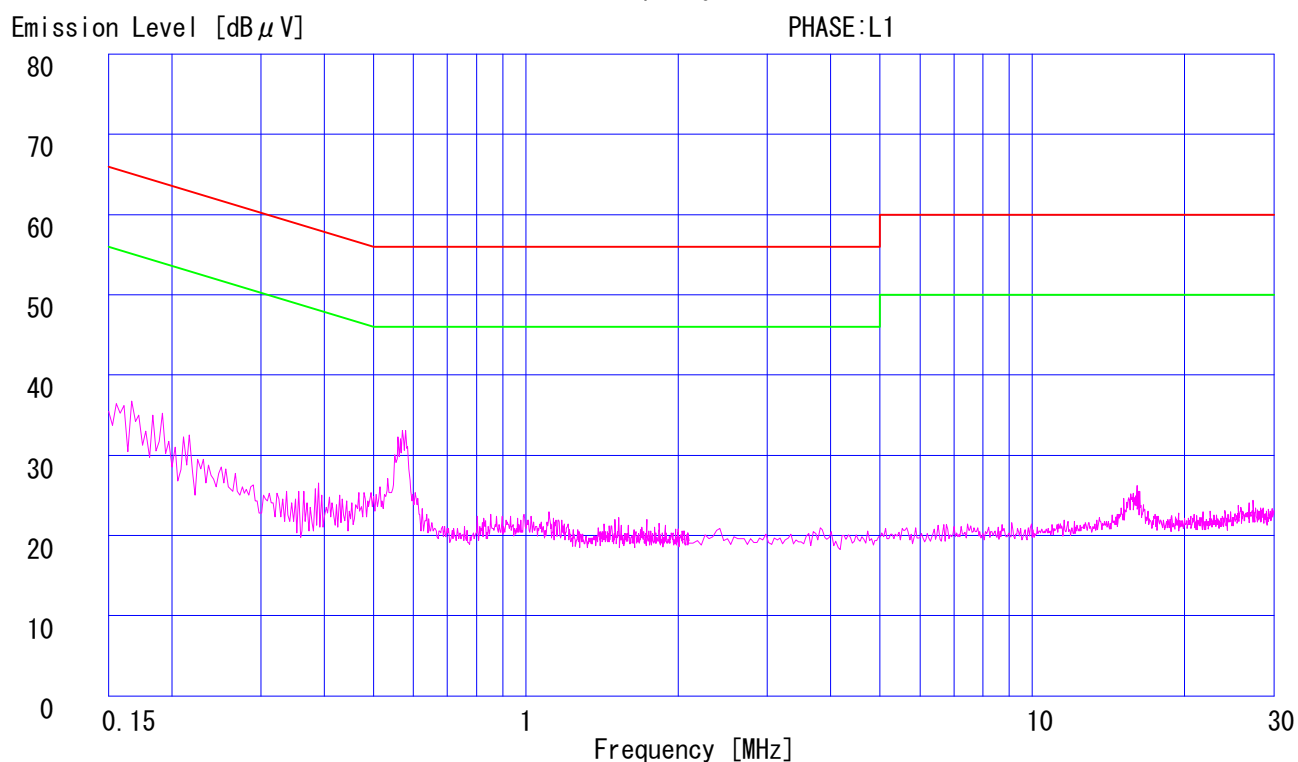
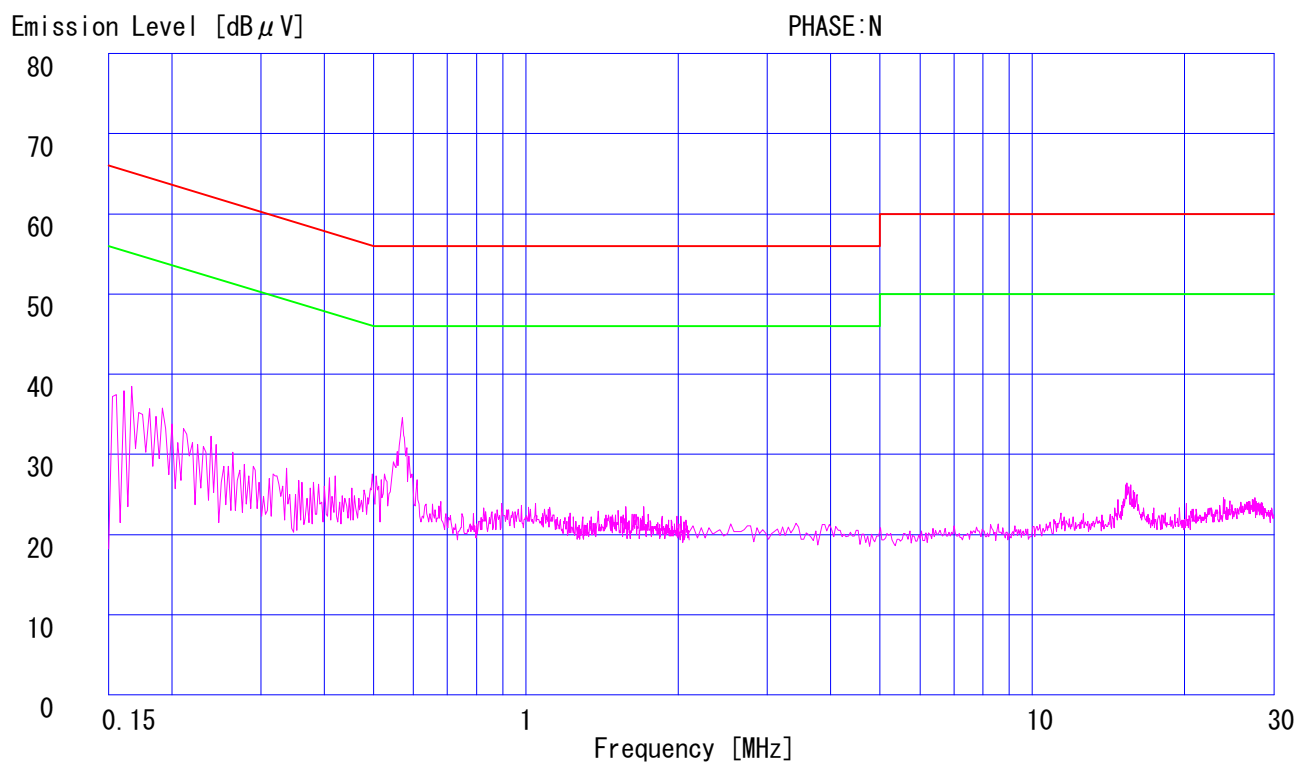
UL Japan, Inc.

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Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2480MHz) 3DH5
Remarks : -
Date : 10/20/2008
Phase : Single Phase
Temperature : 23 °C
Humidity : 59 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub.22)
Regulation 2 : None

Engineer : Go Ishiwata



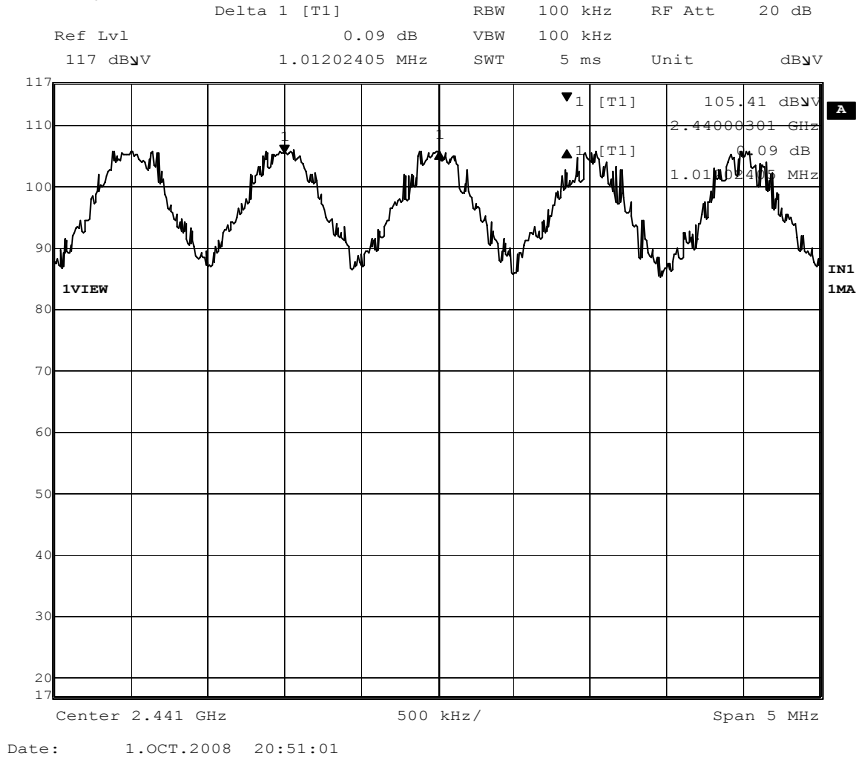
Channel Separation (Regulation: FCC 15.247(a)(1))

UL Japan, Inc. Yamakita EMC lab.
Date:
Temp./Humid.:
Engineer:
Test mode:

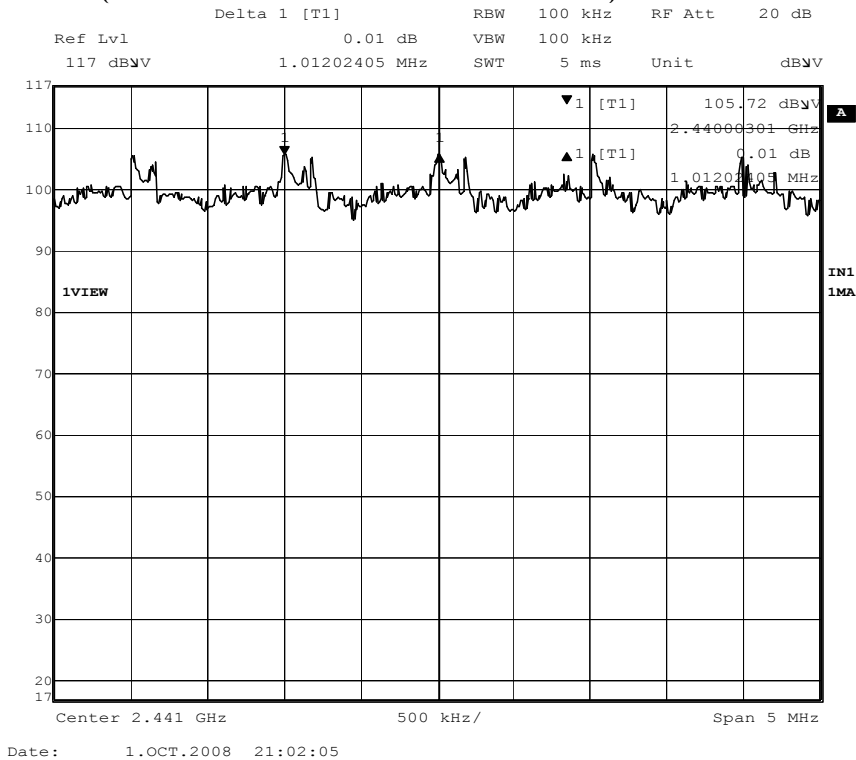
2
2008.10.01
24 deg. C. / 66 %
Makoto Hosaka
Transmitting

Limit: ≥25kHz or 2/3 * 20dB Bandwidth (Power: No greater than 125mW)

1. Hopping, DH5: 1.012MHz (2/3*20dB Bandwidth:2/3*1.088MHz = 725.3kHz)



2. Hopping, 3DH5: 1.012MHz (2/3*20dB Bandwidth:2/3*1.353MHz = 902.0kHz)



20dB Bandwidth (Regulation: FCC 15.247(a)(1))

UL Japan, Inc. Yamakita EMC lab.

Date:

Temp./Humid.:

Engineer:

Test mode:

2

shielded room

2008.10.01

24

deg. C. /

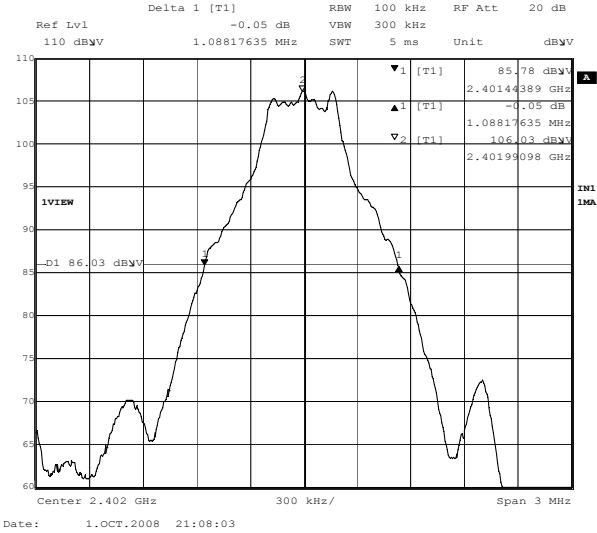
66

%

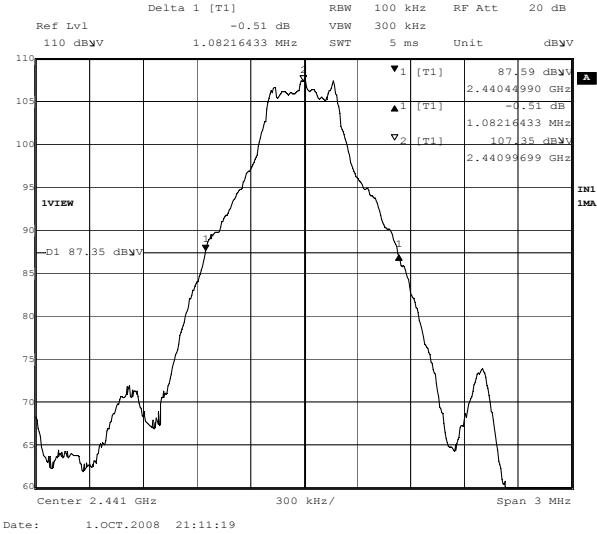
Makoto Hosaka

Transmitting

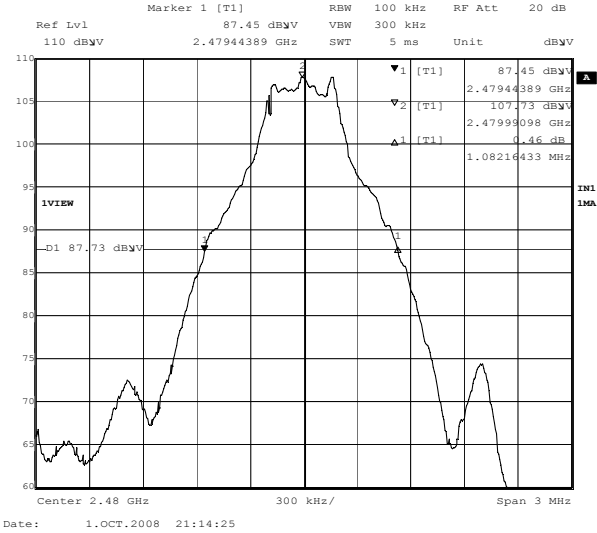
[Hopping off, DH5]
1. ch : 2402MHz/20dB Bandwidth:1.088MHz



2. ch : 2441MHz/20dB Bandwidth:1.082MHz

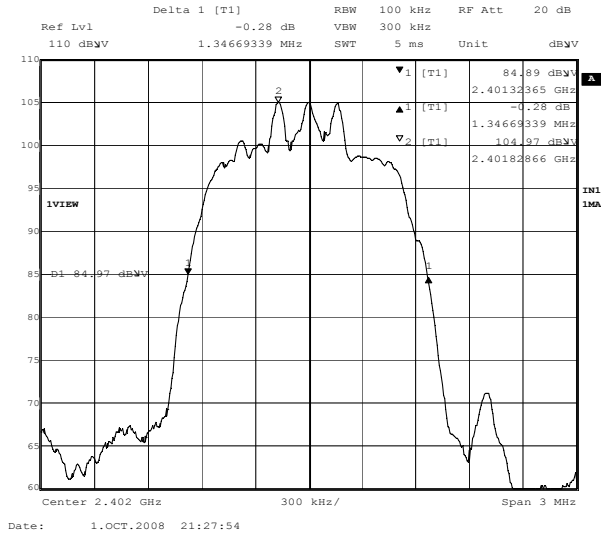


3. ch : 2480MHz/20dB Bandwidth:1.082MHz

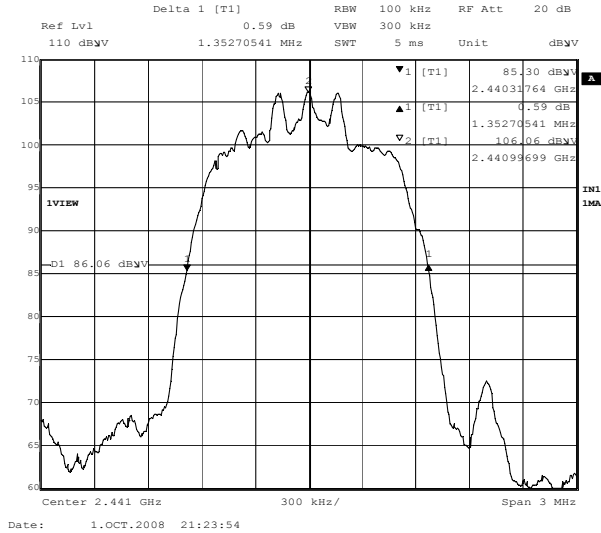


[Hopping off, 3DH5]

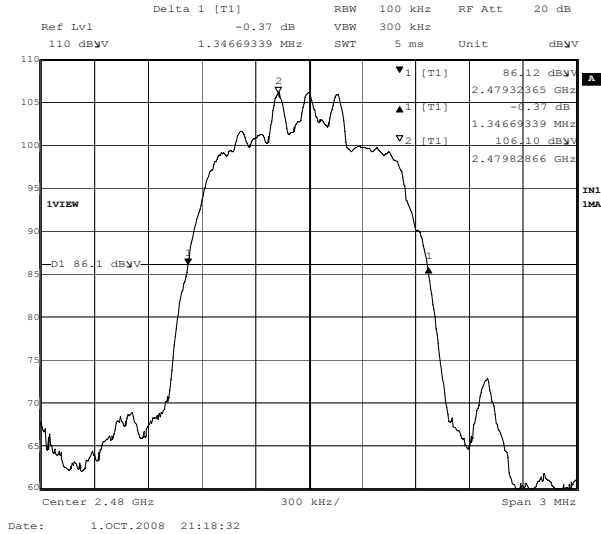
4. ch : 2402MHz/20dB Bandwidth:1.347MHz



5. ch : 2441MHz/20dB Bandwidth:1.353MHz



6. ch : 2480MHz/20dB Bandwidth:1.347MHz



Channel Utilization (Regulation: FCC 15.247(a)(1)(iii))

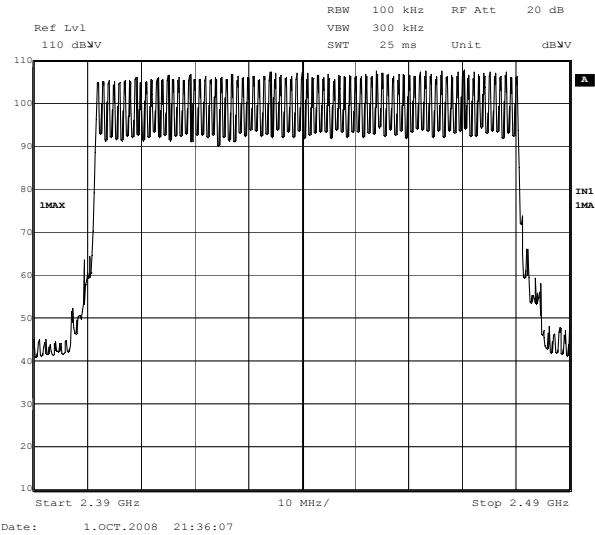
UL Japan, Inc. Yamakita EMC lab.
Date:
Temp./Humid.:
Engineer:
Test mode:

2
2008.10.01
24
Makoto Hosaka
Transmitting

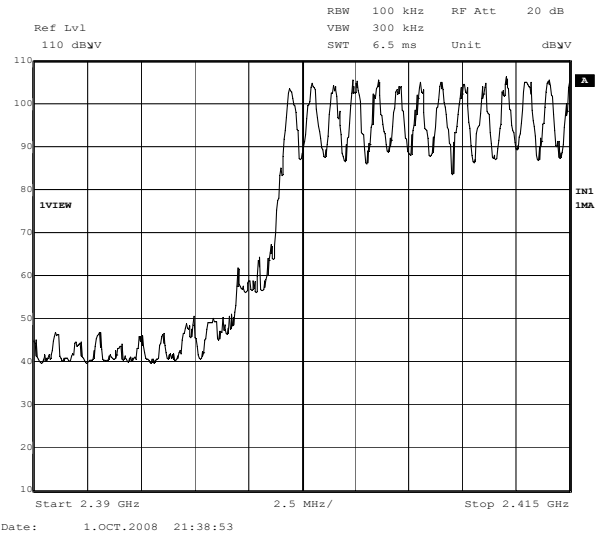
shielded room
%
deg. C./
66
%

Hopping, DH5: 79ch

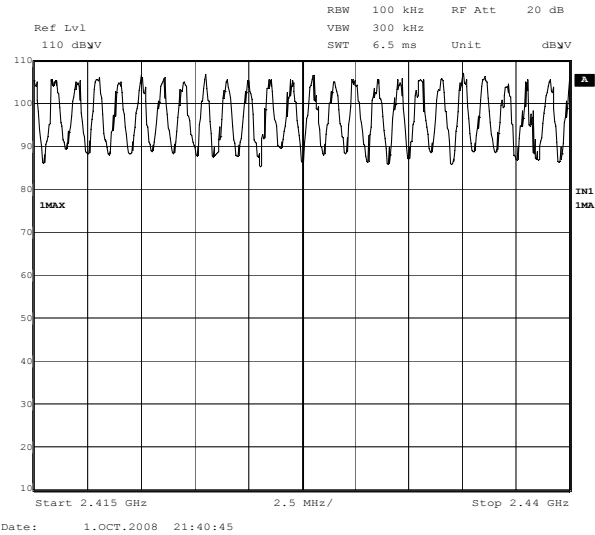
1.



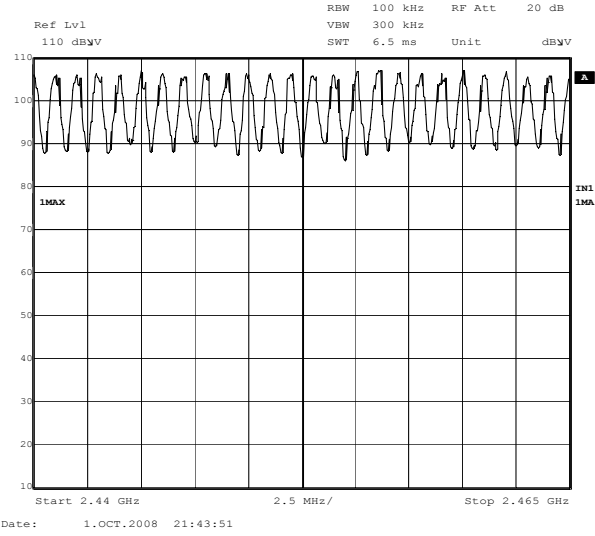
2.



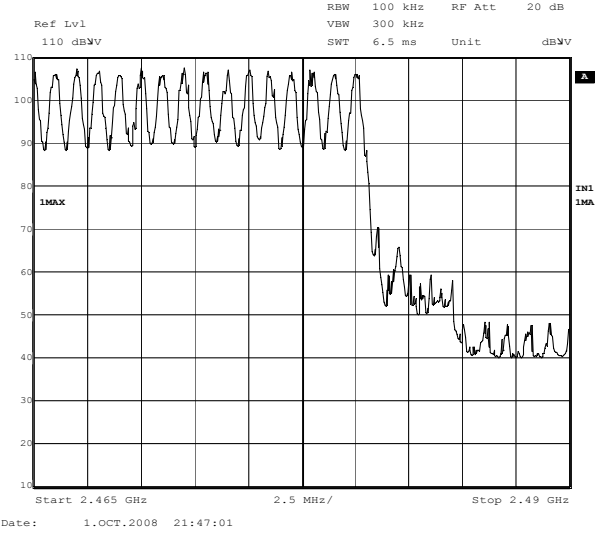
3.



4.

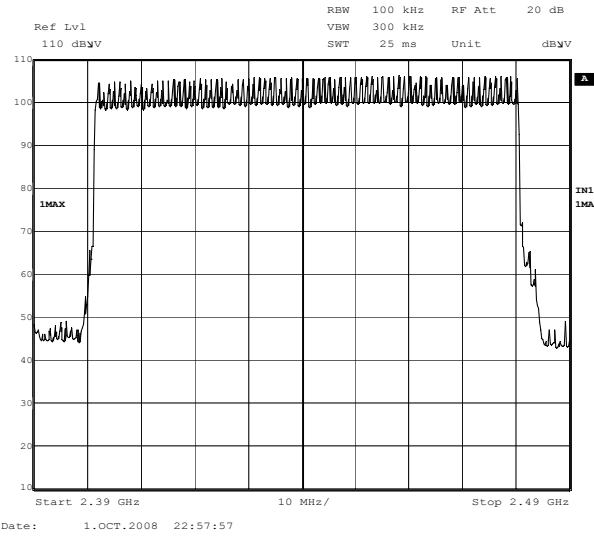


5.

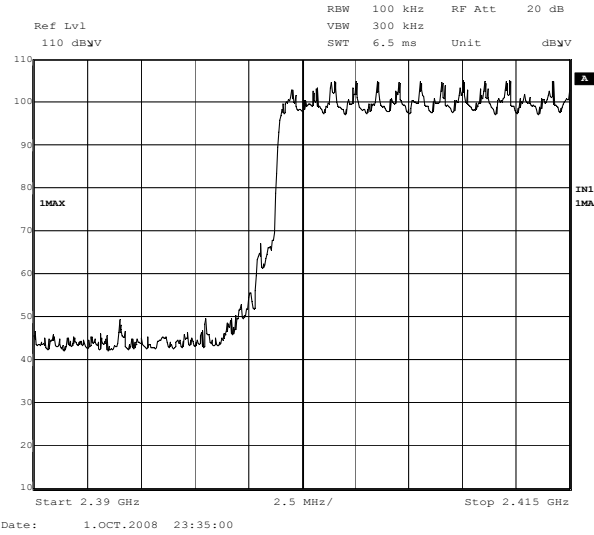


Hopping, 3DH5: 79ch

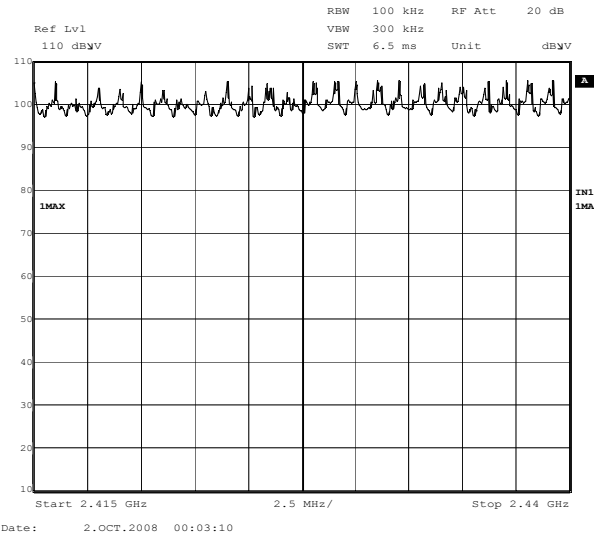
1.



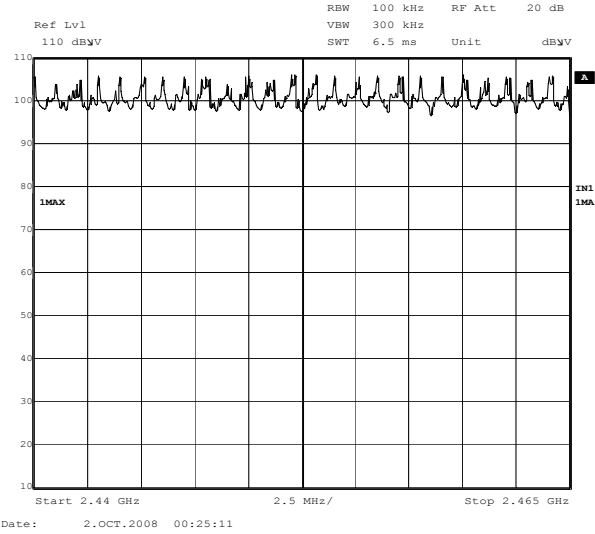
2.



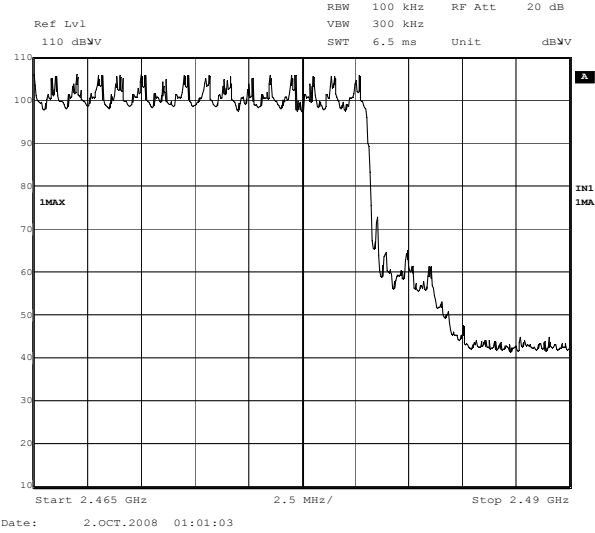
3.



4.



5.



Company: SATO CORPORATION
Kind of Equipment: BARCODE PRINTER
Serial No.: 8E031306

Report No.:
Model No.:
Power:

29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

Dwell Time (Regulation: FCC 15.247(a)(1)(iii))

UL Japan, Inc. Yamakita EMC lab.

No.4 shielded room

Date:

2008.10.22

Temp/Humid.:

23 deg. C. / 47 %

Engineer:

Makoto Hosaka

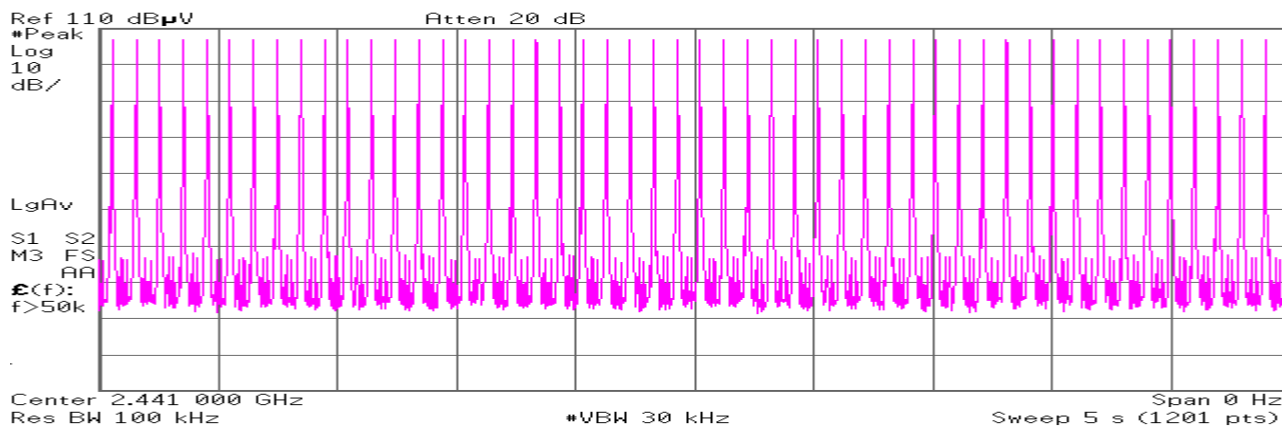
Test mode:

Transmitting

Hopping (DH1):

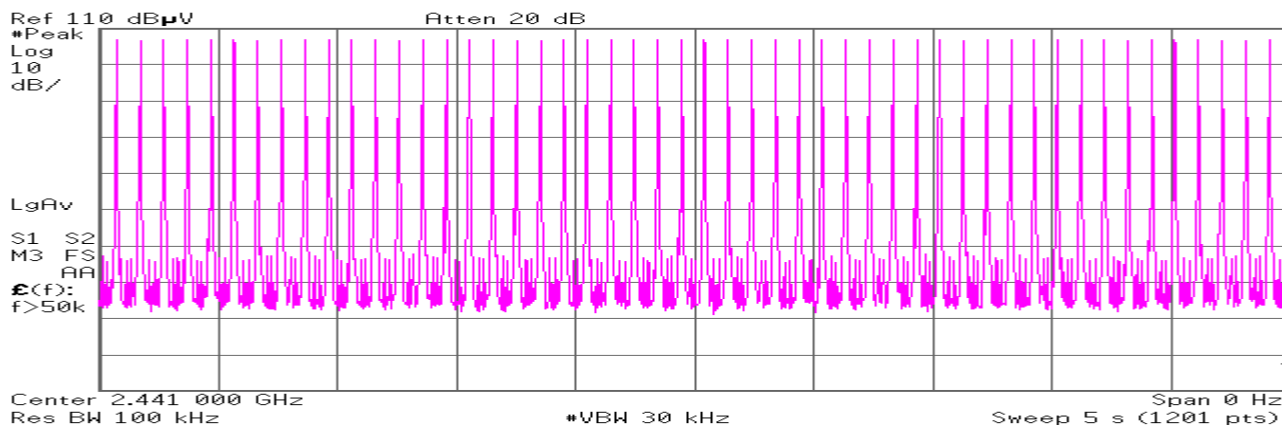
Count 1

Agilent 10:12:41 22 Oct 2008



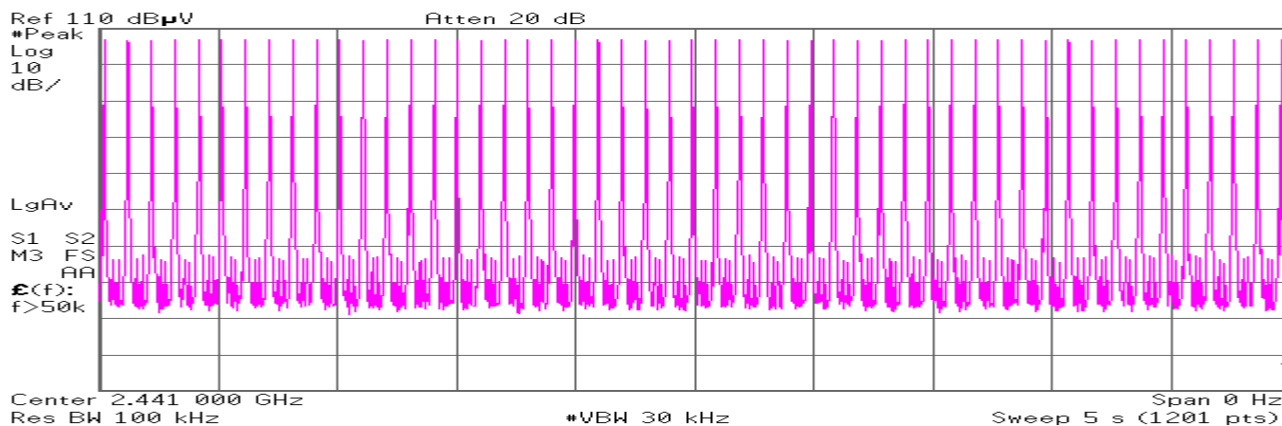
Count 2

Agilent 10:30:24 22 Oct 2008

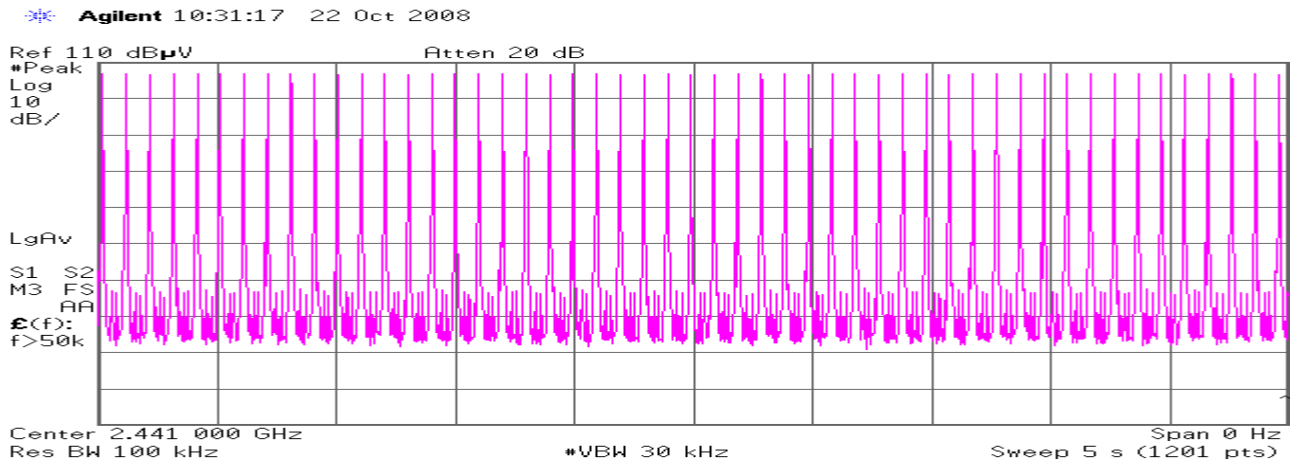


Count 3

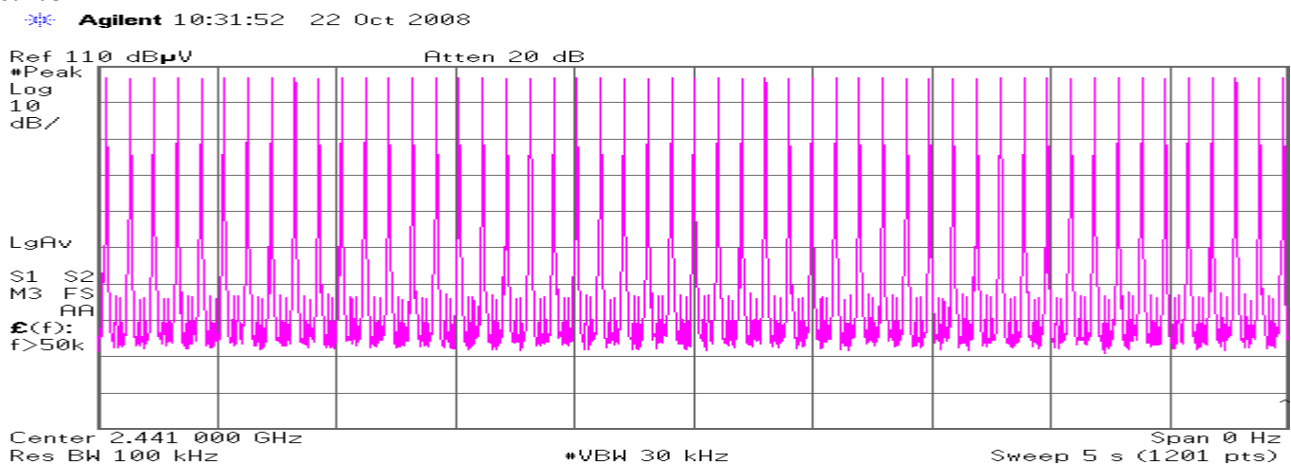
Agilent 10:30:56 22 Oct 2008



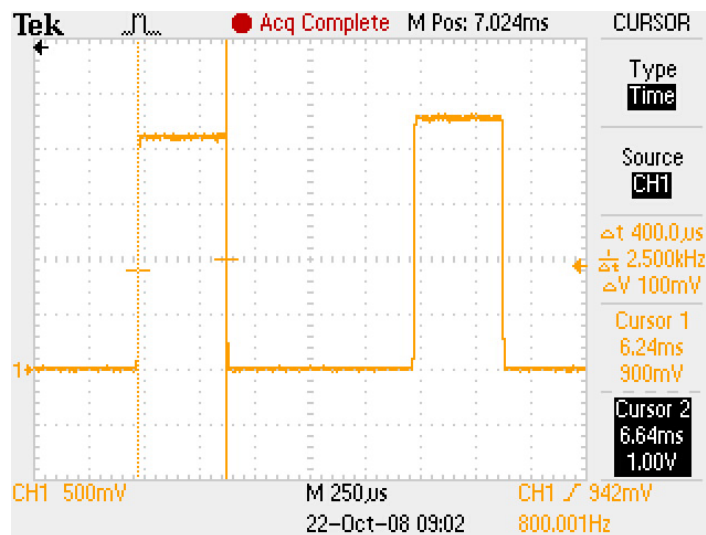
Count 4



Count 5



Duty cycle(Hopping DH1)



Average times of rising in 5 sec. of sweep = $(51 + 50 + 51 + 51 + 51) / 5 = 50.8$

Average times of rising in 1 sec. = $50.8 / 5s = 10.16$

Average times of rising in 0.4x = $0.4 * 79ch * 10.16 = 321.056$

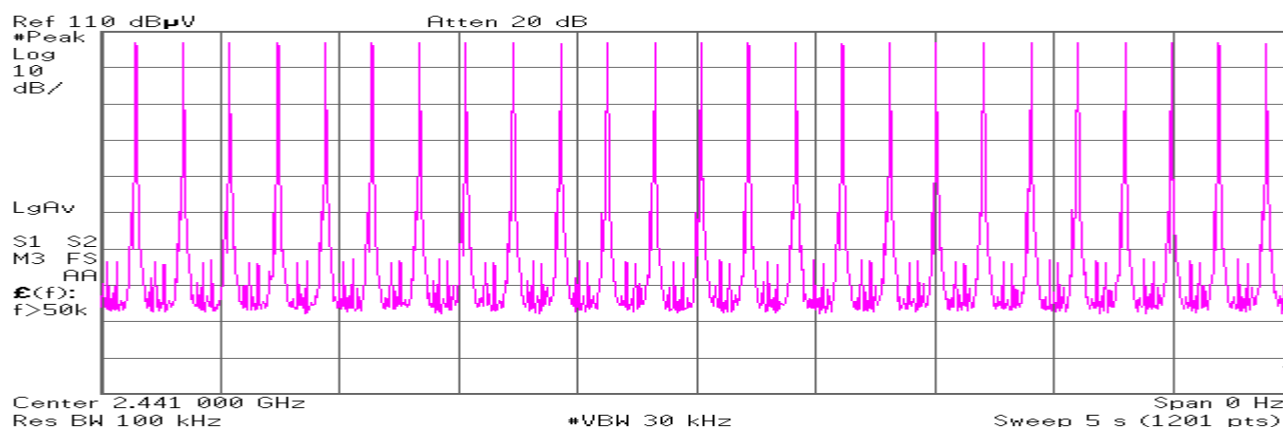
Dwell time = $321.056 * 0.400 = 128.42$ [ms]

Limit : Dwell Time < 0.4[s]

Hopping (DH3):

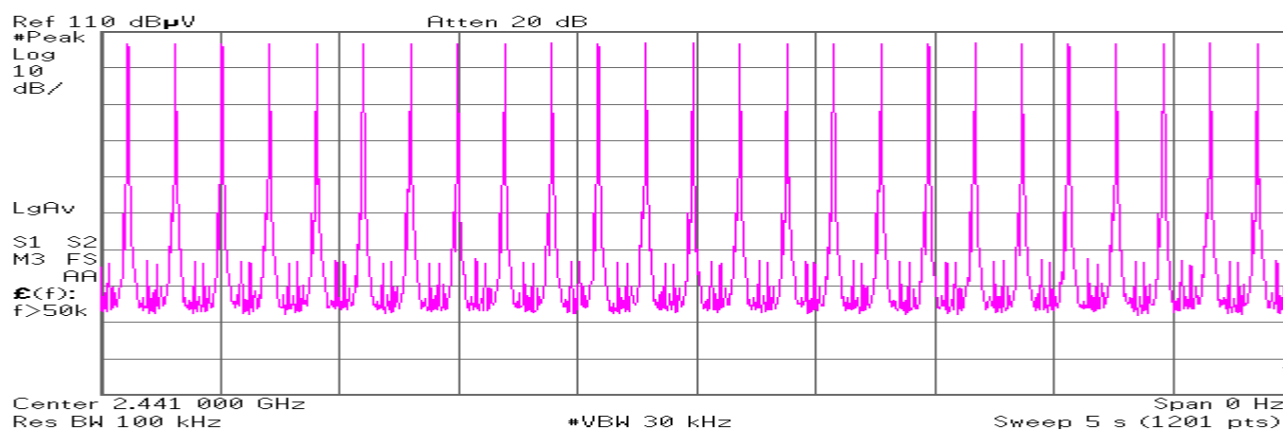
Count 1

Agilent 10:32:19 22 Oct 2008



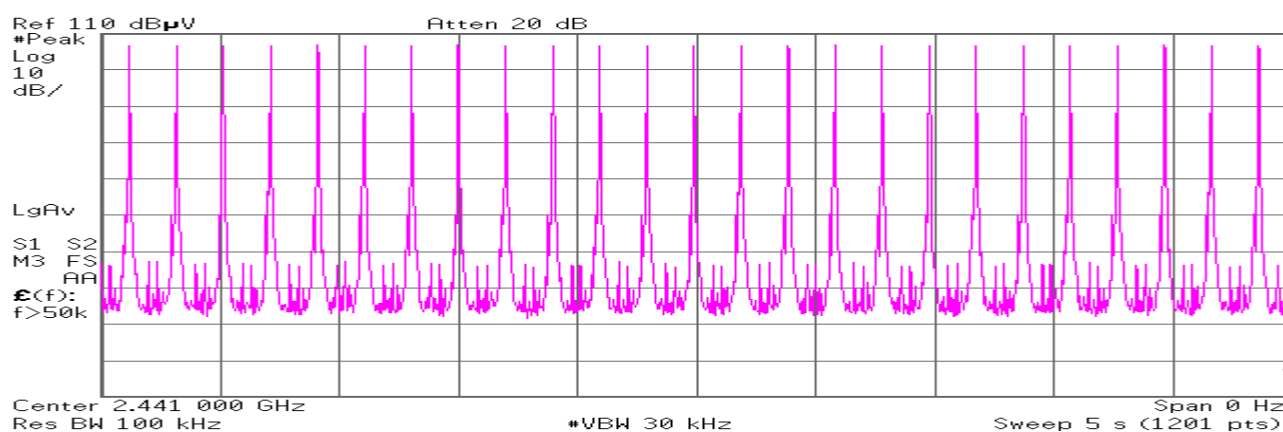
Count 2

Agilent 10:32:45 22 Oct 2008

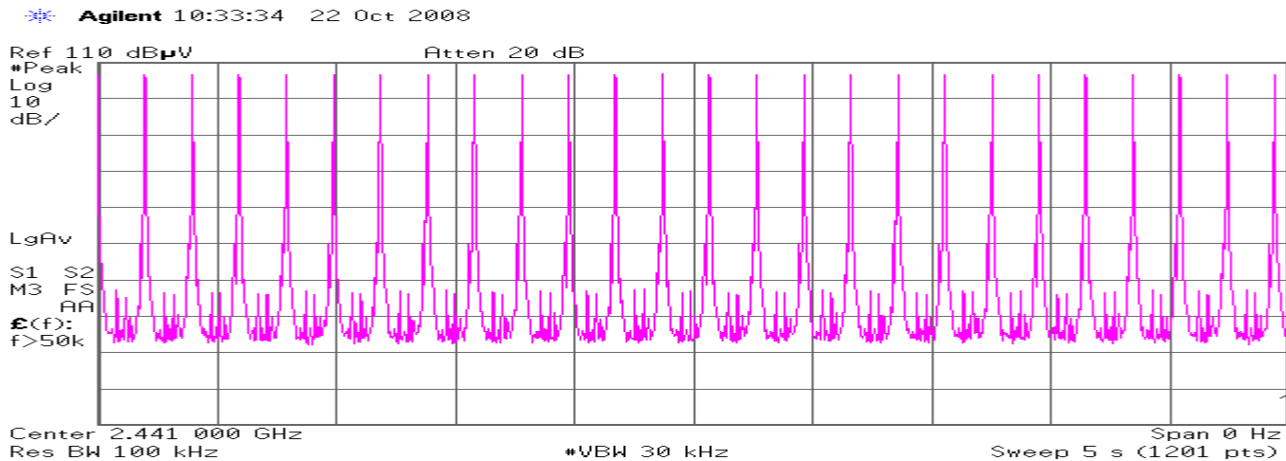


Count 3

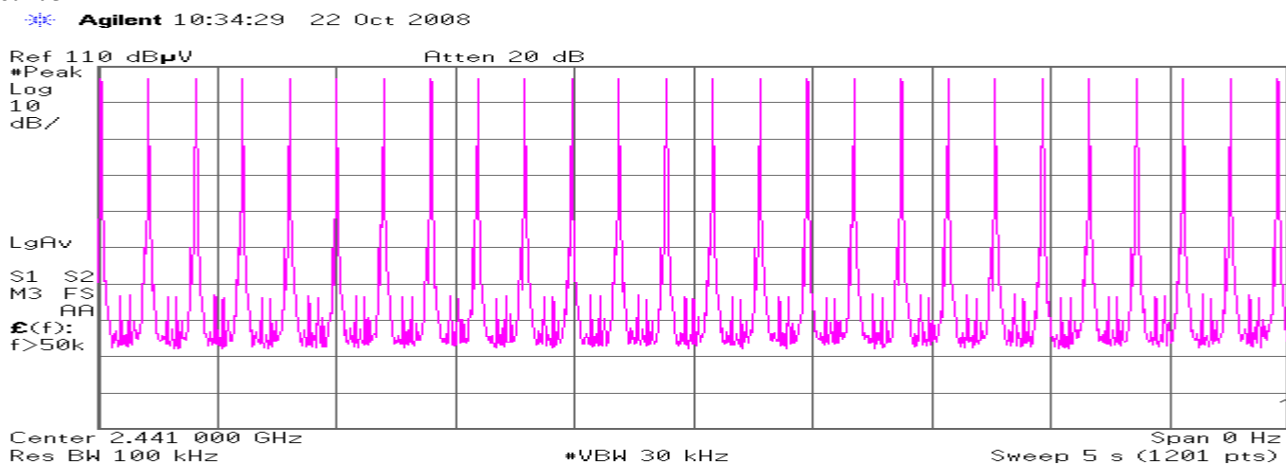
Agilent 10:33:08 22 Oct 2008



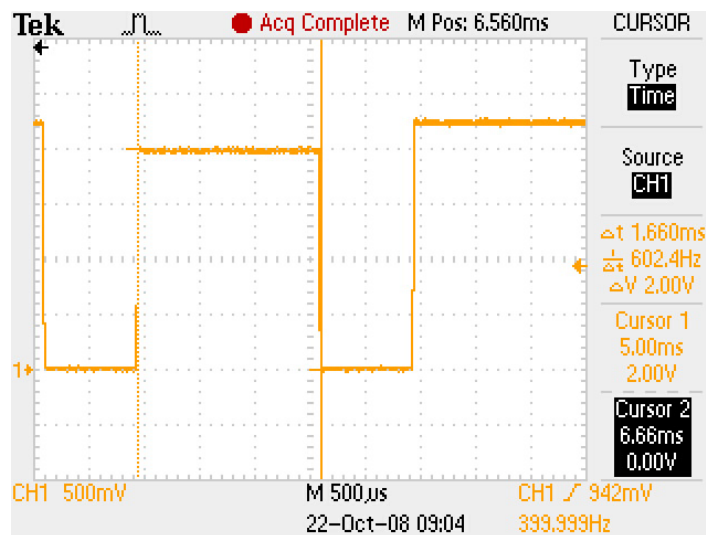
Count4



Count5



Duty cycle(Hopping DH3)



Average times of rising in 5 sec. of sweep = $(25 + 25 + 25 + 26 + 26) / 5 = 25.4$

Average times of rising in 1 sec. = $25.4 / 5s = 5.08$

Average times of rising in 0.4x = $0.4 * 79ch * 5.08 = 160.528$

Dwell time = $160.528 * 1.66 = 266.48$ [ms]

Limit : Dwell Time < 0.4[s]

Company: SATO CORPORATION
Kind of Equipment: BARCODE PRINTER
Serial No.: 8E031306

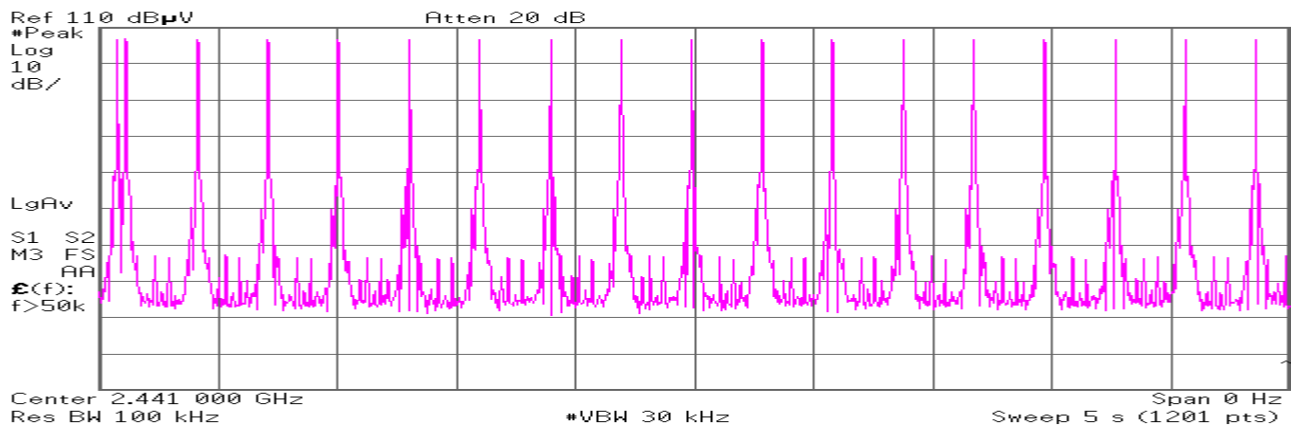
Report No.:
Model No.:
Power:

29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

Hopping (DH5):

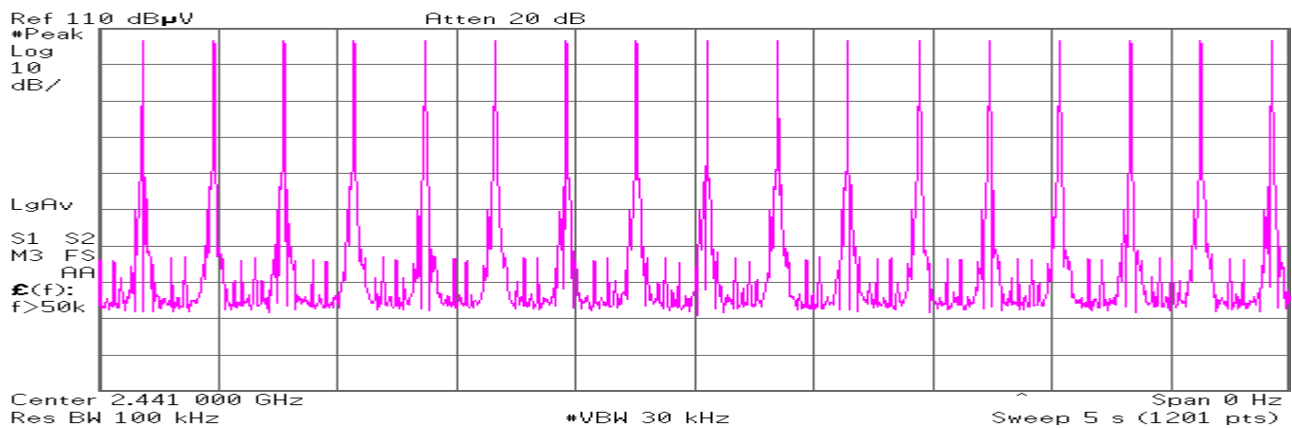
Count 1

Agilent 10:34:54 22 Oct 2008



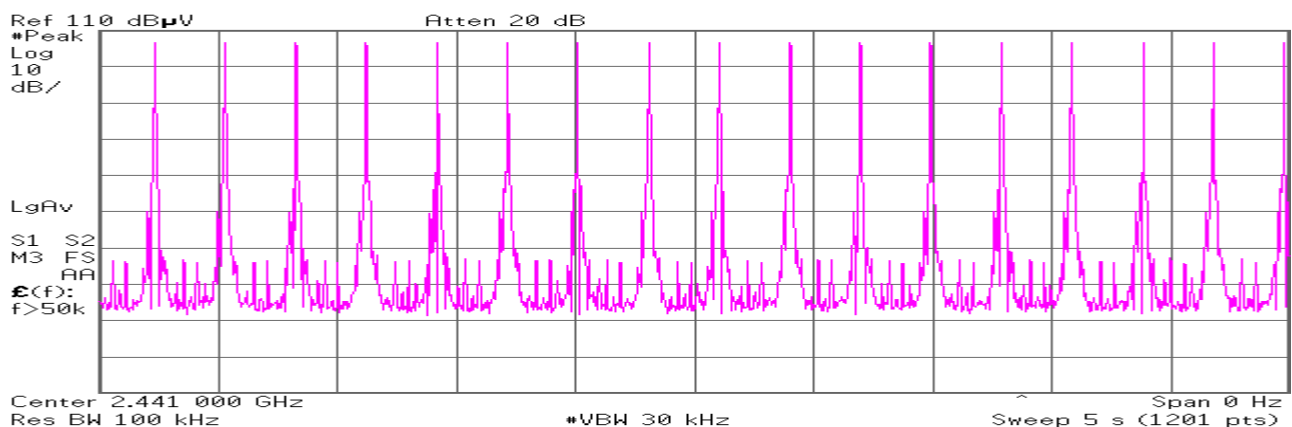
Count 2

Agilent 10:35:16 22 Oct 2008

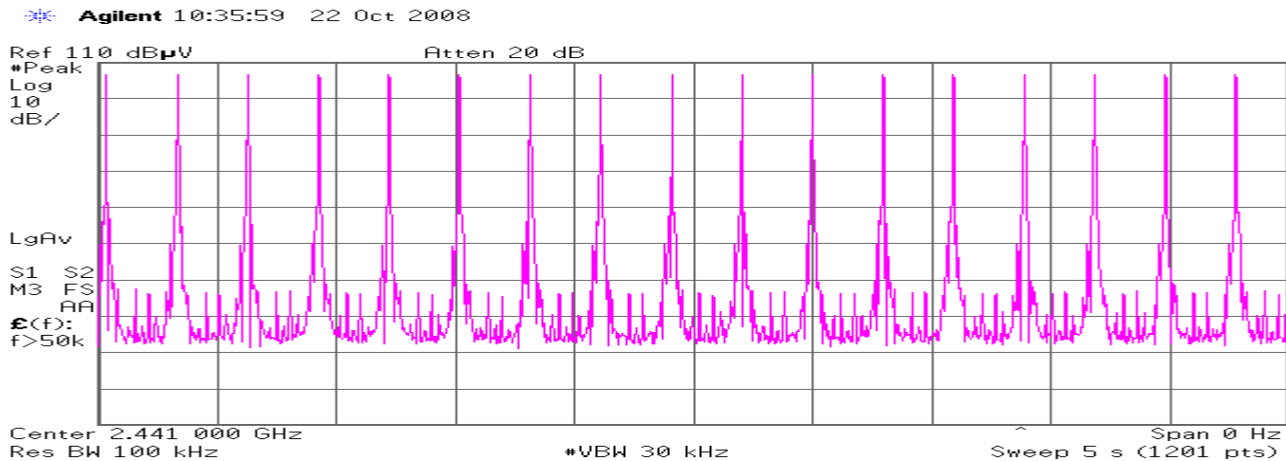


Count 3

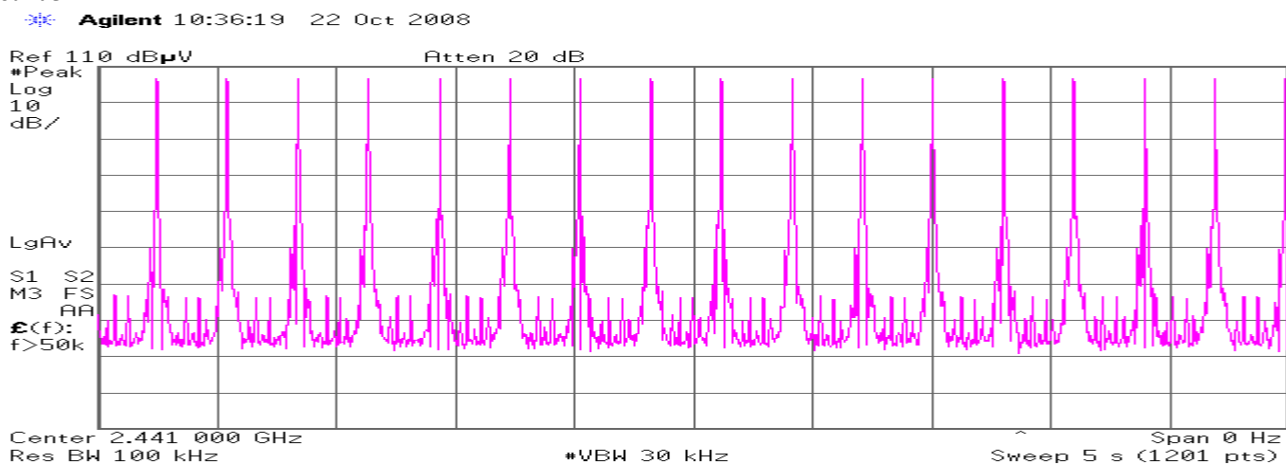
Agilent 10:35:37 22 Oct 2008



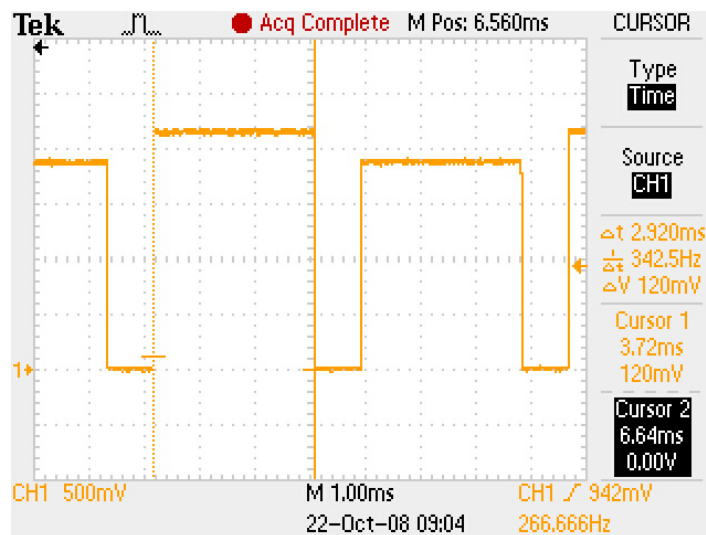
Count 4



Count 5



Duty cycle(Hopping DH5)



Average times of rising in 5 sec. of sweep = $(17 + 17 + 17 + 17 + 17) / 5 = 17.0$

Average times of rising in 1 sec. = $17.0 / 5s = 3.4$

Average times of rising in 0.4x = $0.4 * 79ch * 3.4 = 107.44$

Dwell time = $107.44 * 2.92 = 313.72$ [ms]

Limit : Dwell Time < 0.4[s]

Company: SATO CORPORATION
Kind of Equipment: BARCODE PRINTER
Serial No.: 8E031306

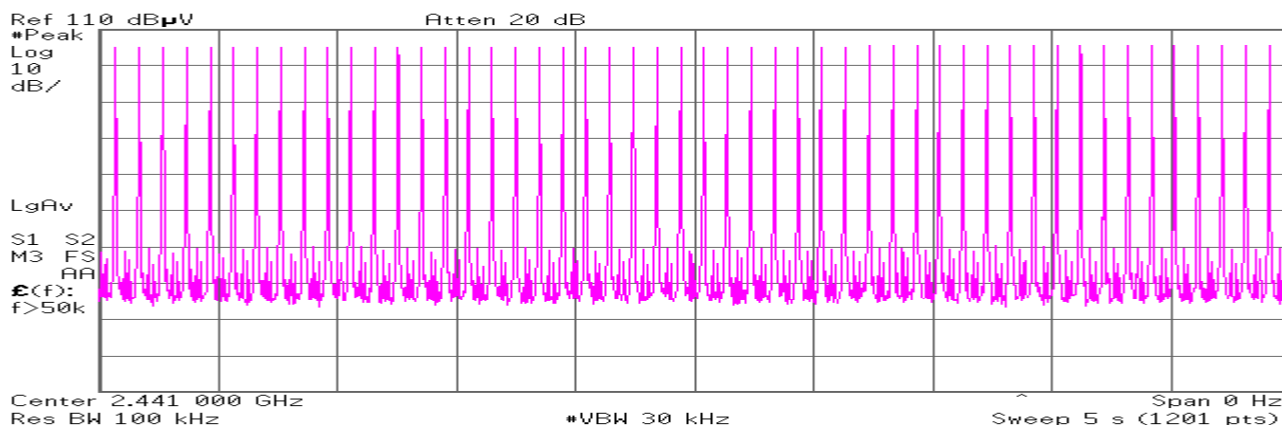
Report No.:
Model No.:
Power:

29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

Hopping (3DH1):

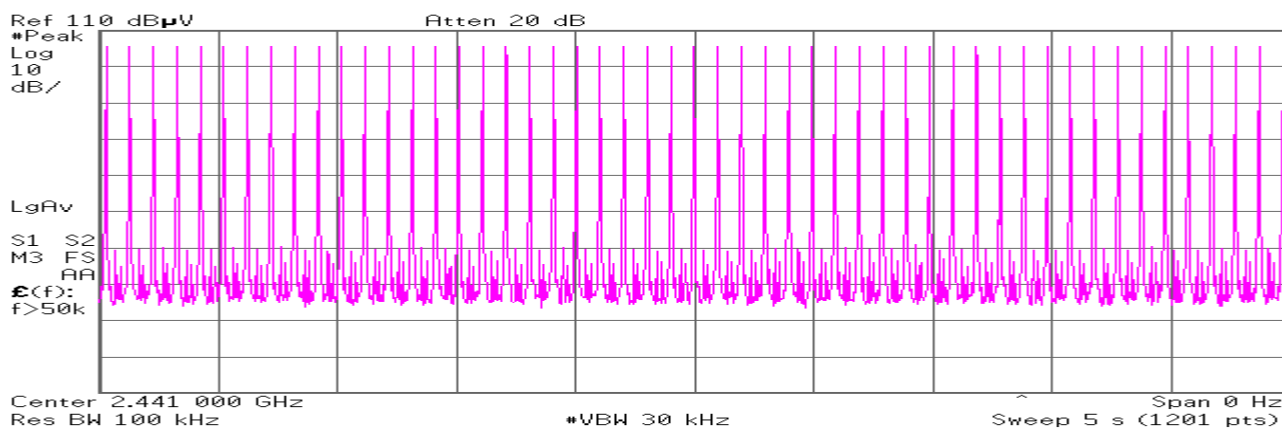
Count 1

Agilent 10:39:44 22 Oct 2008



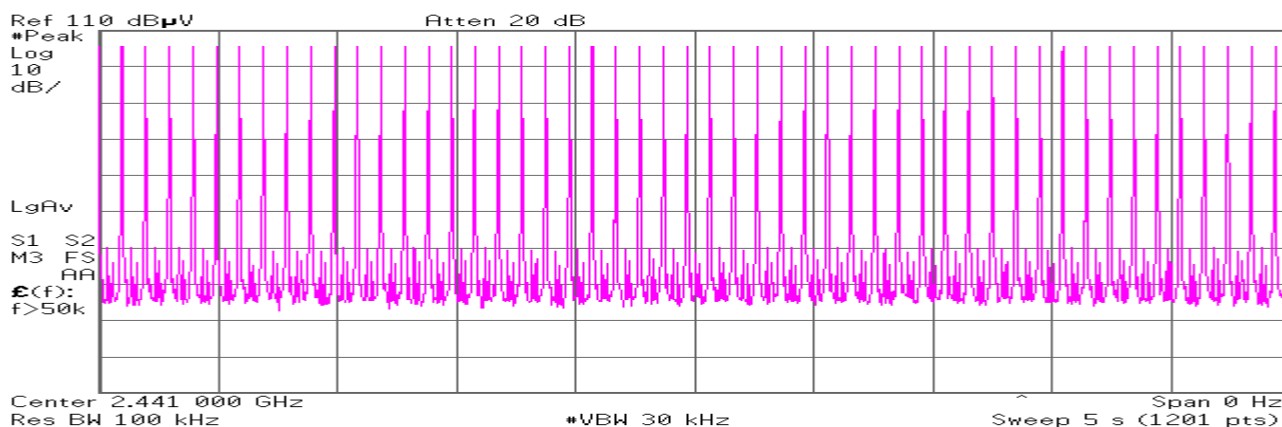
Count 2

Agilent 10:40:04 22 Oct 2008

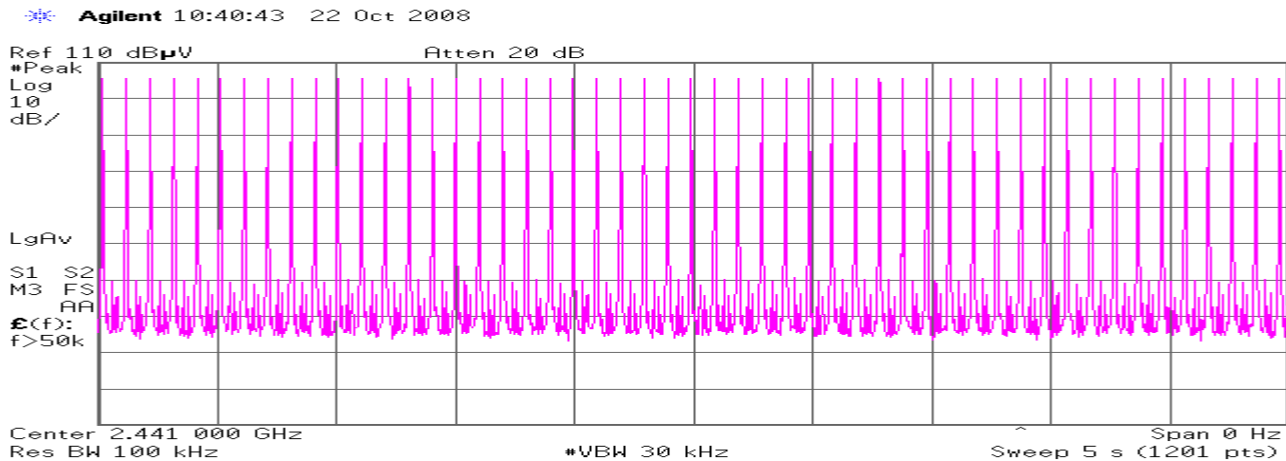


Count 3

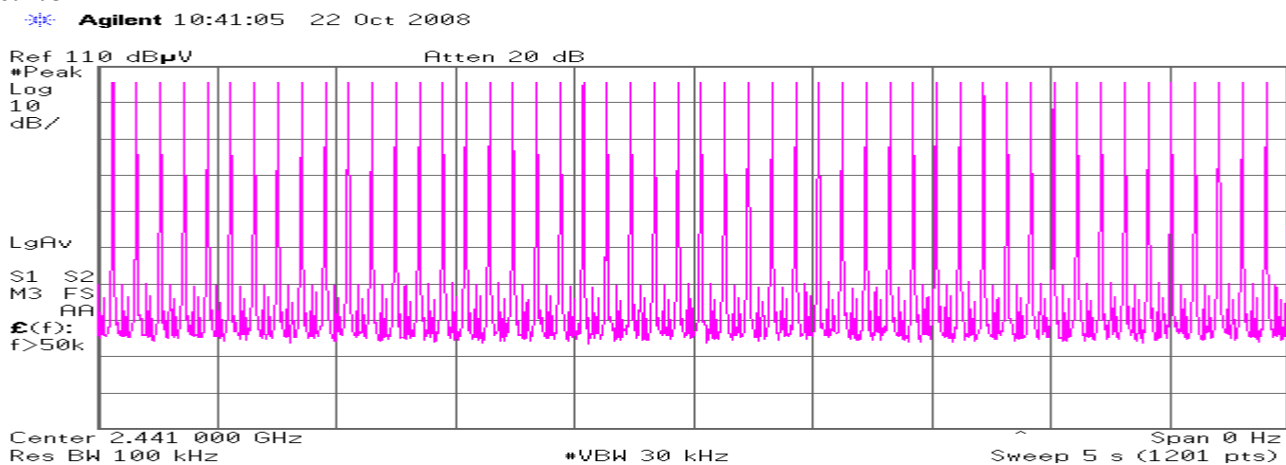
Agilent 10:40:22 22 Oct 2008



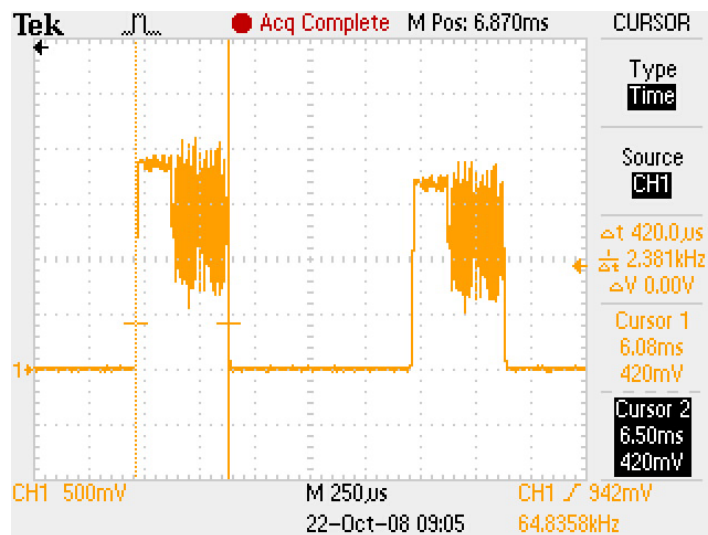
Count4



Count5



Duty cycle(Hopping 3DH1)



Average times of rising in 5 sec. of sweep = $(50 + 51 + 51 + 51 + 50) / 5 = 50.6$

Average times of rising in 1 sec. = $50.6 / 5s = 10.12$

Average times of rising in 0.4x = $0.4 * 79ch * 10.12 = 319.792$

Dwell time = $319.792 * 0.42 = 134.31$ [ms]

Limit : Dwell Time < 0.4[s]

Company: SATO CORPORATION
Kind of Equipment: BARCODE PRINTER
Serial No.: 8E031306

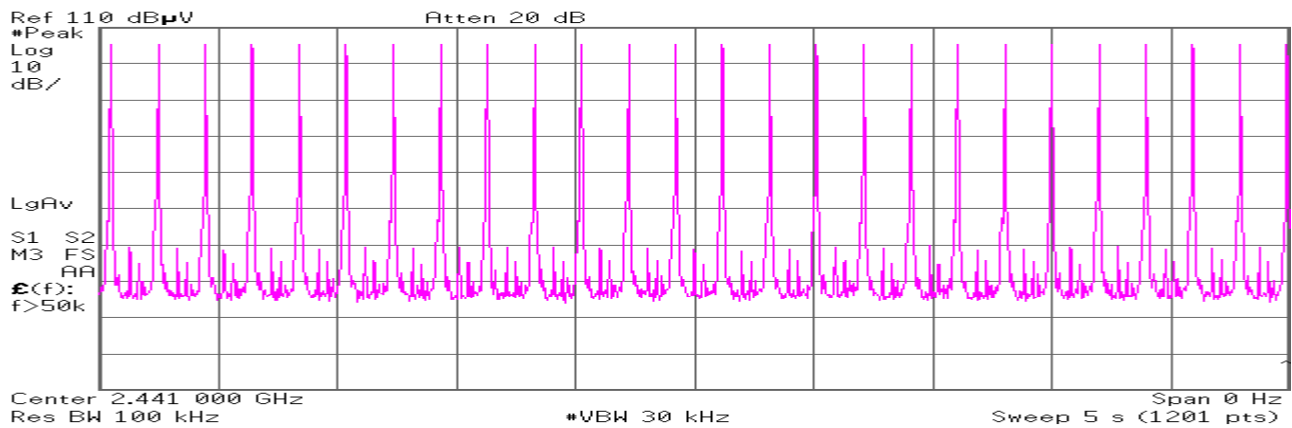
Report No.:
Model No.:
Power:

29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

Hopping (3DH3):

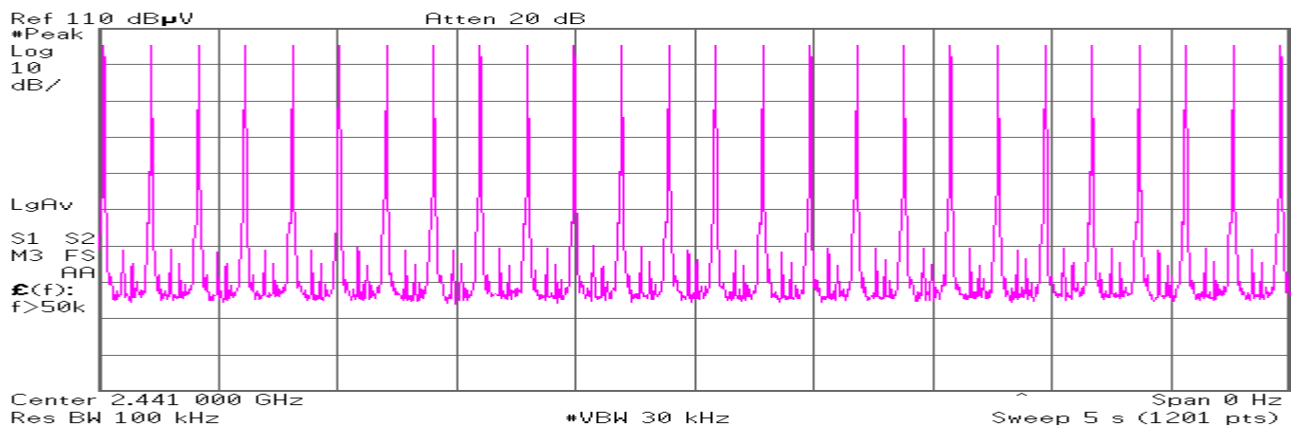
Count 1

Agilent 10:42:35 22 Oct 2008



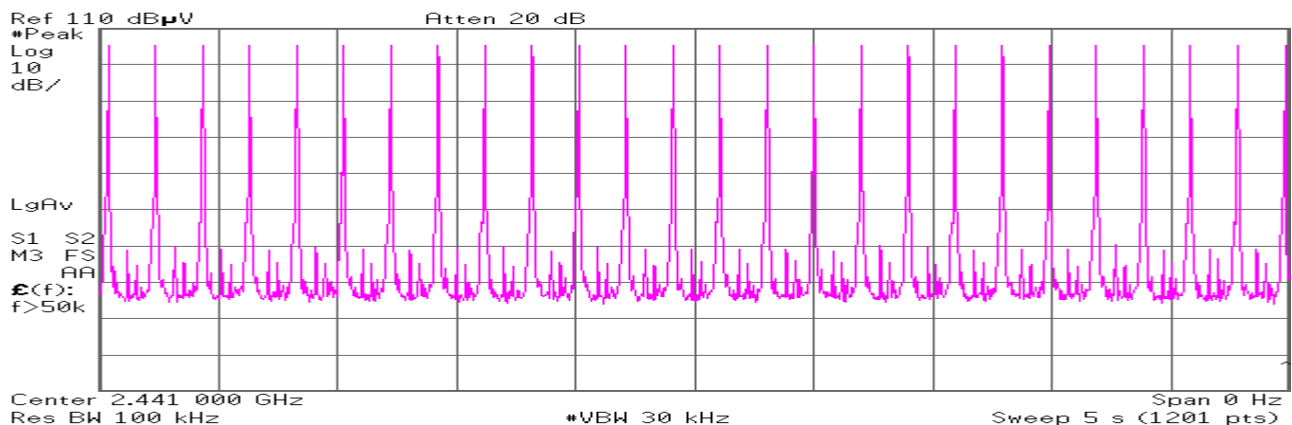
Count 2

Agilent 10:42:56 22 Oct 2008

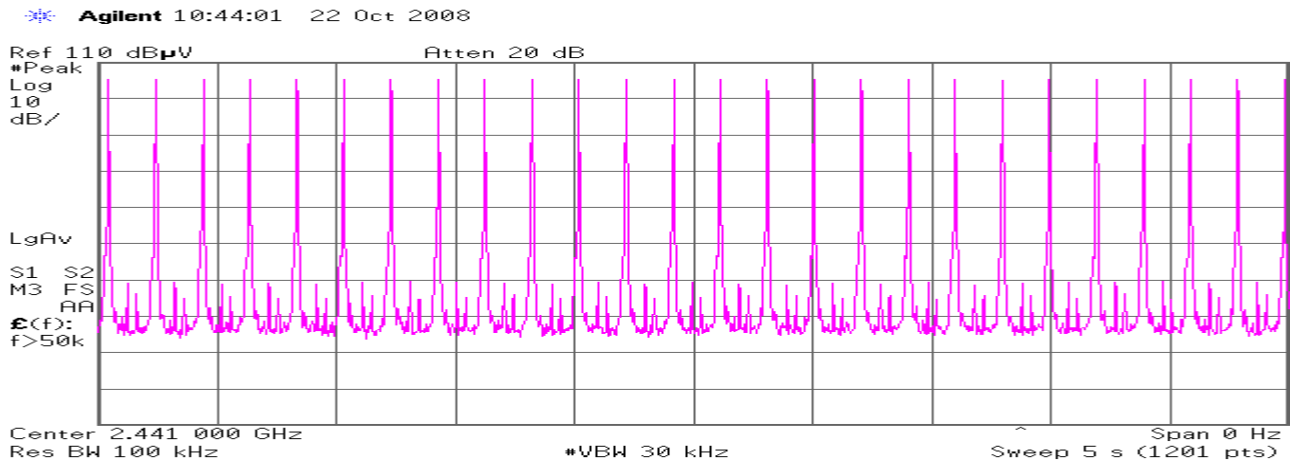


Count 3

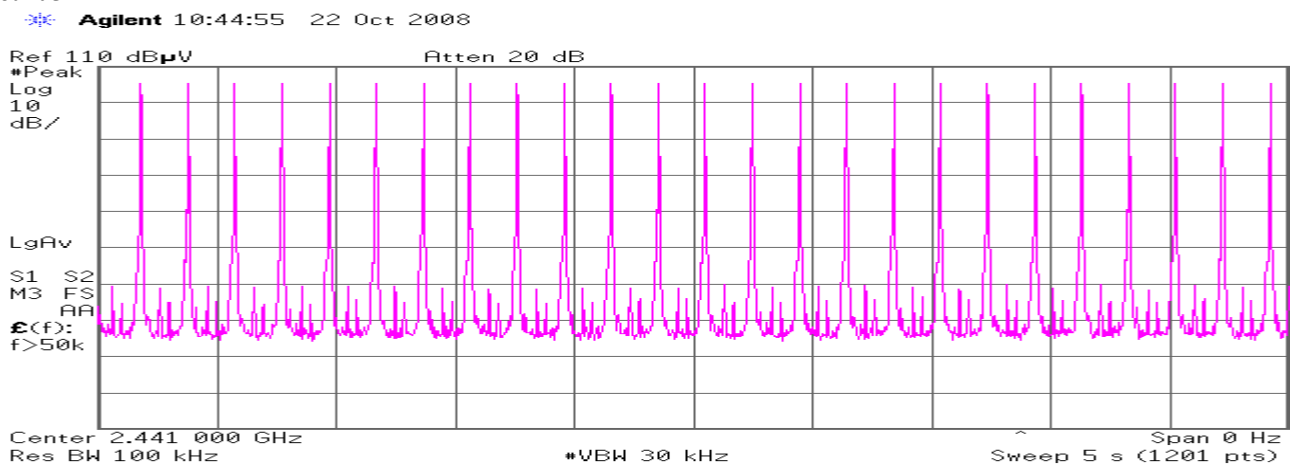
Agilent 10:43:38 22 Oct 2008



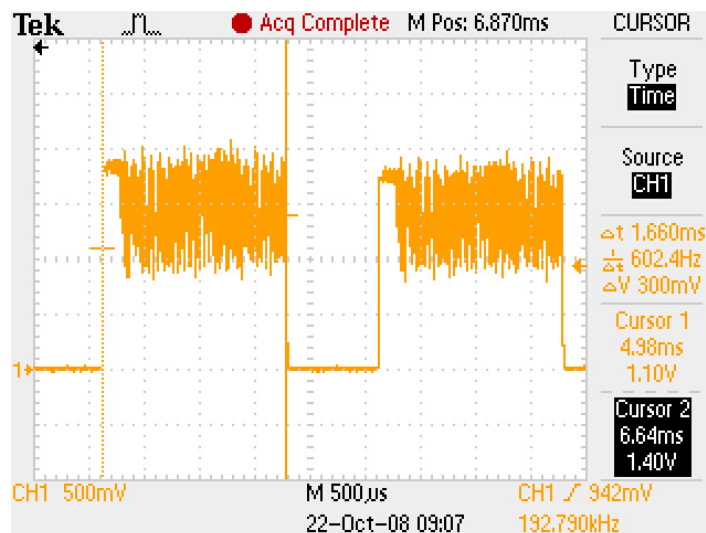
Count4



Count5



Duty cycle(Hopping 3DH3)



Average times of rising in 5 sec. of sweep = $(26 + 26 + 26 + 26 + 25) / 5 = 25.8$

Average times of rising in 1 sec. = $25.8 / 5s = 5.16$

Average times of rising in 0.4x = $0.4 * 79ch * 35.16 = 163.056$

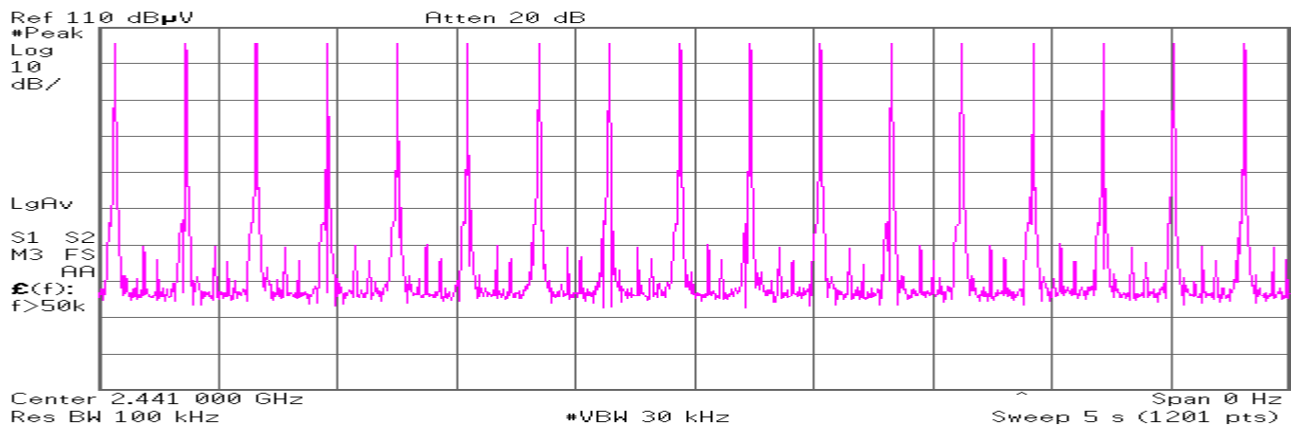
Dwell time = $163.056 * 1.66 = 270.67 [ms]$

Limit : Dwell Time < 0.4[s]

Hopping (3DH5):

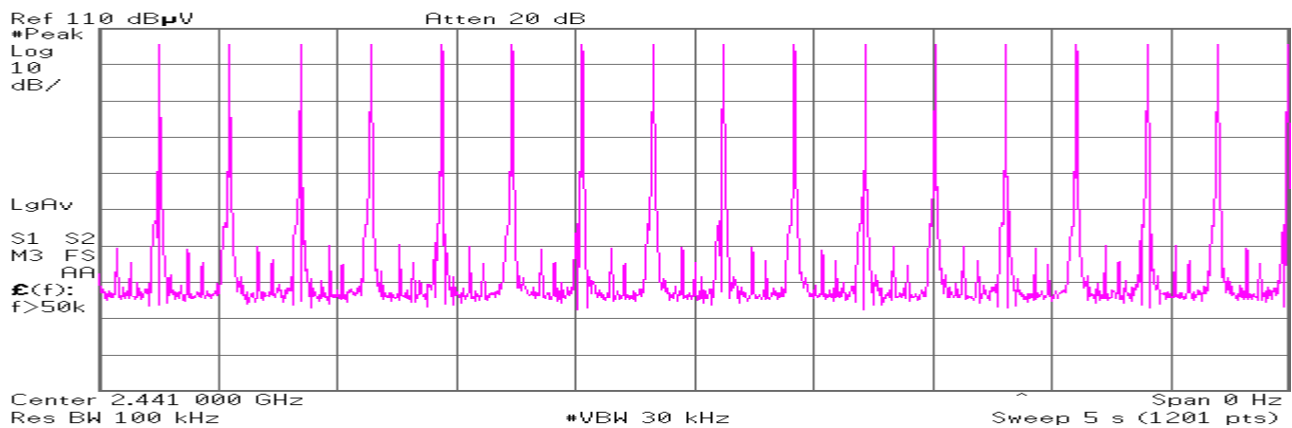
Count 1

Agilent 10:58:17 22 Oct 2008



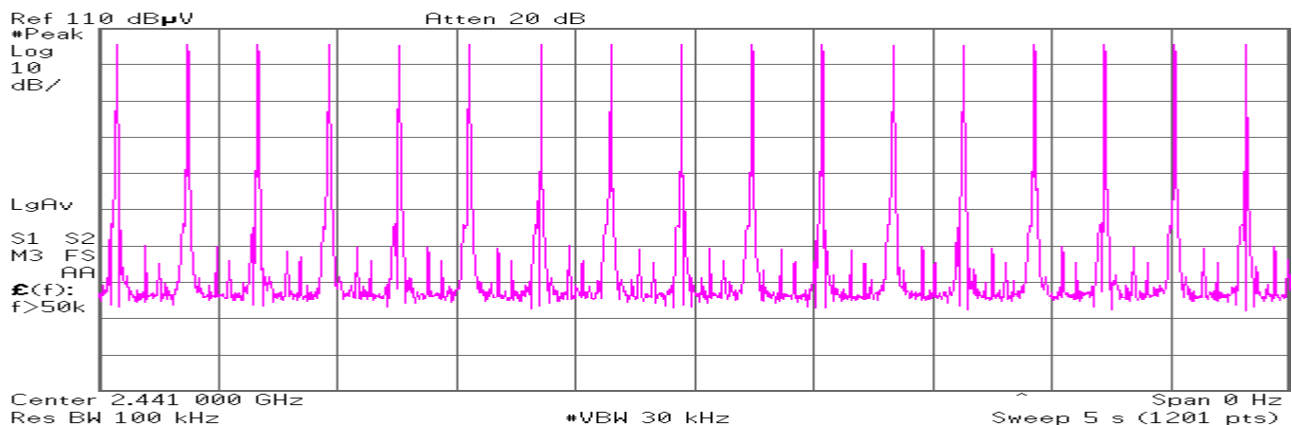
Count 2

Agilent 10:58:37 22 Oct 2008

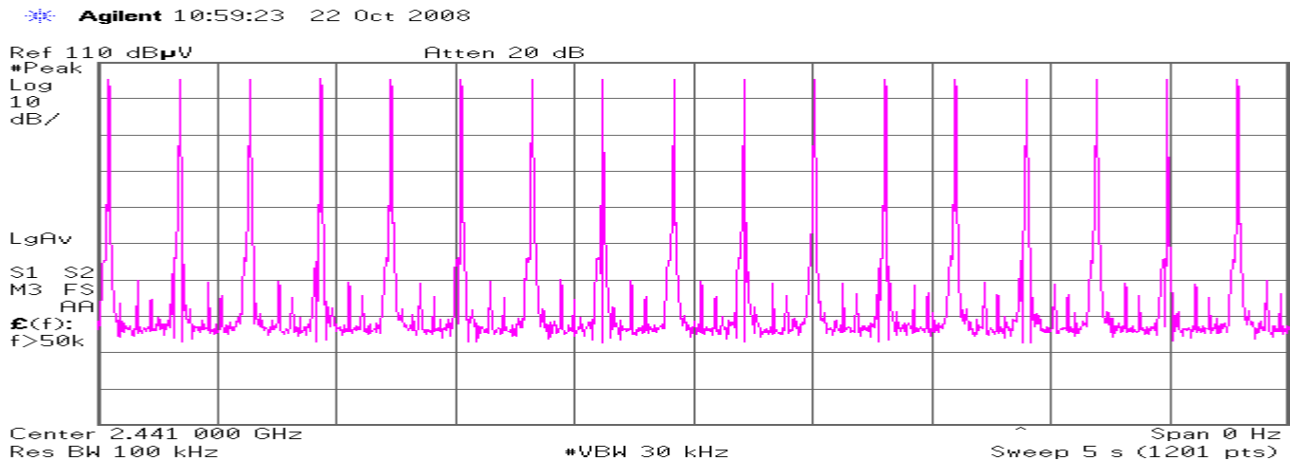


Count 3

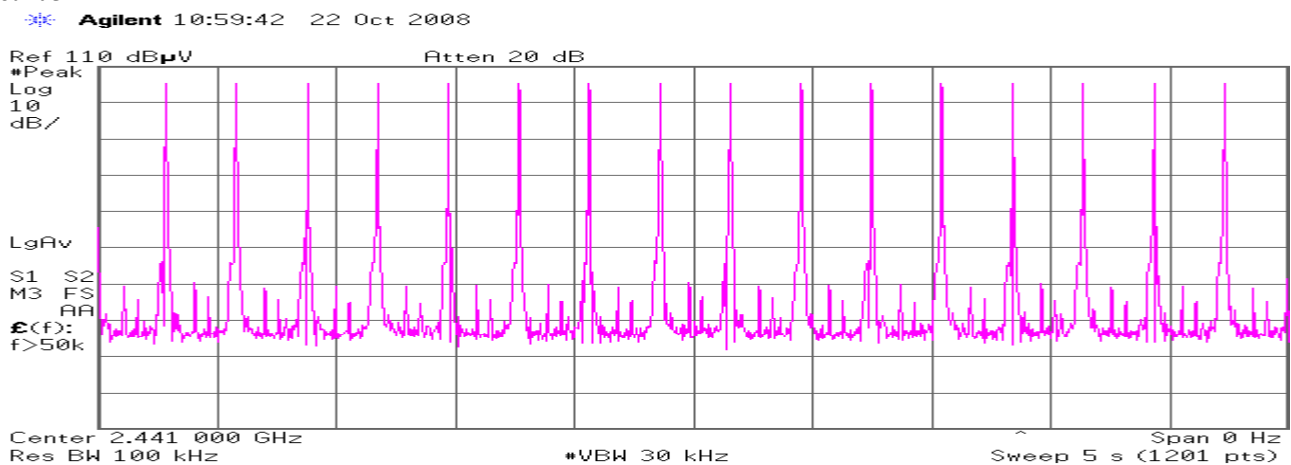
Agilent 10:58:57 22 Oct 2008



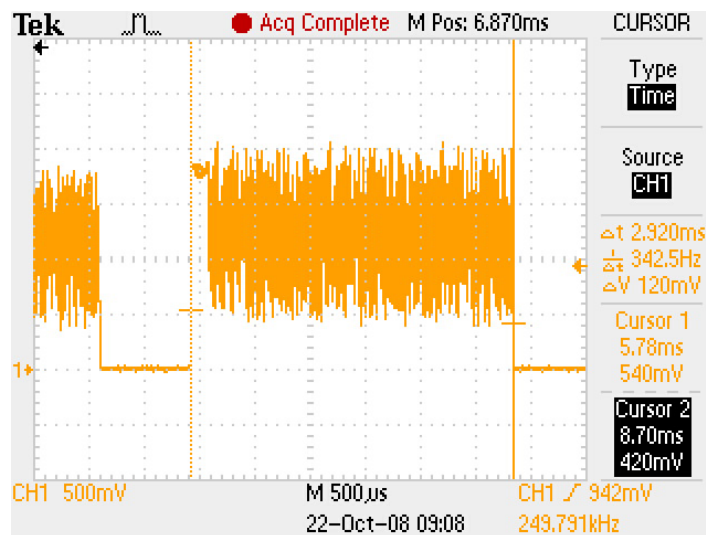
Count4



Count5



Duty cycle(Hopping 3DH5)



Average times of rising in 5 sec. of sweep = $(17 + 17 + 17 + 17 + 16) / 5 = 16.8$

Average times of rising in 1 sec. = $16.8 / 5s = 3.36$

Average times of rising in 0.4x = $0.4 * 79ch * 3.36 = 106.176$

Dwell time = $106.176 * 2.92 = 310.03$ [ms]

Limit : Dwell Time < 0.4[s]

Company: SATO CORPORATION
Kind of Equipment: BARCODE PRINTER
Serial No.: 8E031306

Report No.: 29AE0053-YK-01-A-R2
Model No.: MB200i-B2
Power: AC120V/60Hz

Maximum Peak Conducted Output Power (Regulation: FCC 15.247(b)(1))

UL Japan, Inc Yamakita EMC lab.
No.2 Shielded Room

DATE: 2008.10.01
TEMP./HUMID.: 24deg.C/66%
TEST MODE: Transmitting

ENGINEER: Makoto Hosaka

DH5

CH	FREQ [GHz]	P/M Reading [dBm]	Cable Loss [dB]	Results [dBm]	Limit (125mW) [dBm]	MARGIN [dB]
Low	2402.00	-0.97	0.45	-0.52	20.96	21.48
Mid	2441.00	0.30	0.45	0.75	20.96	20.21
High	2480.00	0.83	0.45	1.28	20.96	19.68

Limit: 125mW=20.96dBm

P/M: Power Meter

CABLE LOSS:Customer's cable + KCC-D20

2DH5

CH	FREQ [GHz]	P/M Reading [dBm]	Cable Loss [dB]	Results [dBm]	Limit (125mW) [dBm]	MARGIN [dB]
Low	2402.00	-0.97	0.45	-0.52	20.96	21.48
Mid	2441.00	0.11	0.45	0.56	20.96	20.40
High	2480.00	0.35	0.45	0.80	20.96	20.16

Limit: 125mW=20.96dBm

P/M: Power Meter

CABLE LOSS:Customer's cable + KCC-D20

3DH5

CH	FREQ [GHz]	P/M Reading [dBm]	Cable Loss [dB]	Results [dBm]	Limit (125mW) [dBm]	MARGIN [dB]
Low	2402.00	-0.88	0.45	-0.43	20.96	21.39
Mid	2441.00	0.25	0.45	0.70	20.96	20.26
High	2480.00	0.58	0.45	1.03	20.96	19.93

Limit: 125mW=20.96dBm

P/M: Power Meter

CABLE LOSS:Customer's cable + KCC-D20

Out of Band Emission (Antenna Terminal Conducted) (Regulation: FCC 15.247(d))

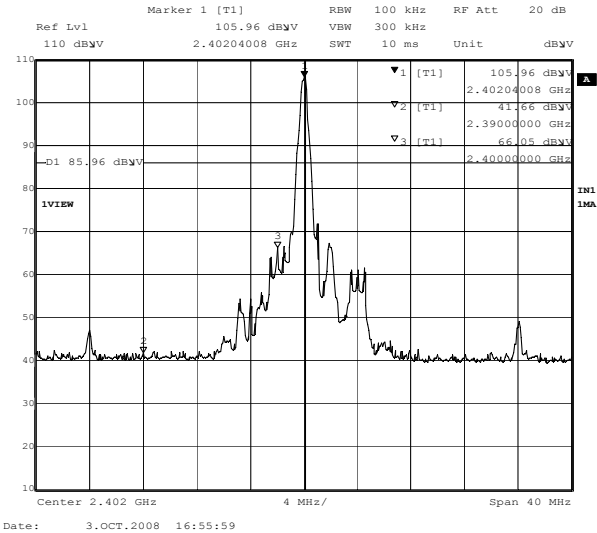
UL Japan, Inc. Yamakita EMC lab.
Date:
Temp./Humid.:
Engineer:
Test mode:

2
2008.10.03
23
Makoto Hosaka
Transmitting

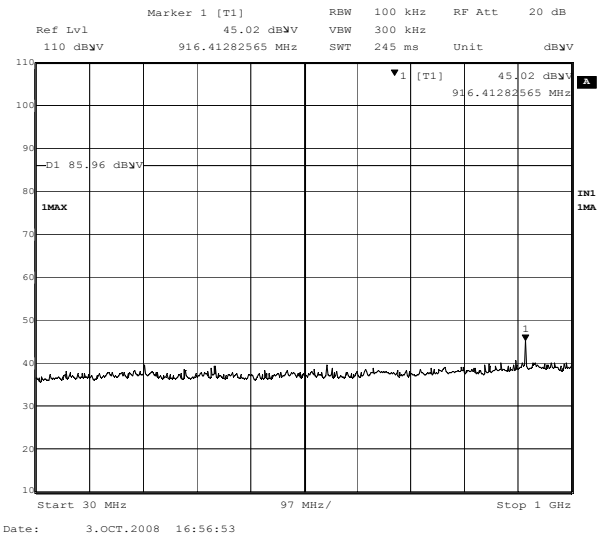
shielded room
deg. C. / 57 %

[Transmitting DH5]
Ch:2402MHz

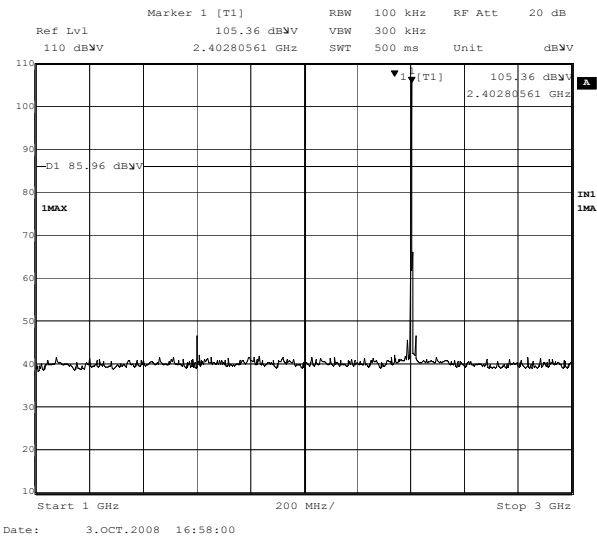
1.



2.

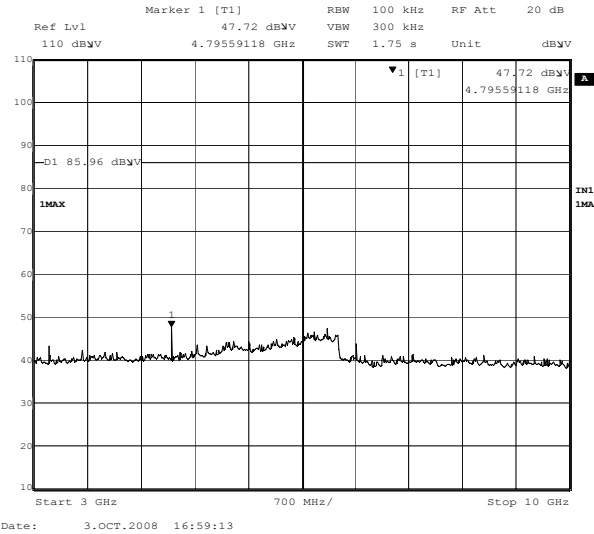


3.

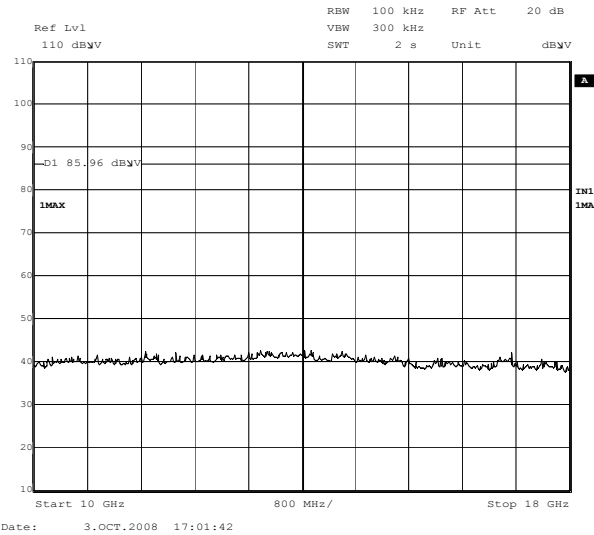


[Transmitting DH5]
Ch:2402MHz

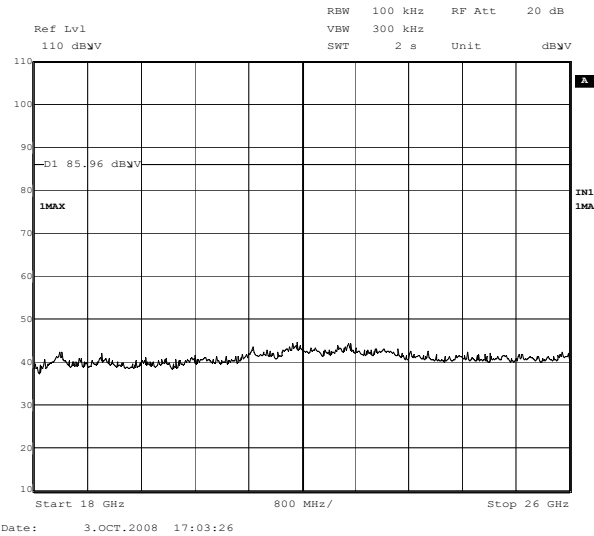
4.



5.



6.



Company:
Kind of Equipment:
Serial No.:

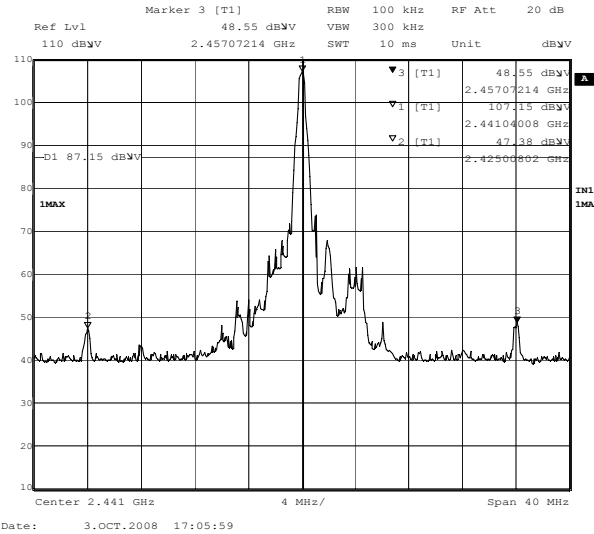
SATO CORPORATION
BARCODE PRINTER
8E031306

Report No.:
Model No.:
Power:

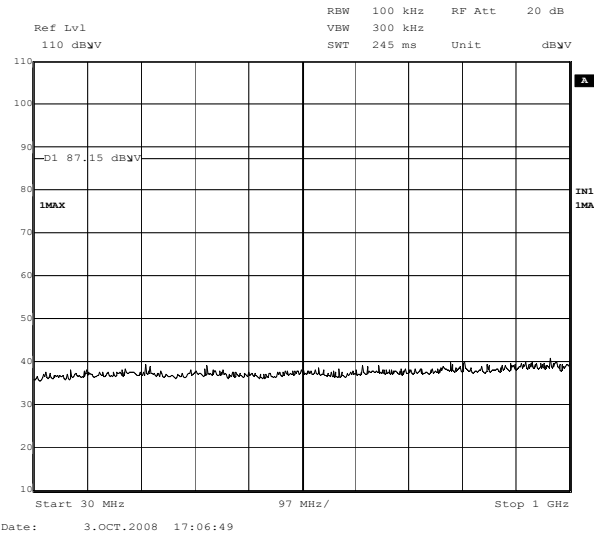
29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

[Transmitting DH5]
Ch:2441MHz

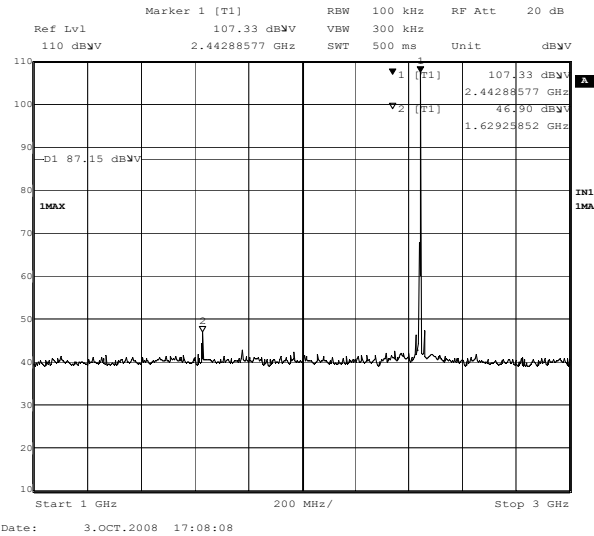
1.



2.

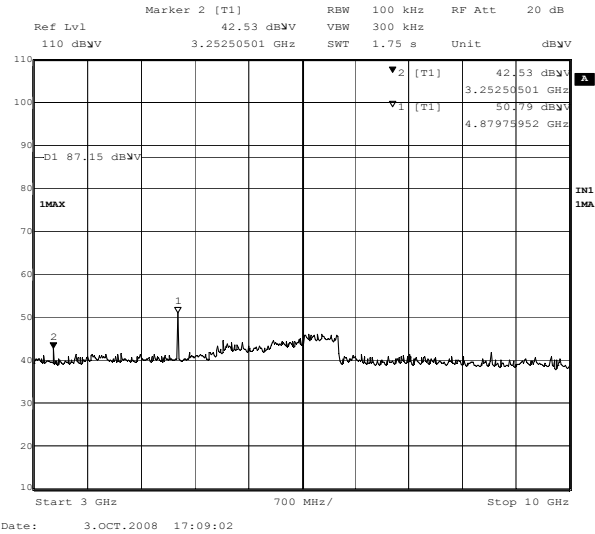


3.

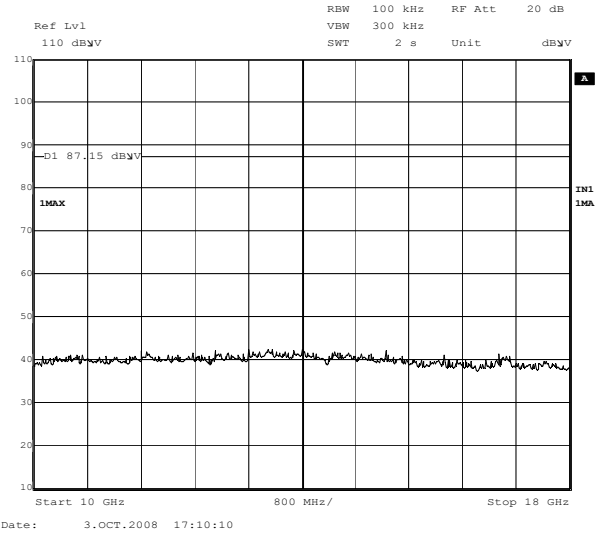


[Transmitting DH5]
Ch:2441MHz

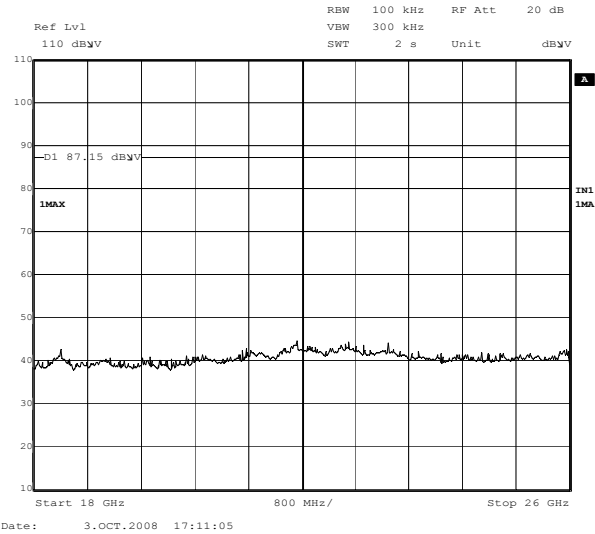
4.



5.



6.



Company:
Kind of Equipment:
Serial No.:

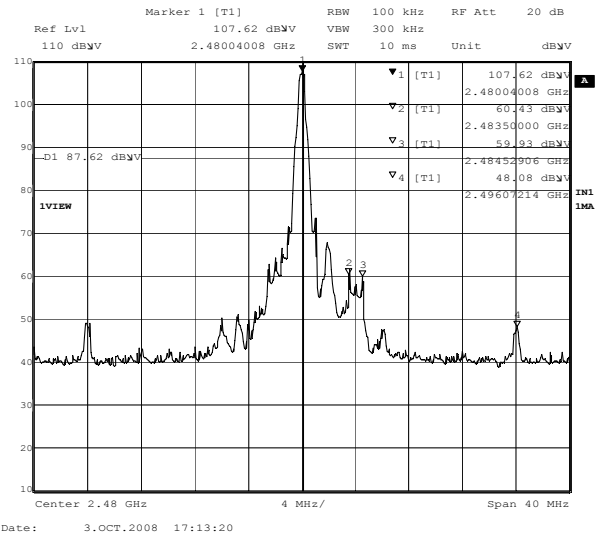
SATO CORPORATION
BARCODE PRINTER
8E031306

Report No.:
Model No.:
Power:

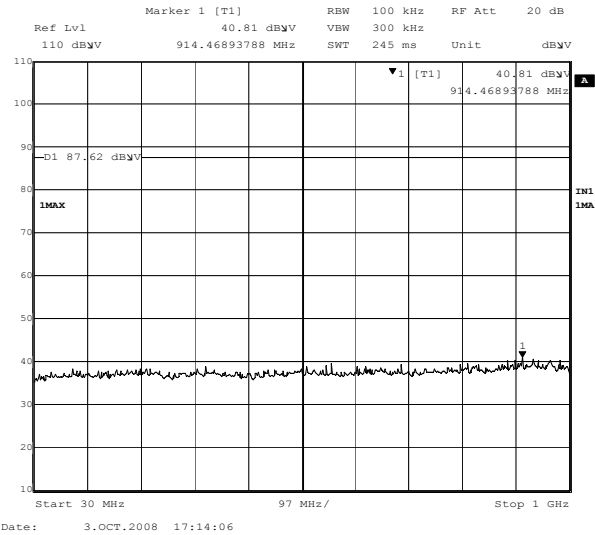
29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

[Transmitting DH5]
Ch:2480MHz

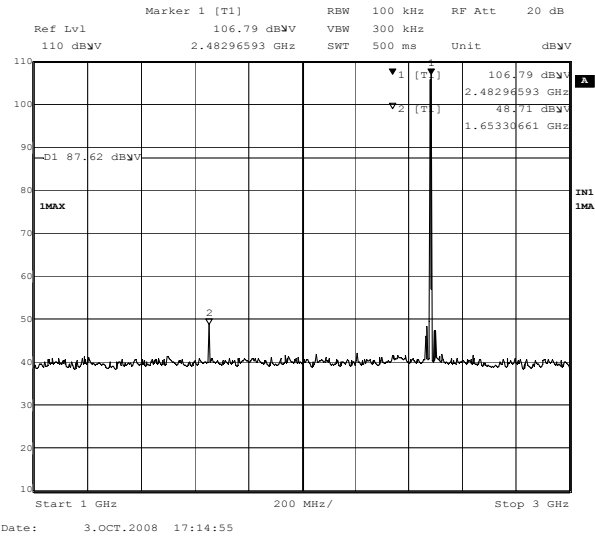
1.



2.

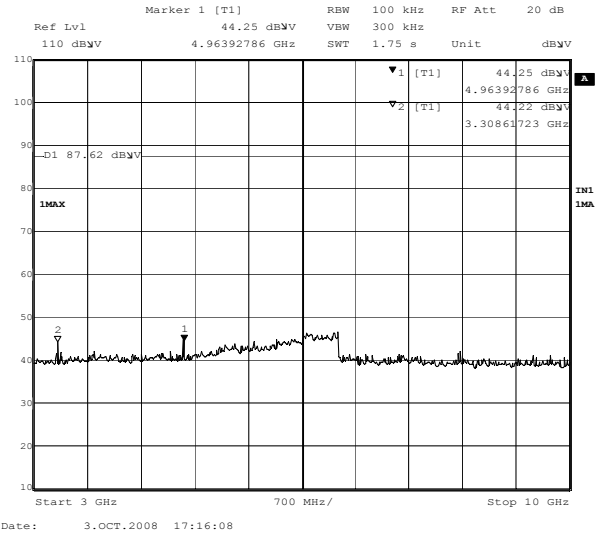


3.

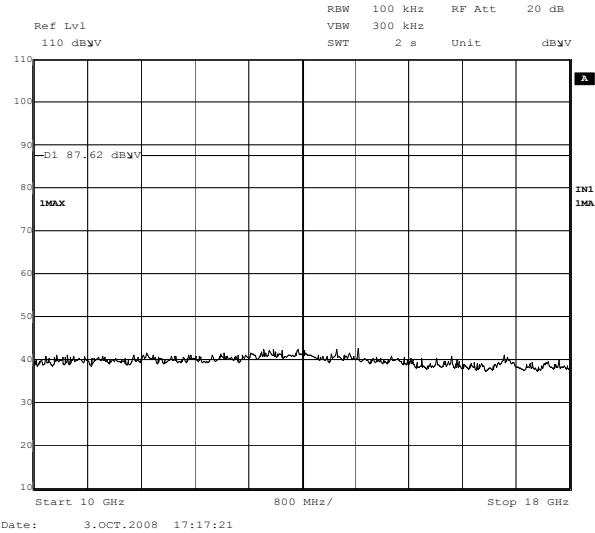


[Transmitting DH5]
Ch:2480MHz

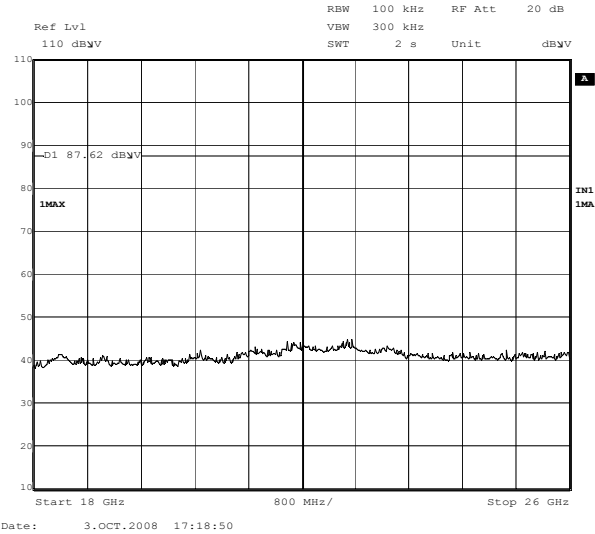
4.



5.



6.



Company:
Kind of Equipment:
Serial No.:

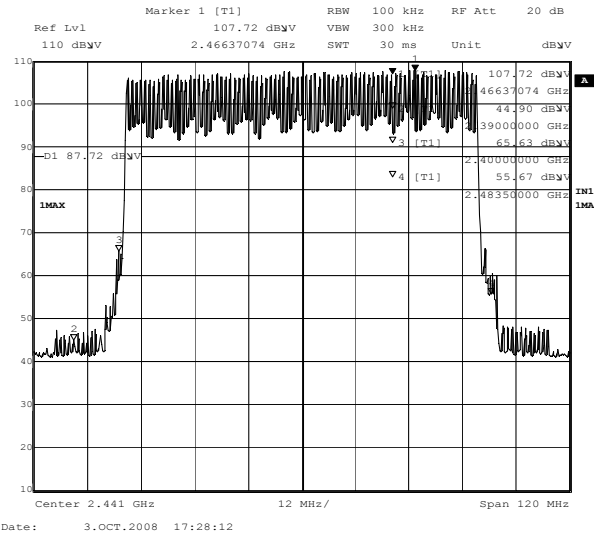
SATO CORPORATION
BARCODE PRINTER
8E031306

Report No.:
Model No.:
Power:

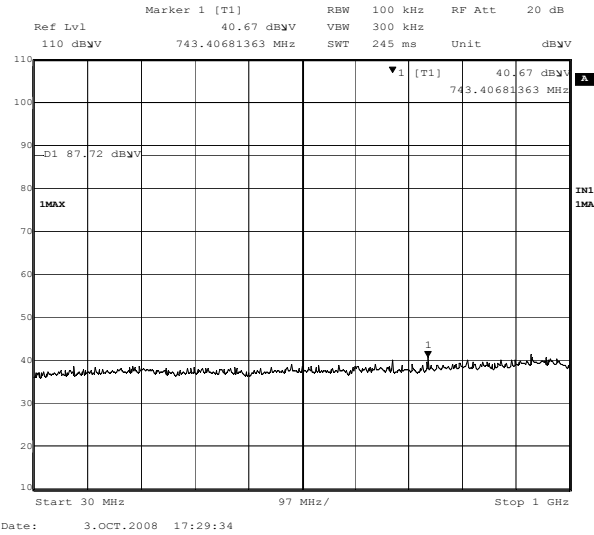
29AE0053-YK-01-A-R2
MB200i-B2
AC120V/60Hz

[Transmitting DH5]
Hopping

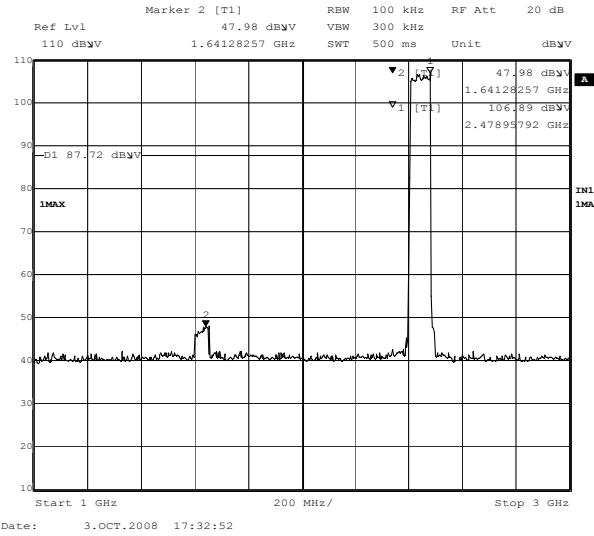
1.



2.

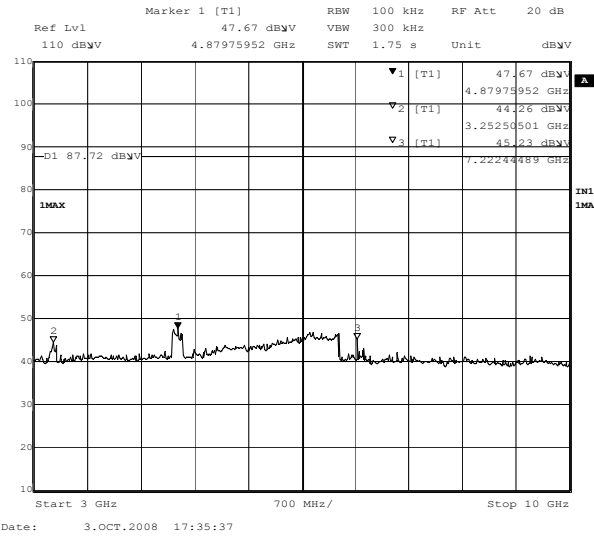


3.

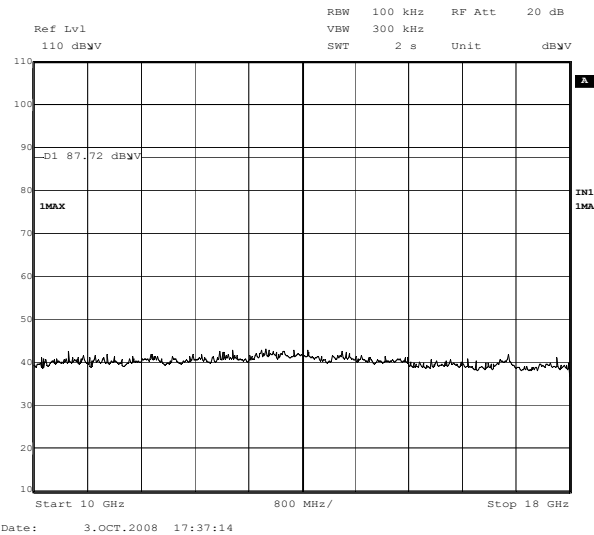


[Transmitting DH5]
Hopping

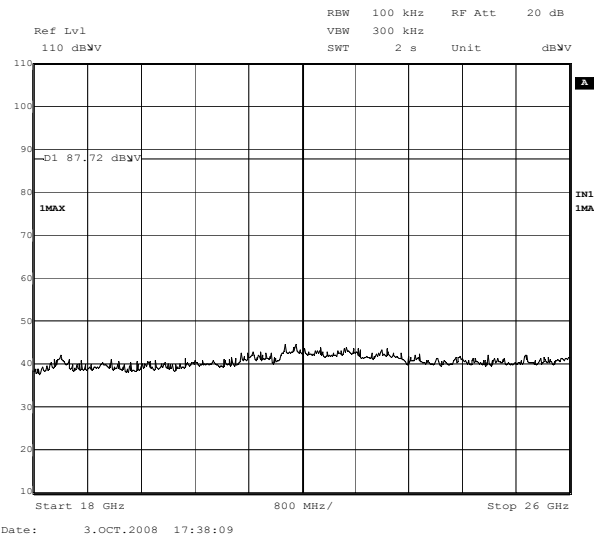
4.



5.

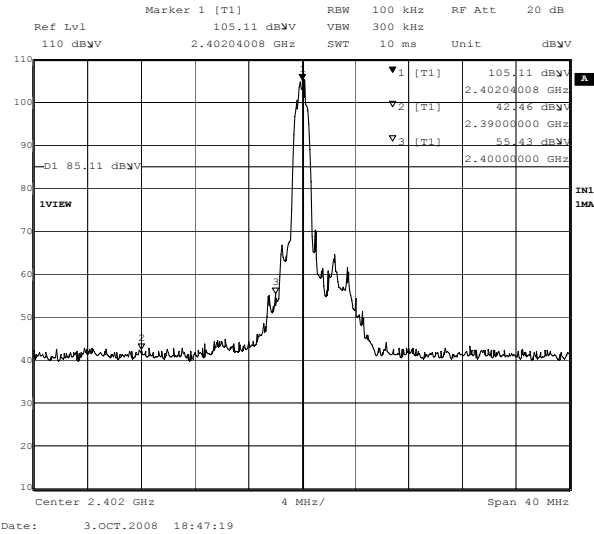


6.

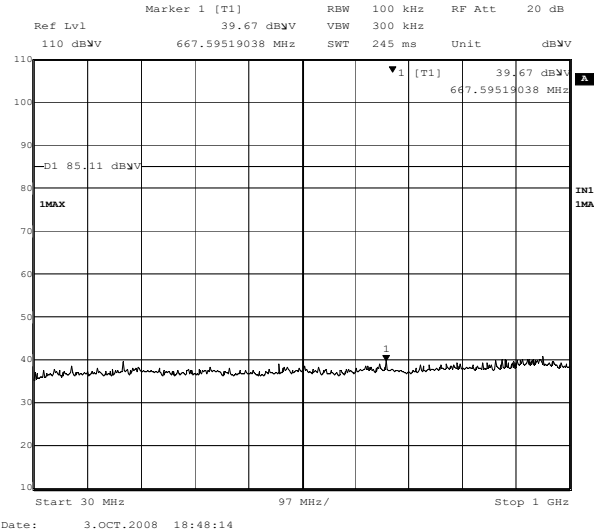


[Transmitting 3DH5]
Ch:2402MHz

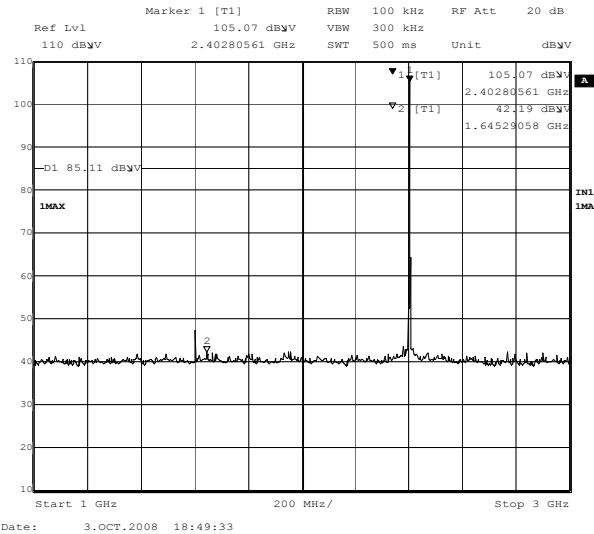
1.



2.

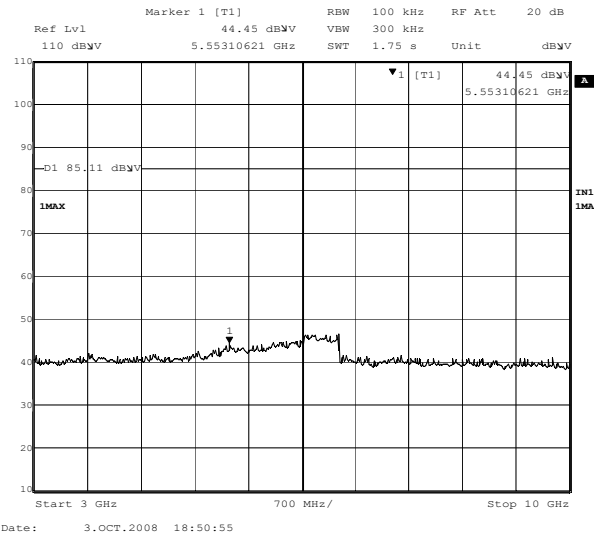


3.

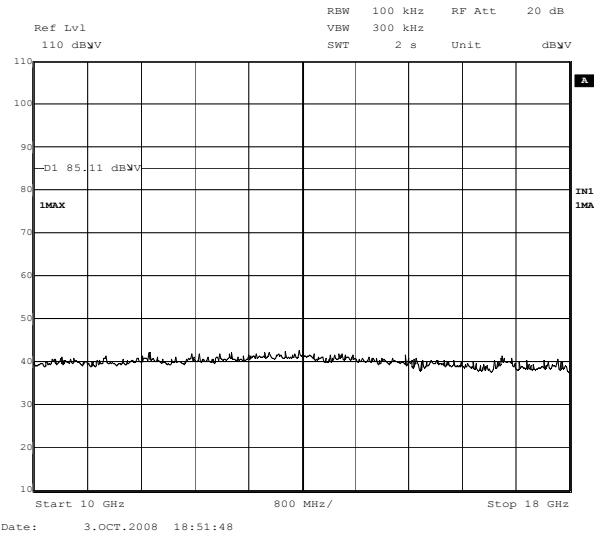


[Transmitting 3DH5]
Ch:2402MHz

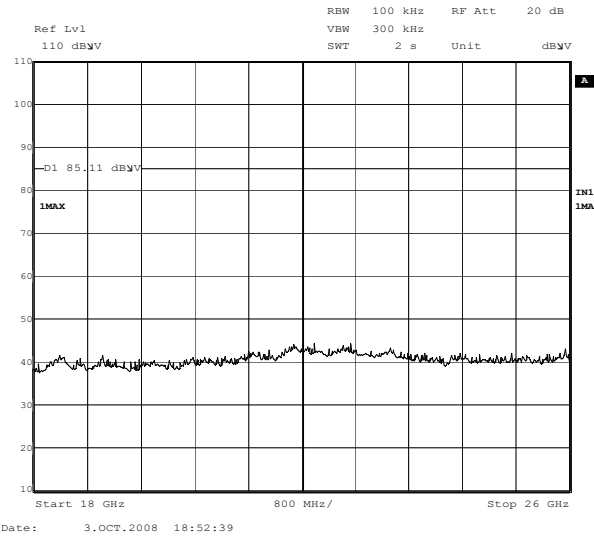
4.



5.

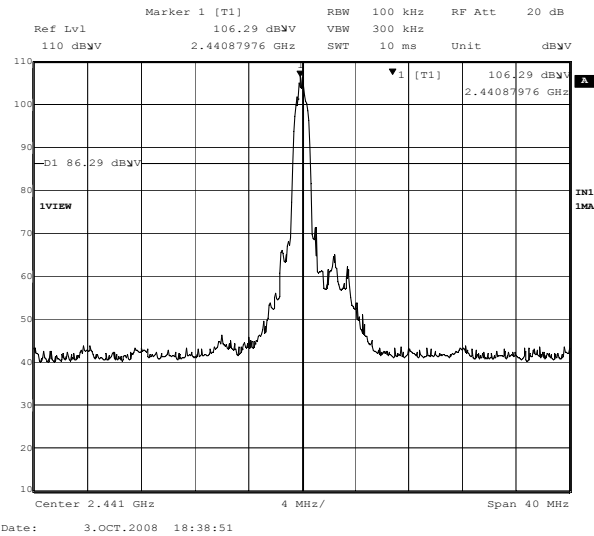


6.

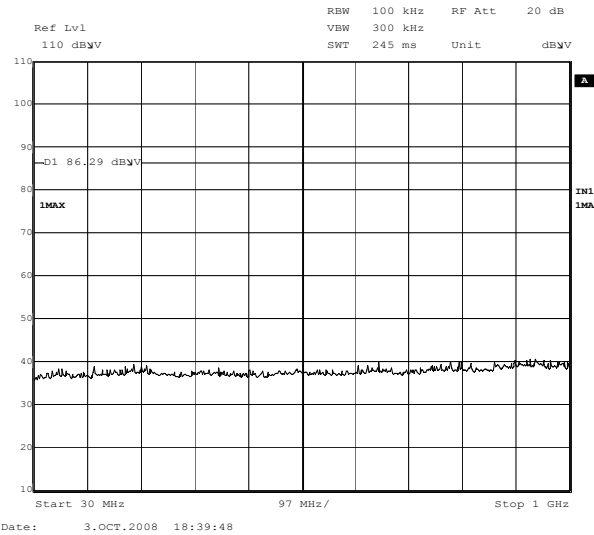


[Transmitting 3DH5]
Ch:2441MHz

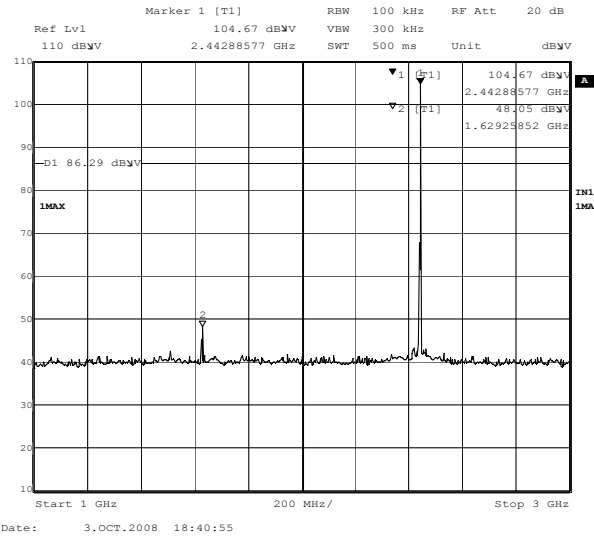
1.



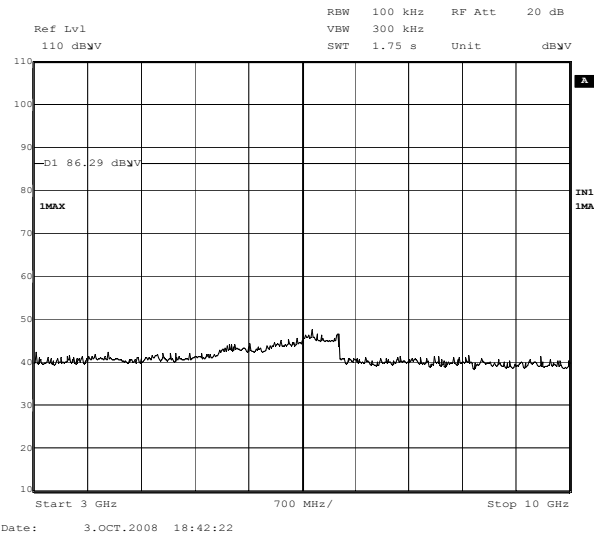
2.



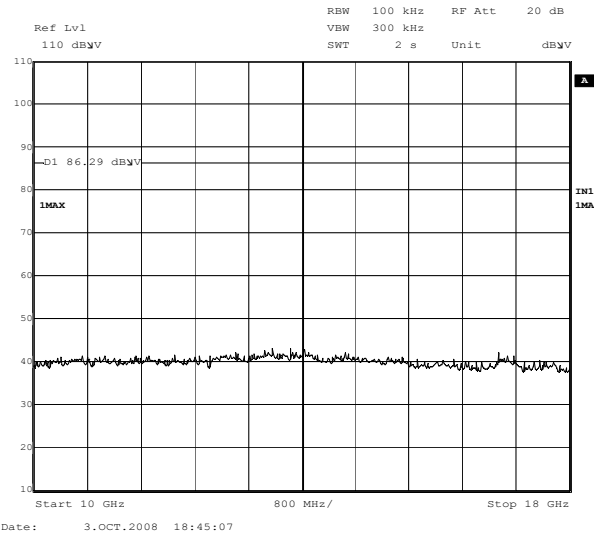
3.



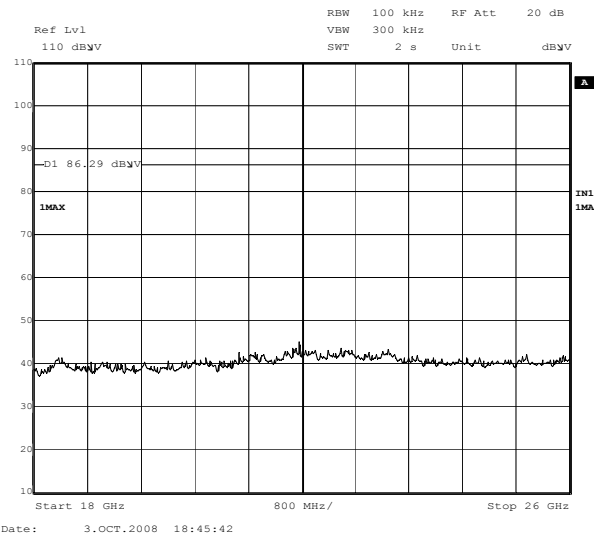
[Transmitting 3DH5]
Ch:2441MHz
4.



5.

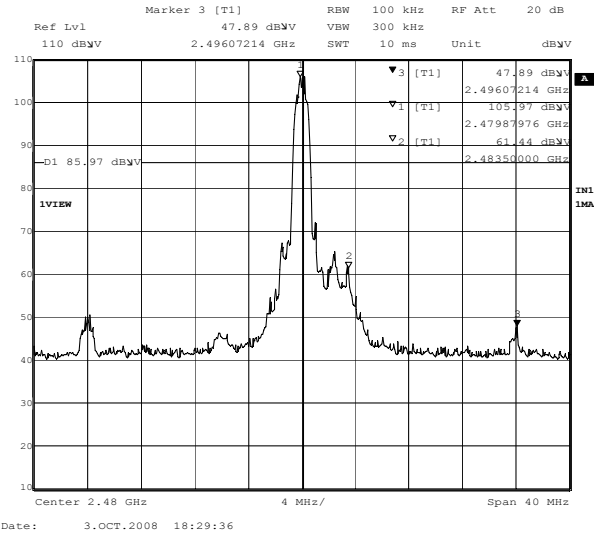


6.

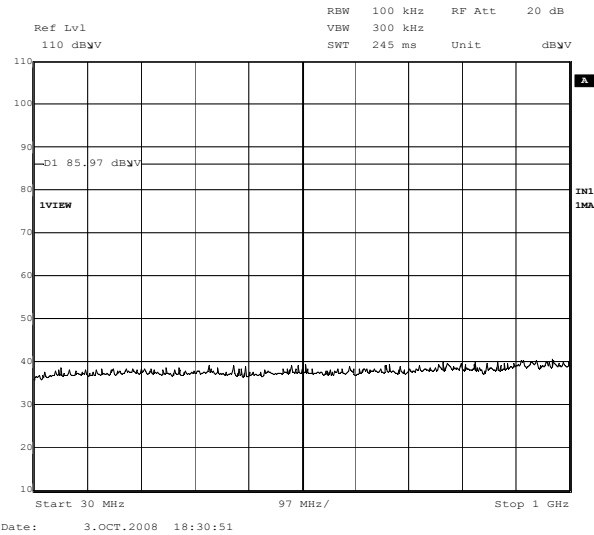


[Transmitting 3DH5]
Ch:2480MHz

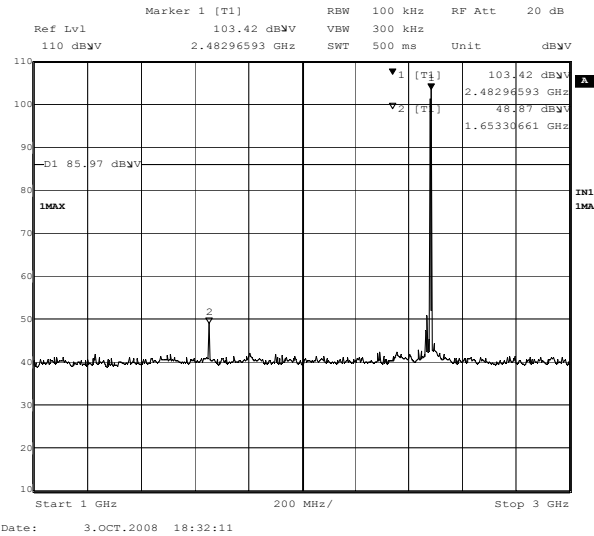
1.



2.

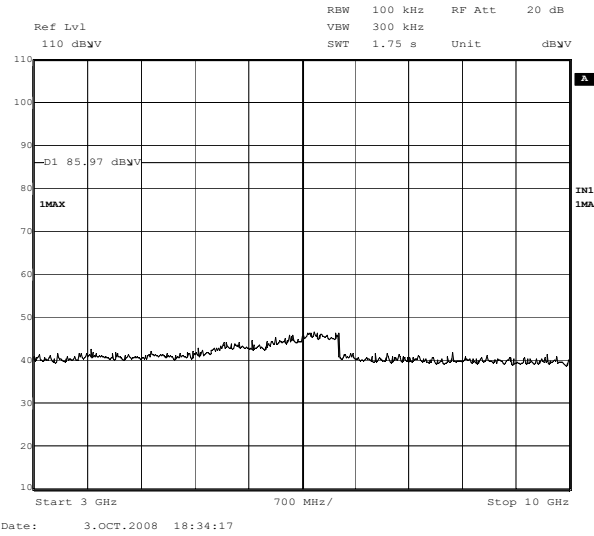


3.

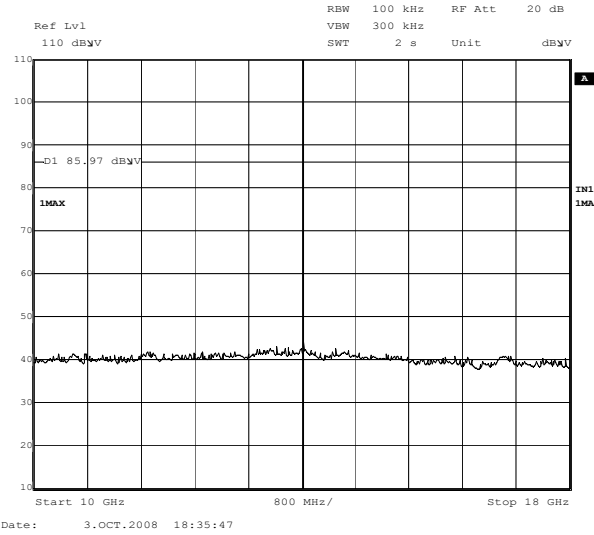


[Transmitting 3DH5]
Ch:2480MHz

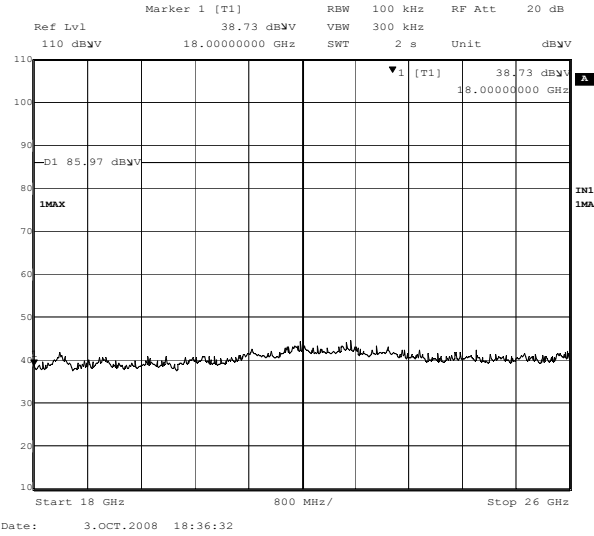
4.



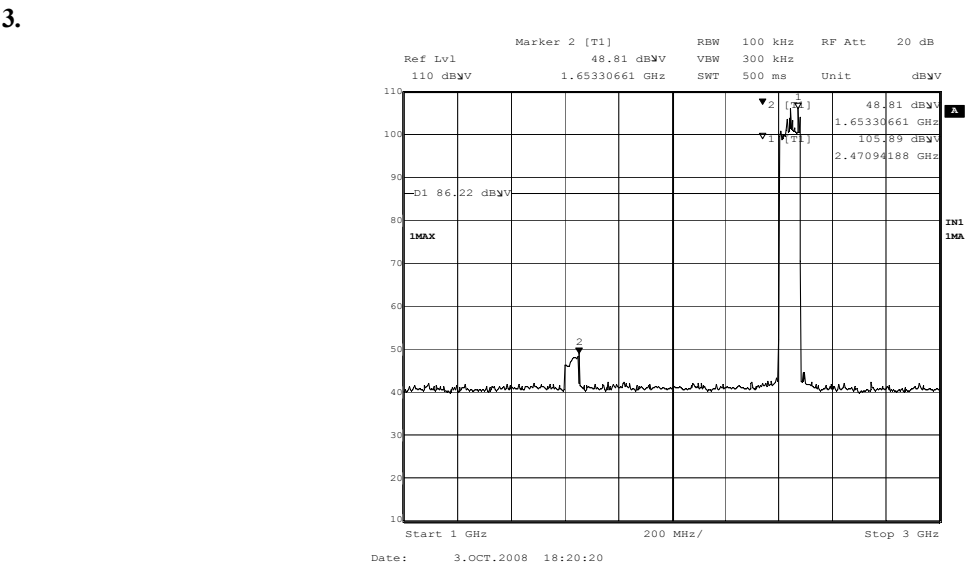
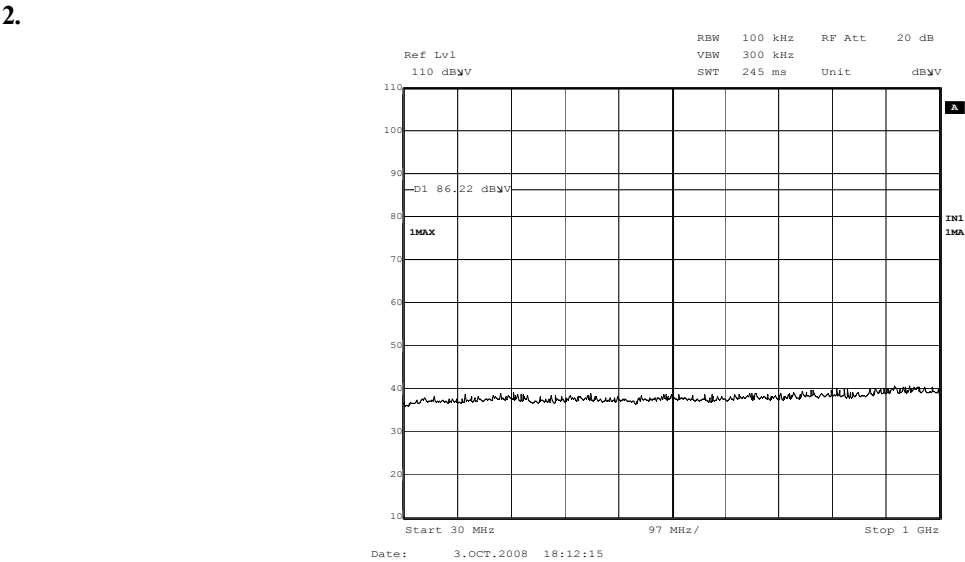
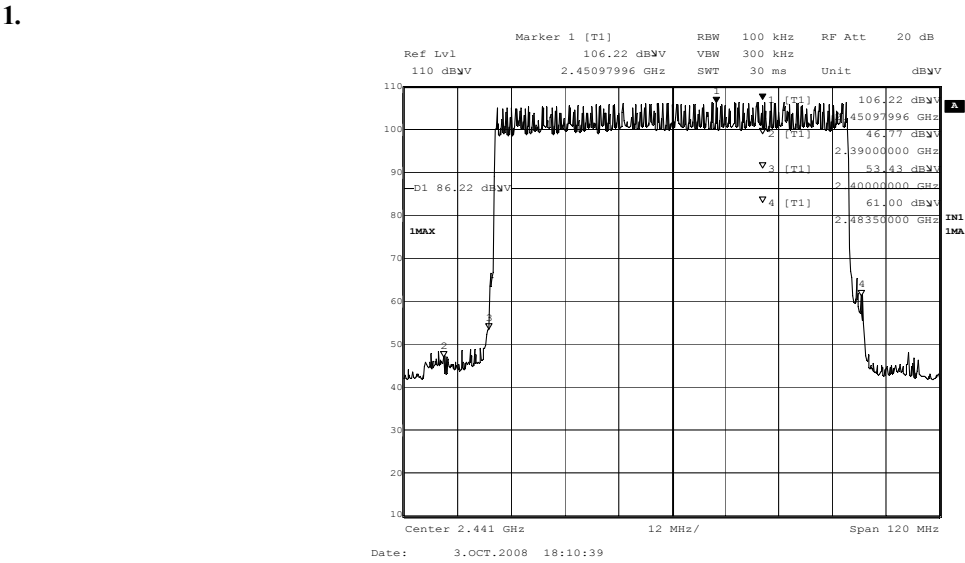
5.



6.

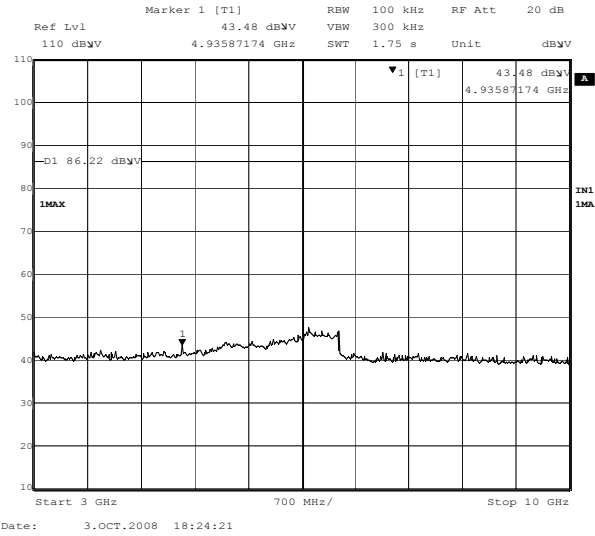


[Transmitting 3DH5]
Hopping

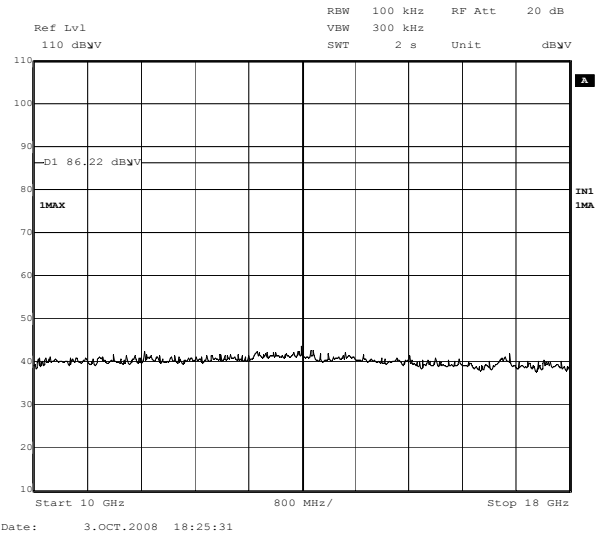


[Transmitting3 DH5]
Hopping

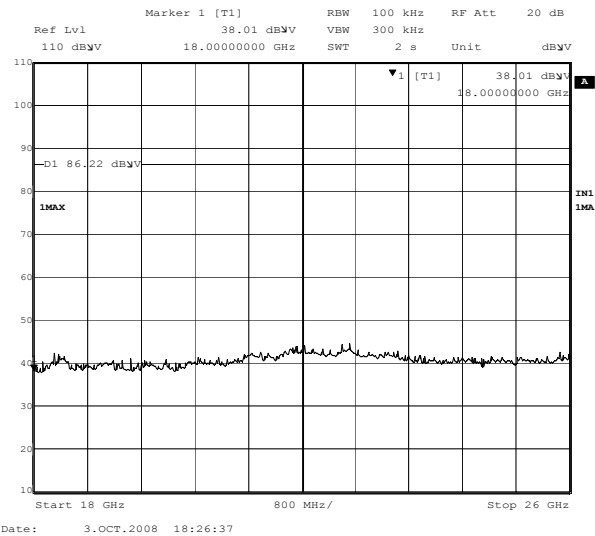
4.



5.



6.



DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2402MHz) DH5
 Remarks : HOR:X/VER:Z
 Date : 10/9/2008
 Test Distance : 3 m
 Temperature : 23 °C
 Humidity : 54 %
 Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	117.98	BB	37.2	42.8	12.6	27.5	2.3	6.0	30.6	36.2	43.5	12.9	7.3
2.	176.96	BB	37.8	30.6	16.1	27.3	2.8	6.0	35.4	28.2	43.5	8.1	15.3
3.	235.94	BB	38.3	34.7	17.2	27.3	3.3	6.0	37.5	33.9	46.0	8.5	12.1
4.	294.94	BB	33.1	32.3	20.0	27.3	3.7	6.0	35.5	34.7	46.0	10.5	11.3
5.	471.88	BB	31.8	34.0	18.2	27.2	4.9	6.0	33.7	35.9	46.0	12.3	10.1
6.	530.88	BB	31.3	33.8	19.0	27.0	5.3	6.0	34.6	37.1	46.0	11.4	8.9
7.	589.85	BB	37.8	38.2	19.9	27.1	5.6	6.0	42.2	42.6	46.0	3.8	3.4
8.	648.83	BB	32.1	32.8	20.2	27.2	5.9	6.0	37.0	37.7	46.0	9.0	8.3
9.	707.83	BB	33.2	33.1	20.5	27.1	6.2	6.1	38.9	38.8	46.0	7.1	7.2

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2402MHz) 3DH5
Remarks : HOR:X/VER:Z
Date : 10/9/2008
Test Distance : 3 m
Temperature : 23 °C
Humidity : 54 %
Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	117.97	BB	41.3	38.8	12.6	27.5	2.3	6.0	34.7	32.2	43.5	8.8	11.3
2.	176.98	BB	38.5	34.1	16.1	27.3	2.8	6.0	36.1	31.7	43.5	7.4	11.8
3.	235.94	BB	35.0	33.0	17.2	27.3	3.3	6.0	34.2	32.2	46.0	11.8	13.8
4.	294.93	BB	38.5	32.8	20.0	27.3	3.7	6.0	40.9	35.2	46.0	5.1	10.8
5.	471.89	BB	34.1	33.8	18.2	27.2	4.9	6.0	36.0	35.7	46.0	10.0	10.3
6.	530.87	BB	31.0	34.9	19.0	27.0	5.3	6.0	34.3	38.2	46.0	11.7	7.8
7.	589.86	BB	36.2	38.5	19.9	27.1	5.6	6.0	40.6	42.9	46.0	5.4	3.1
8.	648.84	BB	32.2	33.2	20.2	27.2	5.9	6.0	37.1	38.1	46.0	8.9	7.9
9.	707.83	BB	34.2	33.2	20.5	27.1	6.2	6.1	39.9	38.9	46.0	6.1	7.1

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2441MHz) DH5
 Remarks : HOR:X/VER:Z
 Date : 10/9/2008
 Test Distance : 3 m
 Temperature : 23 °C
 Humidity : 54 %
 Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	117.99	BB	40.7	43.5	12.6	27.5	2.3	6.0	34.1	36.9	43.5	9.4	6.6
2.	176.96	BB	38.6	32.5	16.1	27.3	2.8	6.0	36.2	30.1	43.5	7.3	13.4
3.	235.94	BB	34.9	33.5	17.2	27.3	3.3	6.0	34.1	32.7	46.0	11.9	13.3
4.	294.93	BB	37.4	33.2	20.0	27.3	3.7	6.0	39.8	35.6	46.0	6.2	10.4
5.	471.88	BB	34.4	33.9	18.2	27.2	4.9	6.0	36.3	35.8	46.0	9.7	10.2
6.	530.88	BB	32.4	34.7	19.0	27.0	5.3	6.0	35.7	38.0	46.0	10.3	8.0
7.	589.86	BB	37.1	38.5	19.9	27.1	5.6	6.0	41.5	42.9	46.0	4.5	3.1
8.	648.84	BB	32.1	33.2	20.2	27.2	5.9	6.0	37.0	38.1	46.0	9.0	7.9
9.	707.81	BB	33.8	33.3	20.5	27.0	6.2	6.1	39.6	39.1	46.0	6.4	6.9

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2441MHz) 3DH5
 Remarks : HOR:X/VER:Z
 Date : 10/9/2008
 Test Distance : 3 m
 Temperature : 23 °C
 Humidity : 54 %
 Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	117.99	BB	41.2	39.1	12.6	27.5	2.3	6.0	34.6	32.5	43.5	8.9	11.0
2.	176.97	BB	38.7	34.7	16.1	27.3	2.8	6.0	36.3	32.3	43.5	7.2	11.2
3.	235.94	BB	34.8	33.2	17.2	27.3	3.3	6.0	34.0	32.4	46.0	12.0	13.6
4.	294.93	BB	38.4	29.4	20.0	27.3	3.7	6.0	40.8	31.8	46.0	5.2	14.2
5.	471.89	BB	34.7	35.4	18.2	27.2	4.9	6.0	36.6	37.3	46.0	9.4	8.7
6.	530.86	BB	30.7	35.1	19.0	27.0	5.3	6.0	34.0	38.4	46.0	12.0	7.6
7.	589.85	BB	37.0	38.1	19.9	27.1	5.6	6.0	41.4	42.5	46.0	4.6	3.5
8.	648.83	BB	32.0	33.3	20.2	27.2	5.9	6.0	36.9	38.2	46.0	9.1	7.8
9.	707.82	BB	34.5	32.8	20.5	27.1	6.2	6.1	40.2	38.5	46.0	5.8	7.5

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2480MHz) DH5
 Remarks : HOR:X/VER:Z
 Date : 10/9/2008
 Test Distance : 3 m
 Temperature : 23 °C
 Humidity : 54 %
 Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	117.98	BB	41.2	39.7	12.6	27.5	2.3	6.0	34.6	33.1	43.5	8.9	10.4
2.	176.97	BB	39.8	34.5	16.1	27.3	2.8	6.0	37.4	32.1	43.5	6.1	11.4
3.	235.95	BB	36.0	33.2	17.2	27.3	3.3	6.0	35.2	32.4	46.0	10.8	13.6
4.	294.94	BB	37.4	32.8	20.0	27.3	3.7	6.0	39.8	35.2	46.0	6.2	10.8
5.	471.89	BB	35.0	34.8	18.2	27.2	4.9	6.0	36.9	36.7	46.0	9.1	9.3
6.	530.87	BB	31.6	35.5	19.0	27.0	5.3	6.0	34.9	38.8	46.0	11.1	7.2
7.	589.86	BB	37.5	38.4	19.9	27.1	5.6	6.0	41.9	42.8	46.0	4.1	3.2
8.	648.84	BB	31.8	32.8	20.2	27.2	5.9	6.0	36.7	37.7	46.0	9.3	8.3
9.	707.83	BB	34.6	33.5	20.5	27.1	6.2	6.1	40.3	39.2	46.0	5.7	6.8

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2480MHz) 3DH5
 Remarks : HOR:X/VER:Z
 Date : 10/9/2008
 Test Distance : 3 m
 Temperature : 23 °C
 Humidity : 54 %
 Regulation : FCC Part15C § 15.209

Engineer : Akira Sato

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	117.98	BB	40.9	39.0	12.6	27.5	2.3	6.0	34.3	32.4	43.5	9.2	11.1
2.	176.96	BB	38.3	35.0	16.1	27.3	2.8	6.0	35.9	32.6	43.5	7.6	10.9
3.	235.96	BB	35.2	34.2	17.2	27.3	3.3	6.0	34.4	33.4	46.0	11.6	12.6
4.	294.93	BB	37.4	31.4	20.0	27.3	3.7	6.0	39.8	33.8	46.0	6.2	12.2
5.	471.89	BB	35.2	35.3	18.2	27.2	4.9	6.0	37.1	37.2	46.0	8.9	8.8
6.	530.86	BB	31.7	35.6	19.0	27.0	5.3	6.0	35.0	38.9	46.0	11.0	7.1
7.	589.84	BB	36.1	38.5	19.9	27.1	5.6	6.0	40.5	42.9	46.0	5.5	3.1
8.	648.83	BB	32.3	34.3	20.2	27.2	5.9	6.0	37.2	39.2	46.0	8.8	6.8
9.	707.82	BB	34.1	32.1	20.5	27.1	6.2	6.1	39.8	37.8	46.0	6.2	8.2

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-08 (MH648A) ■ EMI RECEIVER: KTR-04 (ESVS10)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2402MHz) DH5
Remarks : PK RBW:1MHz, VBW:1MHz
Date : 10/20/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Go Ishiwata
Humidity : 58 %
Regulation : FCC Part15C § 15.209(PK Detection) 1-26GHz:3m/26-40GHz:1m

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	2390.00	BB	45.9	45.5	28.8	35.4	4.4	0.0	43.7	43.3	74.0	30.3	30.7
2.	2400.00	BB	69.6	68.4	28.8	35.3	4.5	0.0	67.6	66.4	74.0	6.4	7.6
3.	4804.00	BB	55.0	56.7	33.6	34.1	5.9	0.0	60.4	62.1	74.0	13.6	11.9
4.	7206.00	BB	46.1	45.6	36.1	34.7	7.1	0.0	54.6	54.1	74.0	19.4	19.9
5.	9608.00	BB	47.2	47.0	37.6	35.3	8.2	0.0	57.7	57.5	74.0	16.3	16.5
6.	12010.00	BB	46.4	46.9	39.7	35.0	8.9	0.0	60.0	60.5	74.0	14.0	13.5

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2402MHz(DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	2390.00	45.9	45.5	28.8	35.4	4.4	0.0	-30.7	13.0	12.6	54.0	41.0	41.4	1M
2	2400.00	69.6	68.4	28.8	35.3	4.5	0.0	-30.7	36.9	35.7	54.0	17.1	18.3	1M
3	4804.00	55.0	56.7	33.6	34.1	5.9	0.0	-30.7	29.7	31.4	54.0	24.3	22.6	1M
4	7206.00	46.1	45.6	36.1	34.7	7.1	0.0	-30.7	23.9	23.4	54.0	30.1	30.6	1M
5	9608.00	47.2	47.0	37.6	35.3	8.2	0.0	-30.7	27.0	26.8	54.0	27.0	27.2	1M
6	12010.00	46.4	46.9	39.7	35.0	8.9	0.0	-30.7	29.3	29.8	54.0	24.7	24.2	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation: $20 \times \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) DH5
Remarks : PK RBW:1MHz, VBW:1MHz
Date : 10/20/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Go Ishiwata
Humidity : 58 %
Regulation : FCC Part15C § 15.209 (PK Detection) 1-26GHz:3m/26-40GHz:1m

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	4882.00	BB	56.8	56.6	33.8	34.1	6.0	0.0	62.5	62.3	74.0	11.5	11.7
2.	7323.00	BB	45.9	46.4	36.2	34.8	7.1	0.0	54.4	54.9	74.0	19.6	19.1
3.	9764.00	BB	47.0	46.9	37.6	35.4	8.2	0.0	57.4	57.3	74.0	16.6	16.7
4.	12205.00	BB	46.2	46.5	39.9	34.8	9.0	0.0	60.3	60.6	74.0	13.7	13.4

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2441MHz(DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	4882.00	56.8	56.6	33.8	34.1	6.0	0.0	-30.7	31.81	31.6	54.0	22.2	22.4	1M
2	7323.00	45.9	46.4	36.2	34.8	7.1	0.0	-30.7	23.71	24.2	54.0	30.3	29.8	1M
3	9764.00	47.0	46.9	37.6	35.4	8.2	0.0	-30.7	26.71	26.6	54.0	27.3	27.4	1M
4	12205.00	46.2	46.5	39.9	34.8	9.0	0.0	-30.7	29.61	29.9	54.0	24.4	24.1	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation: $20 \times \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2480MHz) DH5
 Remarks : PK RBW:1MHz, VBW:1MHz
 Date : 10/20/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 58 %
 Regulation : FCC Part15C § 15. 209 (PK Detection) 1-26GHz:3m/26-40GHz:1m

Engineer : Go Ishiwata

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	2483.50	BB	58.8	52.8	28.8	35.3	4.5	0.0	56.8	50.8	74.0	17.2	23.2
2.	4960.00	BB	54.6	55.5	34.1	34.1	6.0	0.0	60.6	61.5	74.0	13.4	12.5
3.	7440.00	BB	46.2	45.9	36.3	34.8	7.1	0.0	54.8	54.5	74.0	19.2	19.5
4.	9920.00	BB	47.4	46.7	37.6	35.4	8.3	0.0	57.9	57.2	74.0	16.1	16.8
5.	12400.00	BB	46.3	46.6	40.2	34.6	9.0	0.0	60.9	61.2	74.0	13.1	12.8

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2480MHz(DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	2483.50	58.8	52.8	28.8	35.3	4.5	0.0	-30.7	26.1	20.1	54.0	27.9	33.9	1M
2	4960.00	54.6	55.5	34.1	34.1	6.0	0.0	-30.7	29.9	30.8	54.0	24.1	23.2	1M
3	7440.00	46.2	45.9	36.3	34.8	7.1	0.0	-30.7	24.1	23.8	54.0	29.9	30.2	1M
4	9920.00	47.4	46.7	37.6	35.4	8.3	0.0	-30.7	27.2	26.5	54.0	26.8	27.5	1M
5	12400.00	46.3	46.6	40.2	34.6	9.0	0.0	-30.7	30.2	30.5	54.0	23.8	23.5	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation. $20 \cdot \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2402MHz) 3DH5
 Remarks : PK RBW:1MHz, VBW:1MHz
 Date : 10/20/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 58 %
 Regulation : FCC Part15C § 15.209(PK Detection) 1-26GHz:3m/26-40GHz:1m

Engineer : Go Ishiwata

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	2390.00	BB	44.5	47.1	28.8	35.4	4.4	0.0	42.3	44.9	74.0	31.7	29.1
2.	2400.00	BB	48.6	49.0	28.8	35.3	4.5	0.0	46.6	47.0	74.0	27.4	27.0
3.	4804.00	BB	50.5	51.6	33.6	34.1	5.9	0.0	55.9	57.0	74.0	18.1	17.0
4.	7206.00	BB	45.0	44.2	36.1	34.7	7.1	0.0	53.5	52.7	74.0	20.5	21.3
5.	9608.00	BB	44.9	45.1	37.6	35.3	8.2	0.0	55.4	55.6	74.0	18.6	18.4
6.	12010.00	BB	45.9	45.3	39.7	35.0	8.9	0.0	59.5	58.9	74.0	14.5	15.1

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2402MHz(3DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	2390.00	44.5	47.1	28.8	35.4	4.4	0.0	-30.7	11.6	14.2	54.0	42.4	39.8	1M
2	2400.00	48.6	49.0	28.8	35.3	4.5	0.0	-30.7	15.9	16.3	54.0	38.1	37.7	1M
3	4804.00	50.5	51.6	33.6	34.1	5.9	0.0	-30.7	25.2	26.3	54.0	28.8	27.7	1M
4	7206.00	45.0	44.2	36.1	34.7	7.1	0.0	-30.7	22.8	22.0	54.0	31.2	32.0	1M
5	9608.00	44.9	45.1	37.6	35.3	8.2	0.0	-30.7	24.7	24.9	54.0	29.3	29.1	1M
6	12010.00	45.9	45.3	39.7	35.0	8.9	0.0	-30.7	28.8	28.2	54.0	25.2	25.8	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation: $20 \times \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
Kind of Equipment : BARCODE PRINTER
Model No. : MB200i-B2
Serial No. : 8E0314
Power : AC120V/60Hz
Mode : Transmitting (2441MHz) 3DH5
Remarks : PK RBW:1MHz, VBW:1MHz
Date : 10/20/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Go Ishiwata
Humidity : 58 %
Regulation : FCC Part15C § 15.209(PK Detection) 1-26GHz:3m/26-40GHz:1m

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	4882.00	BB	51.0	51.1	33.8	34.1	6.0	0.0	56.7	56.8	74.0	17.3	17.2
2.	7323.00	BB	44.6	44.4	36.2	34.8	7.1	0.0	53.1	52.9	74.0	20.9	21.1
3.	9764.00	BB	44.9	45.0	37.6	35.4	8.2	0.0	55.3	55.4	74.0	18.7	18.6
4.	12205.00	BB	45.3	45.6	39.9	34.8	9.0	0.0	59.4	59.7	74.0	14.6	14.3

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2441MHz(3DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	4882.00	51.0	51.1	33.8	34.1	6.0	0.0	-30.7	26.0	26.1	54.0	28.0	27.9	1M
2	7323.00	44.6	44.4	36.2	34.8	7.1	0.0	-30.7	22.4	22.2	54.0	31.6	31.8	1M
3	9764.00	44.9	45.0	37.6	35.4	8.2	0.0	-30.7	24.6	24.7	54.0	29.4	29.3	1M
4	12205.00	45.3	45.6	39.9	34.8	9.0	0.0	-30.7	28.7	29.0	54.0	25.3	25.0	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation: $20 \times \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Applicant : SATO CORPORATION
 Kind of Equipment : BARCODE PRINTER
 Model No. : MB200i-B2
 Serial No. : 8E0314
 Power : AC120V/60Hz
 Mode : Transmitting (2480MHz) 3DH5
 Remarks : PK RBW:1MHz, VBW:1MHz
 Date : 10/20/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 58 %
 Regulation : FCC Part15C § 15. 209 (PK Detection) 1-26GHz:3m/26-40GHz:1m

Engineer : Go Ishiwata

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 [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	2483.50	BB	59.5	54.6	28.8	35.3	4.5	0.0	57.5	52.6	74.0	16.5	21.4
2.	4960.00	BB	48.1	49.9	34.1	34.1	6.0	0.0	54.1	55.9	74.0	19.9	18.1
3.	7440.00	BB	44.7	44.2	36.3	34.8	7.1	0.0	53.3	52.8	74.0	20.7	21.2
4.	9920.00	BB	45.0	45.3	37.6	35.4	8.3	0.0	55.5	55.8	74.0	18.5	18.2
5.	12400.00	BB	45.7	45.6	40.2	34.6	9.0	0.0	60.3	60.2	74.0	13.7	13.8

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz

■ CABLE: KCC-D16/D17 ■ PREAMP: KAF-07 (8449B) ■ SPECTRUM ANALYZER: KTR-01 (ES140)

DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 29AE0053-YK-01-A-R2

Company : SATO CORPORATION

Equipment : BARCODE PRINTER

Model : MB200i-B2

Sample No. : 8E0314

Power : AC120V/60Hz

Mode : Transmitting 2480MHz(3DH5)

Regulation : FCC Part15C Section 15.209

Test Distance : 3m

Date : 2008/10/20

Temperature : 22deg.C

Humidity : 58%

ENGINEER : Go Ishiwata

AV calculation value SPECTRUMANALYZER RBW:1MHz

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN		VBW [Hz]
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]	
1	2483.50	59.5	54.6	28.8	35.3	4.5	0.0	-30.7	26.81	21.9	54.0	27.2	32.1	1M
2	4960.00	48.1	49.9	34.1	34.1	6.0	0.0	-30.7	23.4	25.2	54.0	30.6	28.8	1M
3	7440.00	44.7	44.2	36.3	34.8	7.1	0.0	-30.7	22.6	22.1	54.0	31.4	31.9	1M
4	9920.00	45.0	45.3	37.6	35.4	8.3	0.0	-30.7	24.8	25.1	54.0	29.2	28.9	1M
5	12400.00	45.7	45.6	40.2	34.6	9.0	0.0	-30.7	29.6	29.5	54.0	24.4	24.5	1M

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation. $20 \cdot \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$ See Appendix 4

* This noise is not plus emission

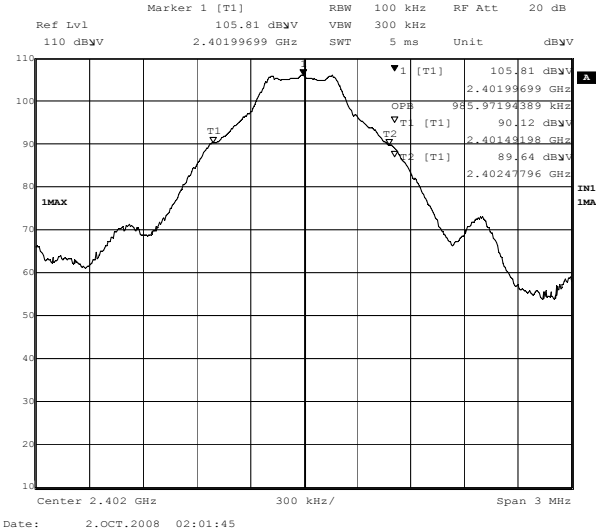
Occupied Bandwidth (99%) (Regulation: RSS-Gen 4.6.1)

UL Japan, Inc. Yamakita EMC lab.
Date:
Temp./Humid.:
Engineer:
Test mode:

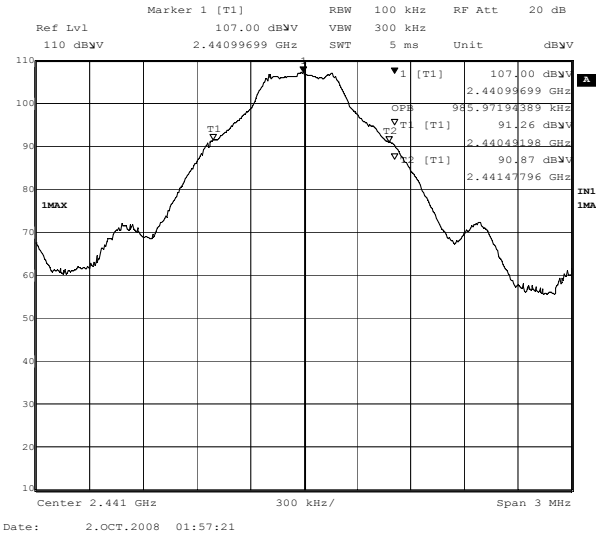
2
2008.10.01
24
Makoto Hosaka
Transmitting

shielded room
deg. C. / 66 %

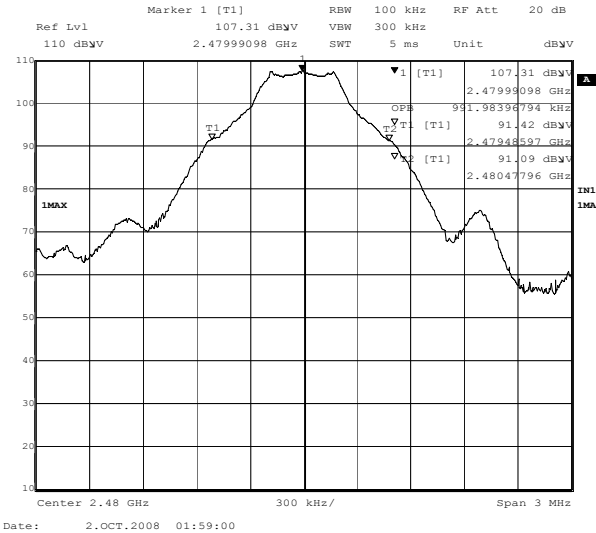
[Hopping off, DH5]
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2. ch : 2441MHz/Occupied Bandwidth:986.0kHz

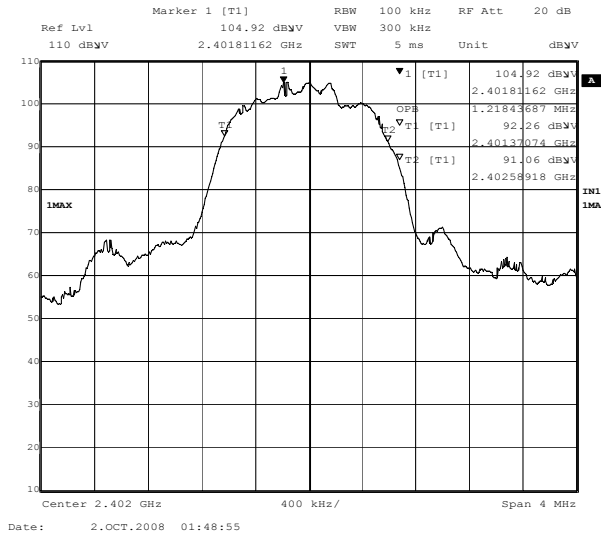


3. ch : 2480MHz/Occupied Bandwidth:992.0kHz

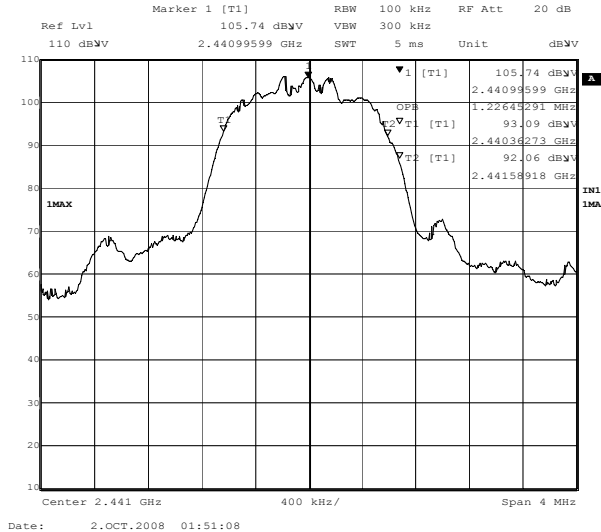


[Hopping off, 3DH5]

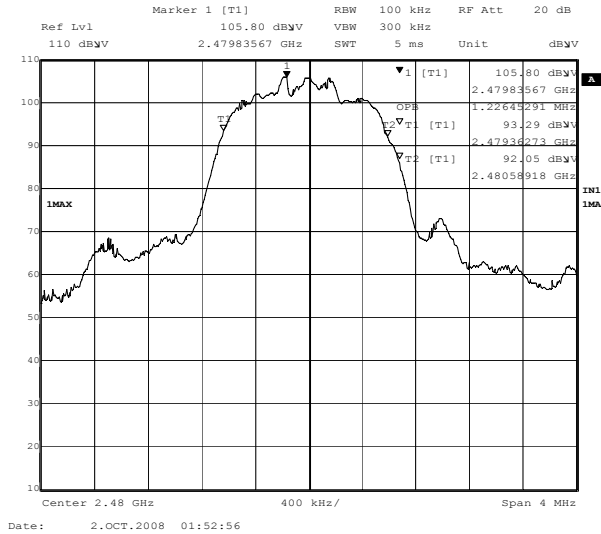
4. ch : 2402MHz/Occupied Bandwidth:1.2184MHz

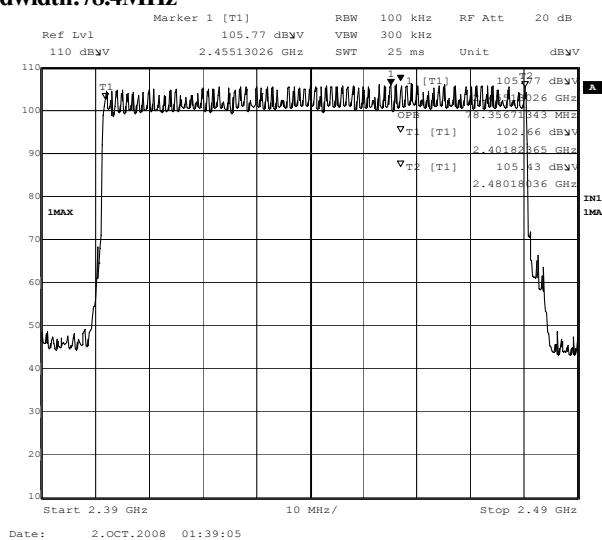


5. ch : 2441MHz/Occupied Bandwidth:1.2265MHz



6. ch : 2480MHz/Occupied Bandwidth:1.2265MHz





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(NSA)	Anechoic Chamber	JSE	Semi 3m	RE	2008/08/06 * 12
KAF-08	Pre Amplifier	Anritsu	MH648A	RE	2008/06/03 * 12
KAT6-01	Attenuator	INMET	18N-6dB	RE	2008/03/17 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/12/27 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	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	2007/11/01 * 12
KSA-04	Spectrum Analyzer	Advantest	R3271A	RE	2008/09/29 * 12
KTR-04	Test Receiver	Rohde & Schwarz	ESVS10	RE	2007/10/30 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	RE	2008/07/07 * 12
KJM-07	Measure	KOMELON	KMC-36	RE	-
KAF-07	Pre Amplifier	Hewlett Packard	8449B	RE	2007/12/10 * 12
KCC-D16/D17	Coaxial Cable	INSULATED WIRE INC	KPS-1501-200-KPS/KPS-1501-2000-KPS	RE	2008/02/21 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2008/08/11 * 12
KHA-03	Horn Antenna	EMCO	3160-09	RE	2008/04/30 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2008/04/18 * 12
YA-CE	Conducted emission(software)	UL Japan	CE(Ver.1.6)	CE	-
KCC-14/15/16 /18/KPL-01/KRM-01	Coaxial Cable/Pulse Limiter/RF Relay Matrix	Fujikura/Suhner/PMM/TSJ	5D-2W/8D-2W/S04272B/S04272B/PL01/-	CE	2008/05/15 * 12
KLS-01	LISN(AMN)	Schwarzbeck	NSLK8126	CE	2008/04/07 * 12
KSA-09	Spectrum Analyzer	Advantest	R3265	CE	2008/07/07 * 12
KTR-02	Test Receiver	Rohde & Schwarz	ESCS30	CE	2008/09/12 * 12
KOS-04	Humidity Indicator	SATO	PC-5000TRH	CE	2008/07/07 * 12
KJM-08	Measure	KOMELON	KMC-36	CE	-

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 ,
AT: Antenna terminal disturbance voltage

APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
KPM-05	Power meter	Agilent	E4417A	AT5	2008/03/21 * 12
KPSS-01	Power sensor	Agilent	E9327A	AT5	2008/03/27 * 12
KCC-D20	Coaxial Cable	SUHNER	SUCOFLEX102	AT(full)	2008/07/09 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	AT1,2,3,6	2008/04/18 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	AT4	2008/01/11 * 12
KOSC-01	Oscilloscope	Tektronix	TDS-2022B	AT4	2008/05/07 * 12
KDT-01	Coaxial Crystal Detector	Agilent	8473C	AT4	Pre Check
KOS-01	Humidity Indicator	Custom	CTH-190	AT1,2,3,5,6	2008/07/14 * 12
KOS-07	Humidity Indicator	Custom	CTH-190	AT4	2006/10/06 * 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 :

Antenna terminal disturbance voltage

AT1: Carrier frequency separation

AT2: 20dB bandwidth & Occupied bandwidth (99%)

AT3: Number of hopping frequency

AT4: Dwell time

AT5: Maximum peak output power

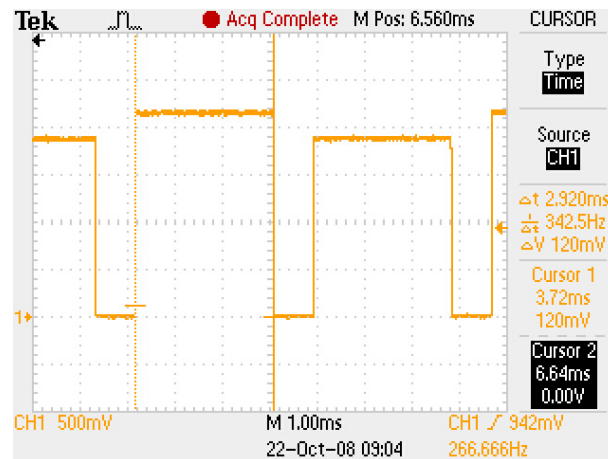
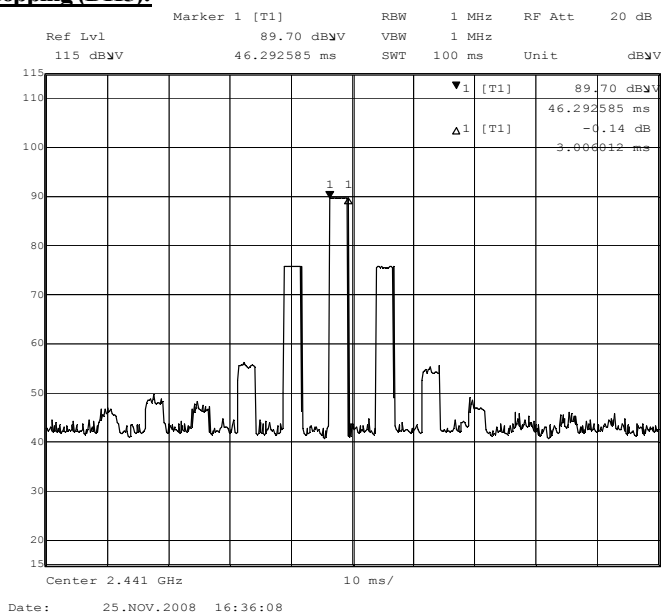
AT6: Out of band emissions (Antenna port conducted)

APPENDIX 4 Duty factor calculation: FCC 15.35C

COMPANY : SATO CORPORATION
EQUIPMENT : BARCODE PRINTER
MODEL NUMBER: MB200i-B2
SERIAL NUMBER: 8E0314
FCC ID : MMFMB200I-B2
POWER : AC120V/60Hz

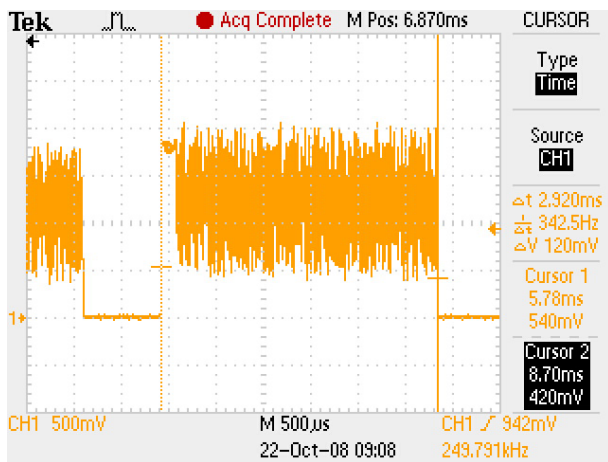
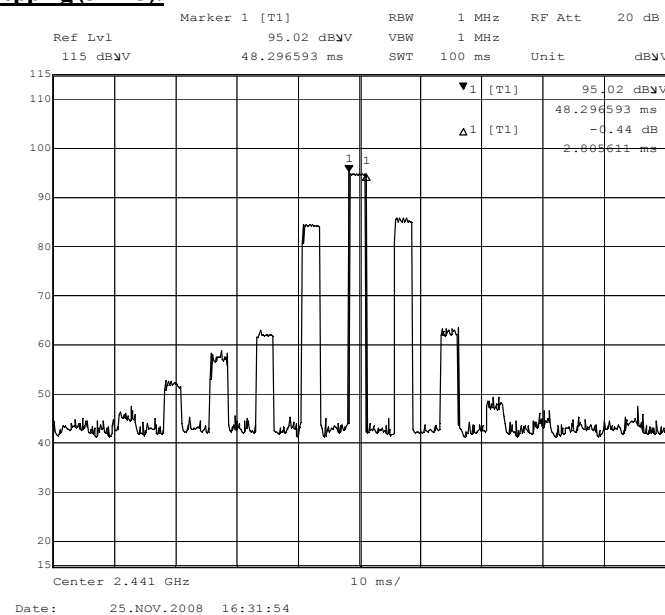
UL Japan, Inc. Yamakita No.4 Shielded Room
REPORT NO : 29AE0053-YK-01-A-R2
REGULATION : FCC Part15SubpartA 35(c)
DATE : 2008.11.25
TEMP/HUMI : 21deg.C./43%
TEST MODE : Transmitting
ENGINEER : Makoto Hosaka

Hopping (DH5):



Duty Factor calculation: $20 \cdot \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$

Hopping (3DH5):



Duty Factor calculation: $20 \cdot \log(2.92[\text{ms}]/100[\text{ms}]) = -30.69[\text{dB}]$