

DATA OF CONDUCTION TEST

UL Japan, Inc.
YAMAKITA No.1 SHIELD ROOM
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:902.75MHz
Remarks : ANT:Dipole
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C Engineer : Takahiro Suzuki
Humidity : 66 %
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	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dB μ V]		[dB μ V]					[dB]	[dB μ V]	[dB μ V]		[dB]	
1.	0.1500	35.8	—	36.1	—	0.1	0.1	0.0	36.3	—	66.0	56.0	29.7	—
2.	0.2000	35.1	—	36.4	—	0.1	0.1	0.0	36.6	—	63.6	53.6	27.0	—
3.	0.2500	33.9	—	34.4	—	0.1	0.1	0.0	34.6	—	61.8	51.8	27.2	—
4.	0.3000	31.7	—	31.6	—	0.1	0.1	0.0	31.9	—	60.2	50.2	28.3	—
5.	0.3500	29.0	—	30.8	—	0.1	0.2	0.0	31.1	—	59.0	49.0	27.9	—
6.	0.4534	26.3	—	27.5	—	0.1	0.2	0.0	27.8	—	56.8	46.8	29.0	—
7.	2.3886	27.1	—	27.0	—	0.1	0.4	0.0	27.6	—	56.0	46.0	28.4	—

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

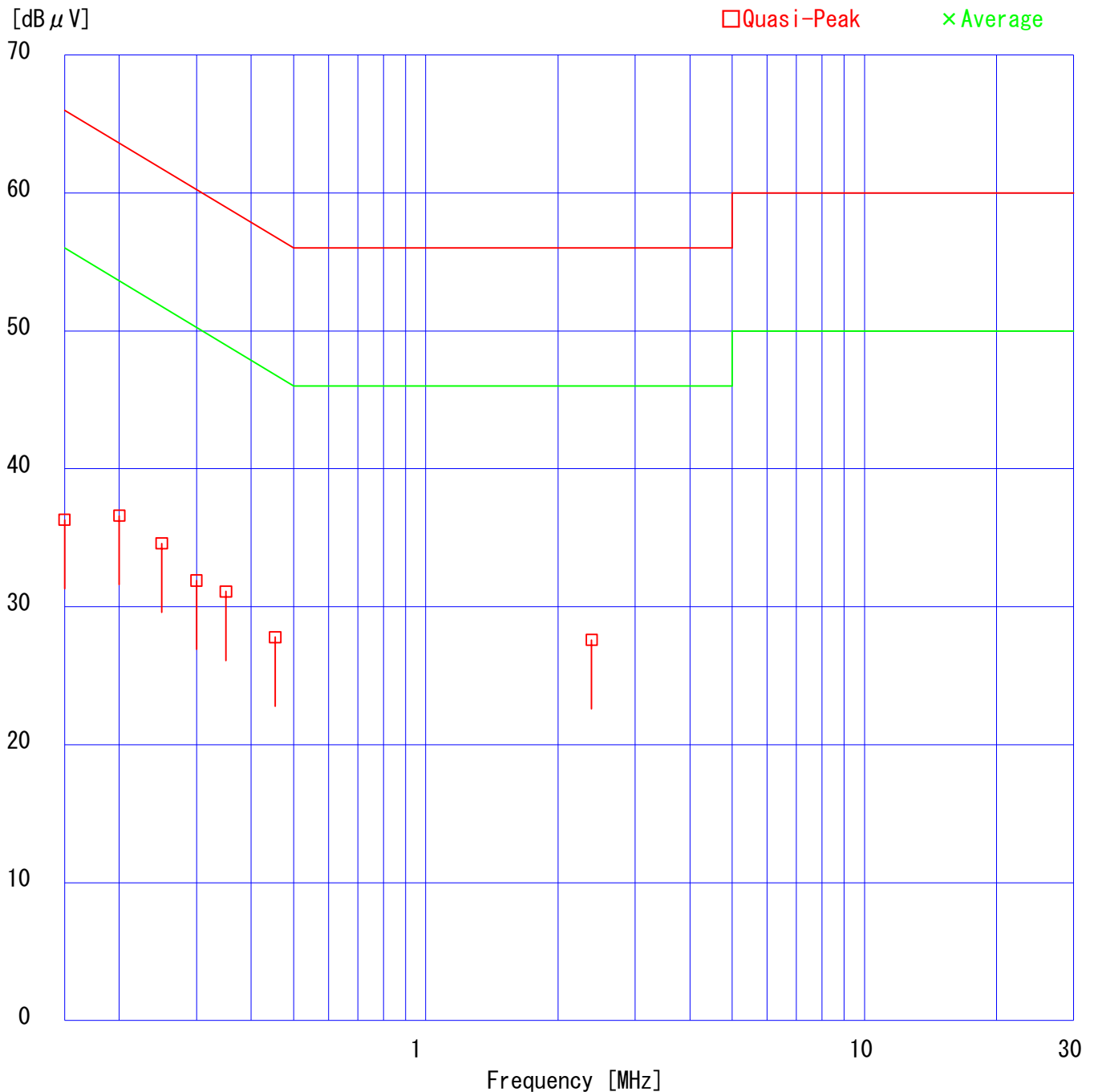
■ LISN: KLS-02 (NSLK8127) ■ COAXIAL CABLE: KCC-14/15/16/18
■ PULSE LIMITTER: KPL-01 (PL01) ■ EMI RECEIVER: KTR-02 (ESCS30)

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Engineer : Takahiro Suzuki



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

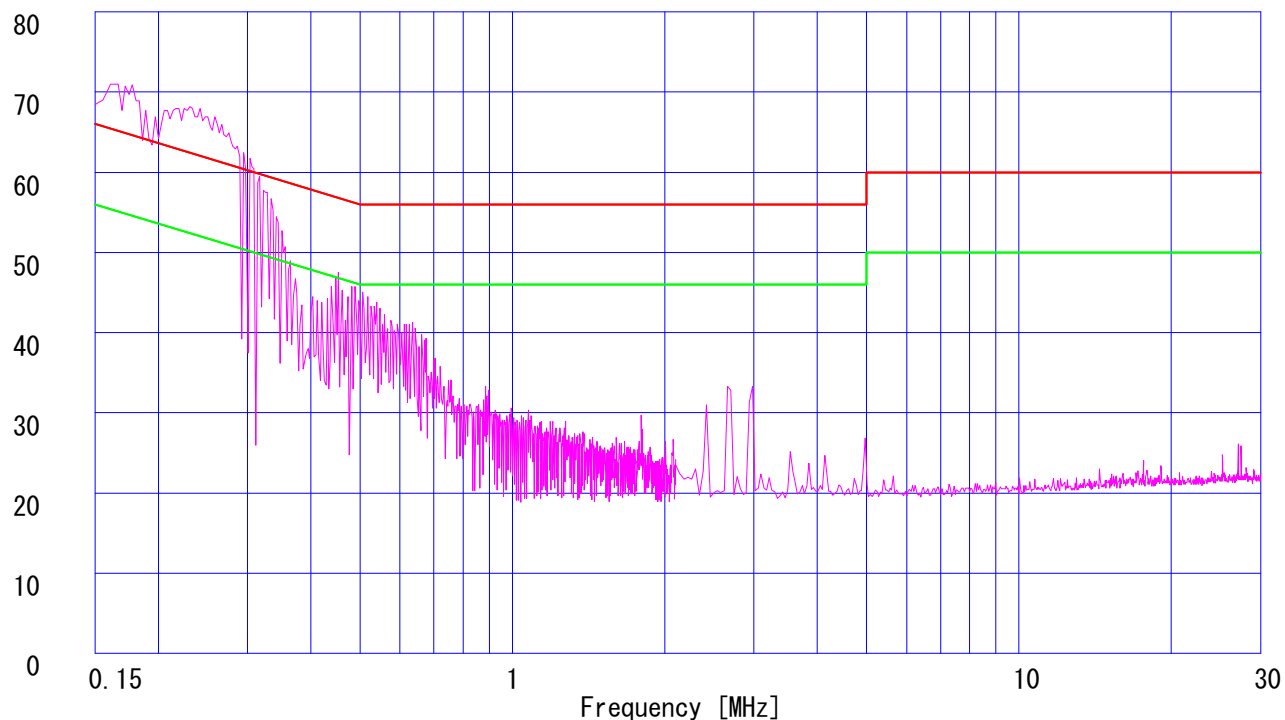
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:902.75MHz
Remarks : ANT:Dipole
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki

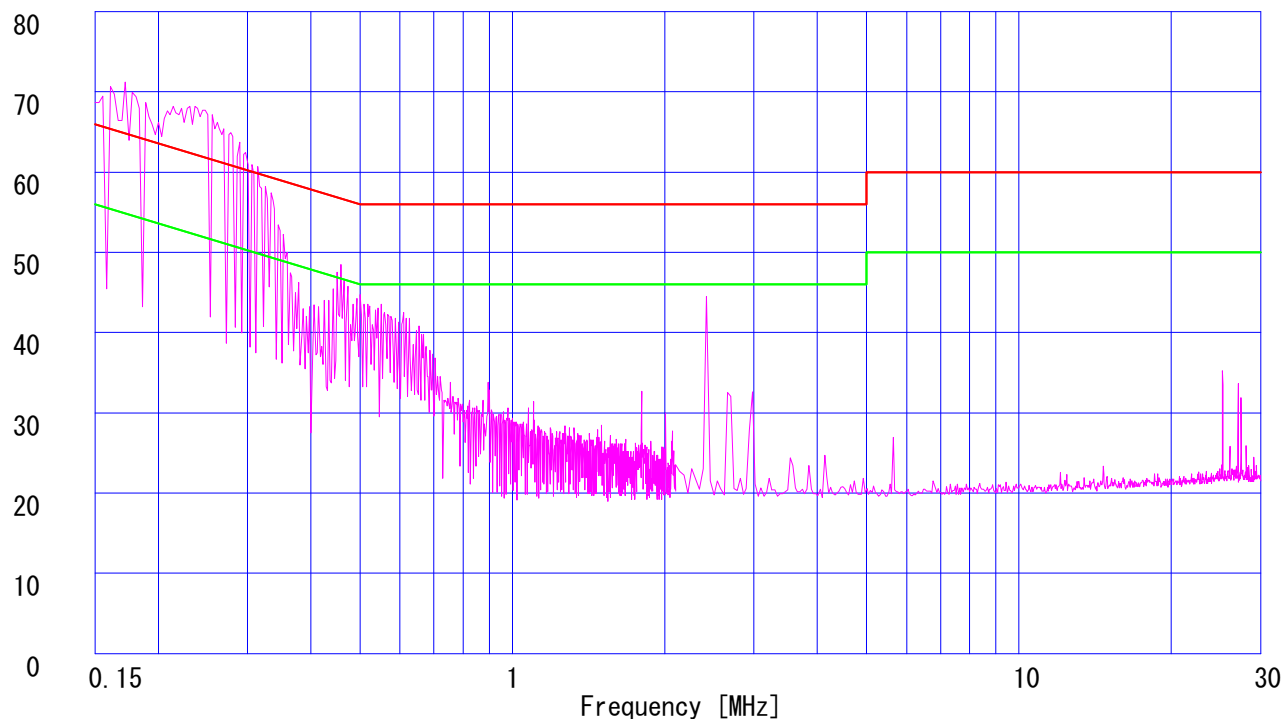
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

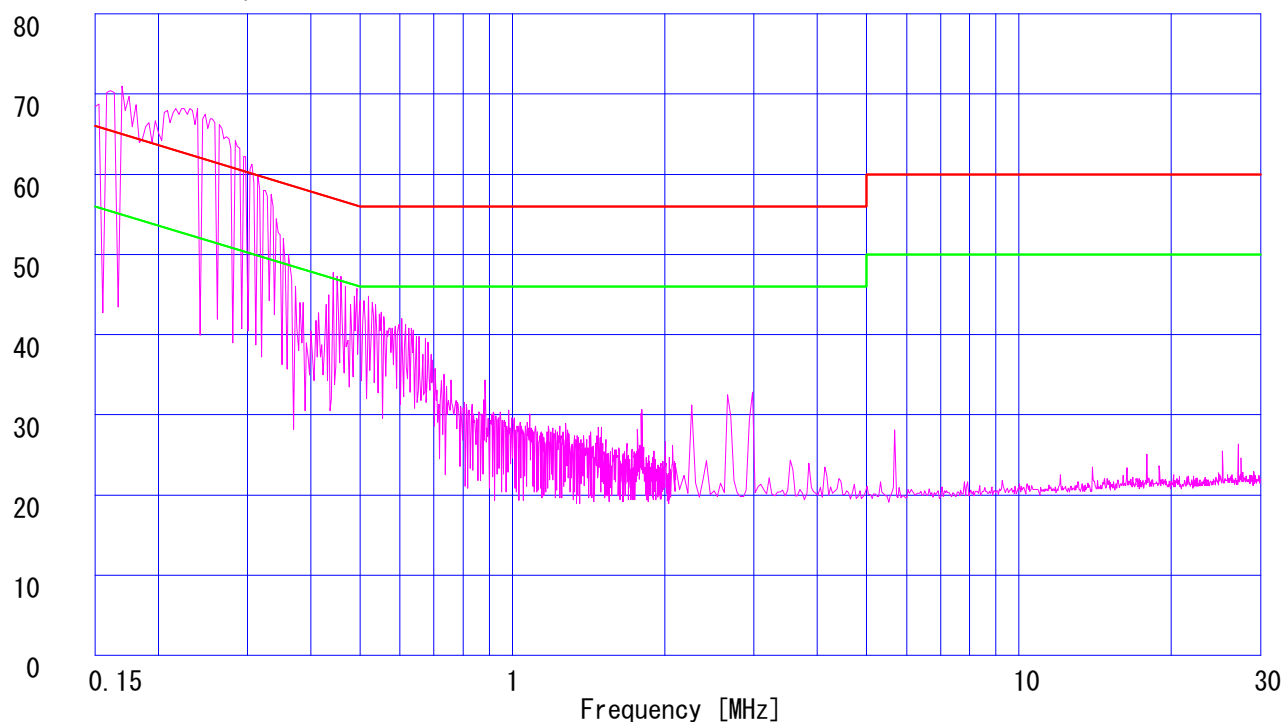
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:915.25MHz
Remarks : ANT:Dipole
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki

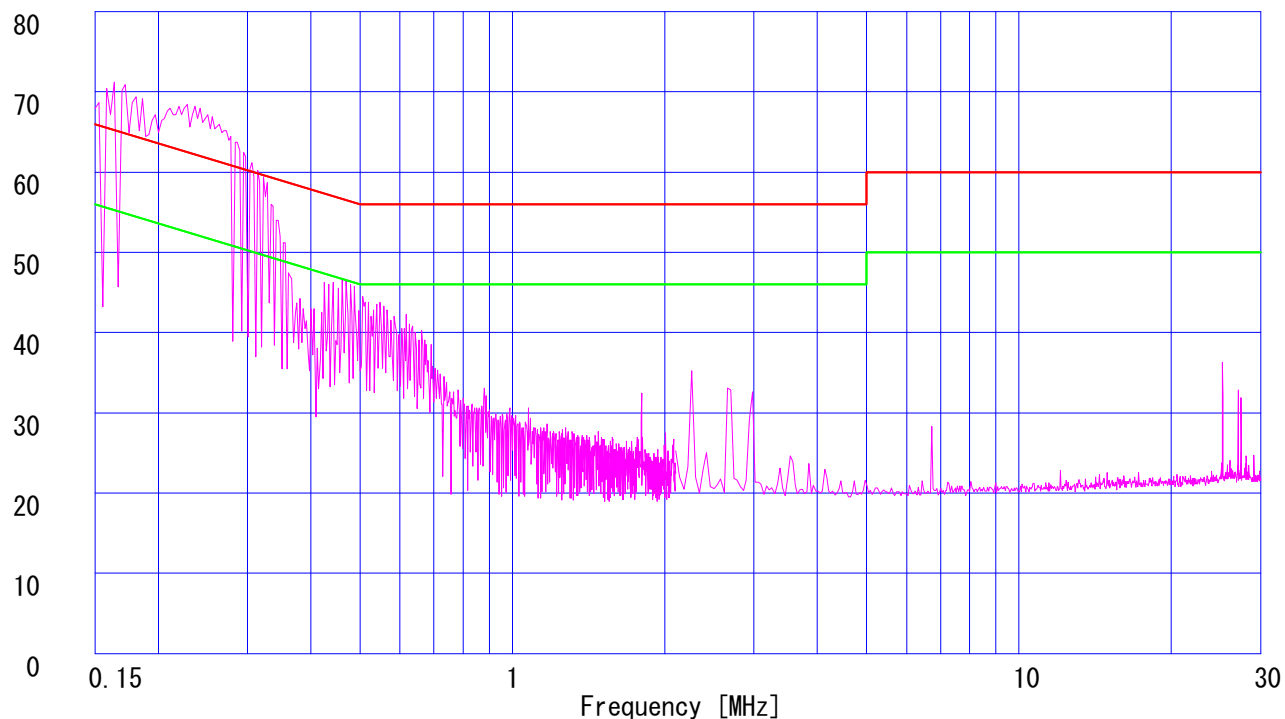
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

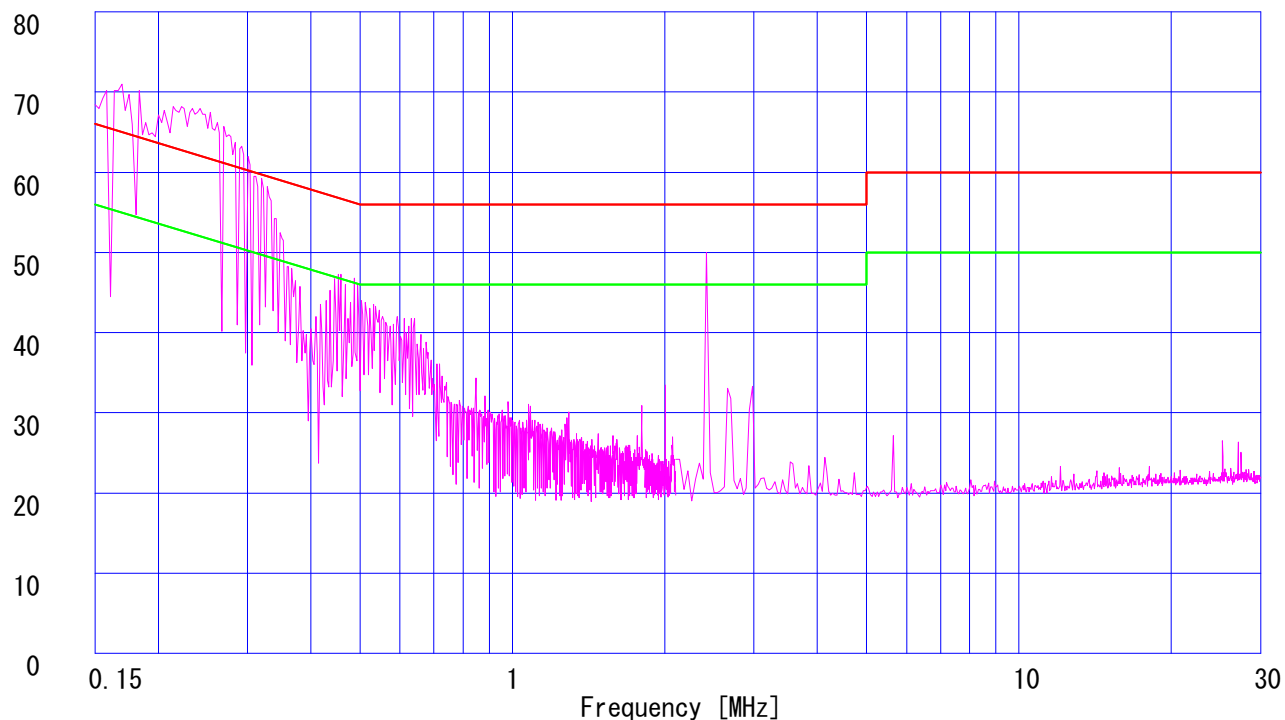
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:927.25MHz
Remarks : ANT:Dipole
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki

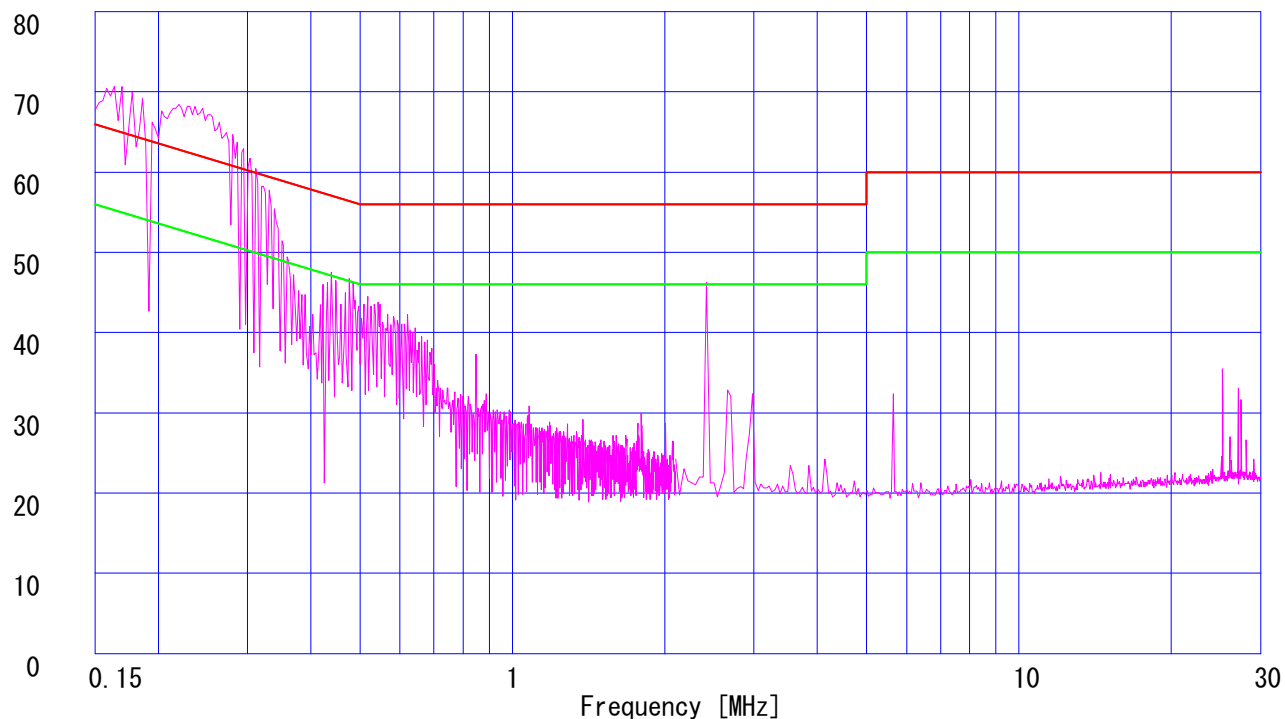
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST

UL Japan, Inc.
YAMAKITA No.1 SHIELD ROOM
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:902.75MHz
Remarks : ANT:Mini
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C Engineer : Takahiro Suzuki
Humidity : 66 %
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	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dB μ V]		[dB μ V]					[dB]	[dB μ V]	[dB μ V]		[dB]	
1.	0.1500	35.3	—	35.8	—	0.1	0.1	0.0	36.0	—	66.0	56.0	30.0	—
2.	0.2000	35.3	—	36.0	—	0.1	0.1	0.0	36.2	—	63.6	53.6	27.4	—
3.	0.2500	33.2	—	33.5	—	0.1	0.1	0.0	33.7	—	61.8	51.8	28.1	—
4.	0.3000	32.2	—	31.1	—	0.1	0.1	0.0	32.4	—	60.2	50.2	27.8	—
5.	0.3500	28.9	—	30.1	—	0.1	0.2	0.0	30.4	—	59.0	49.0	28.6	—
6.	0.4534	26.9	—	28.4	—	0.1	0.2	0.0	28.7	—	56.8	46.8	28.1	—
7.	2.3886	26.1	—	27.2	—	0.1	0.4	0.0	27.7	—	56.0	46.0	28.3	—

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

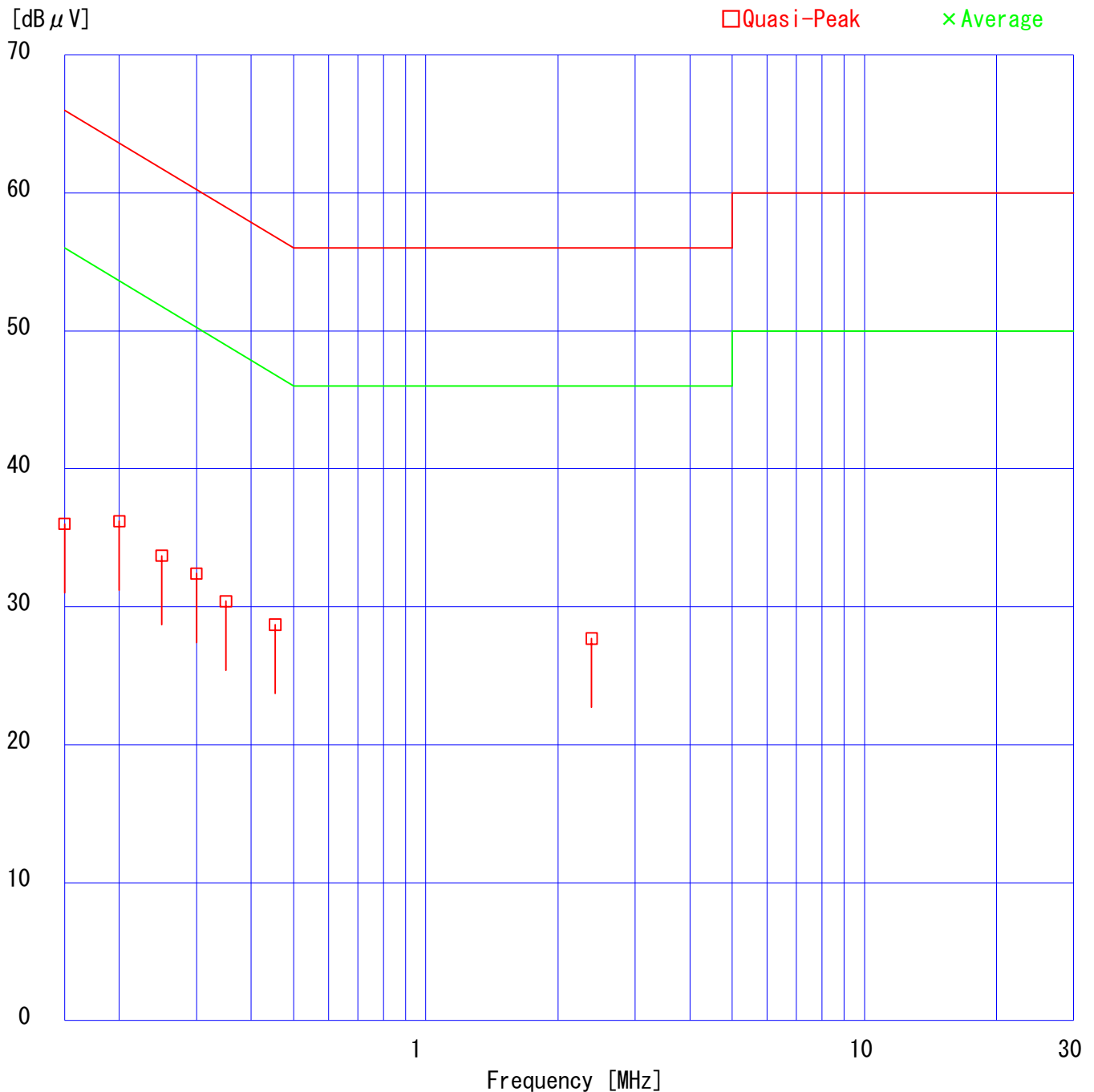
■ LISN: KLS-02 (NSLK8127) ■ COAXIAL CABLE: KCC-14/15/16/18
■ PULSE LIMITTER: KPL-01 (PL01) ■ EMI RECEIVER: KTR-02 (ESCS30)

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Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:902.75MHz
Remarks : ANT:Mini
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

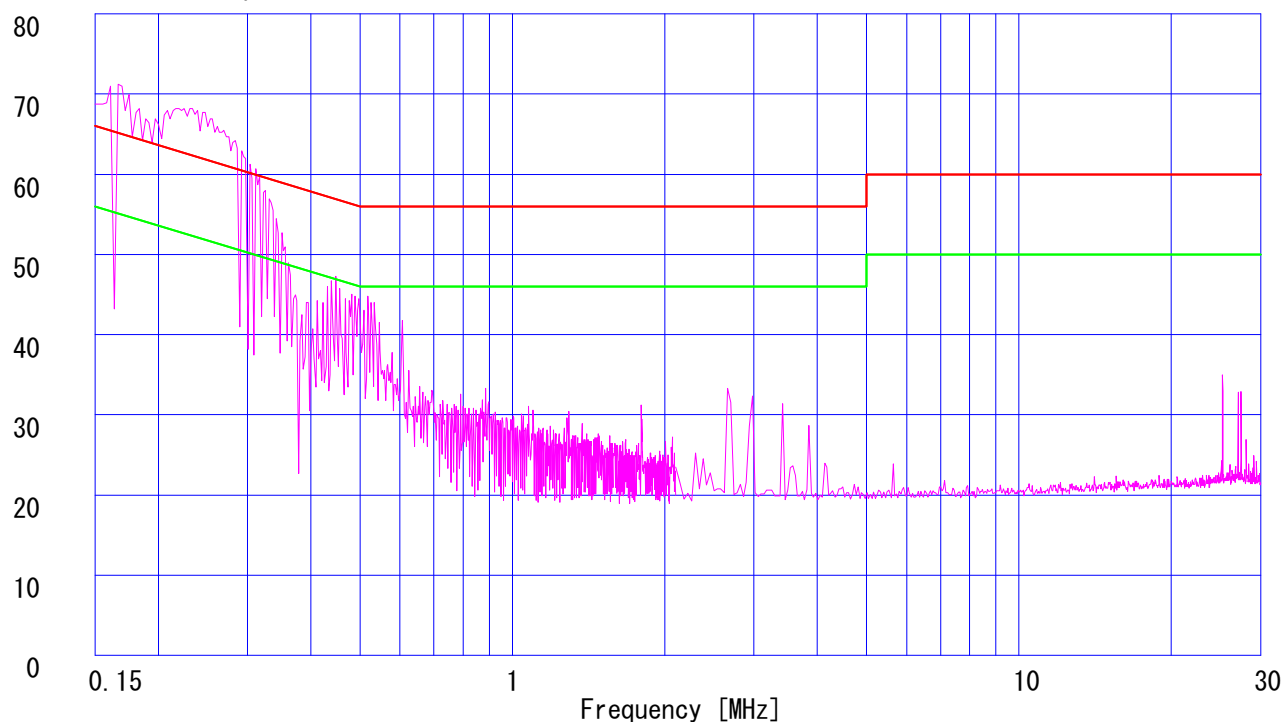
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:902.75MHz
Remarks : ANT:Mini
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Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki

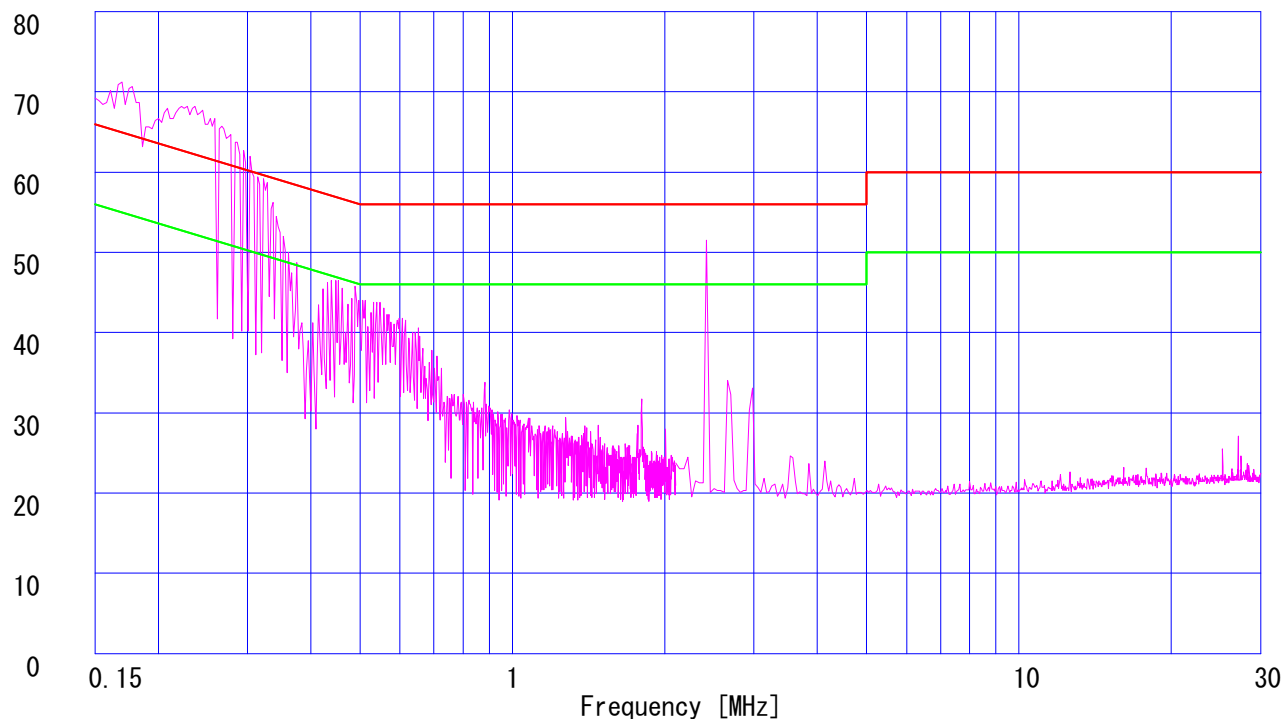
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



DATA OF CONDUCTION TEST CHART

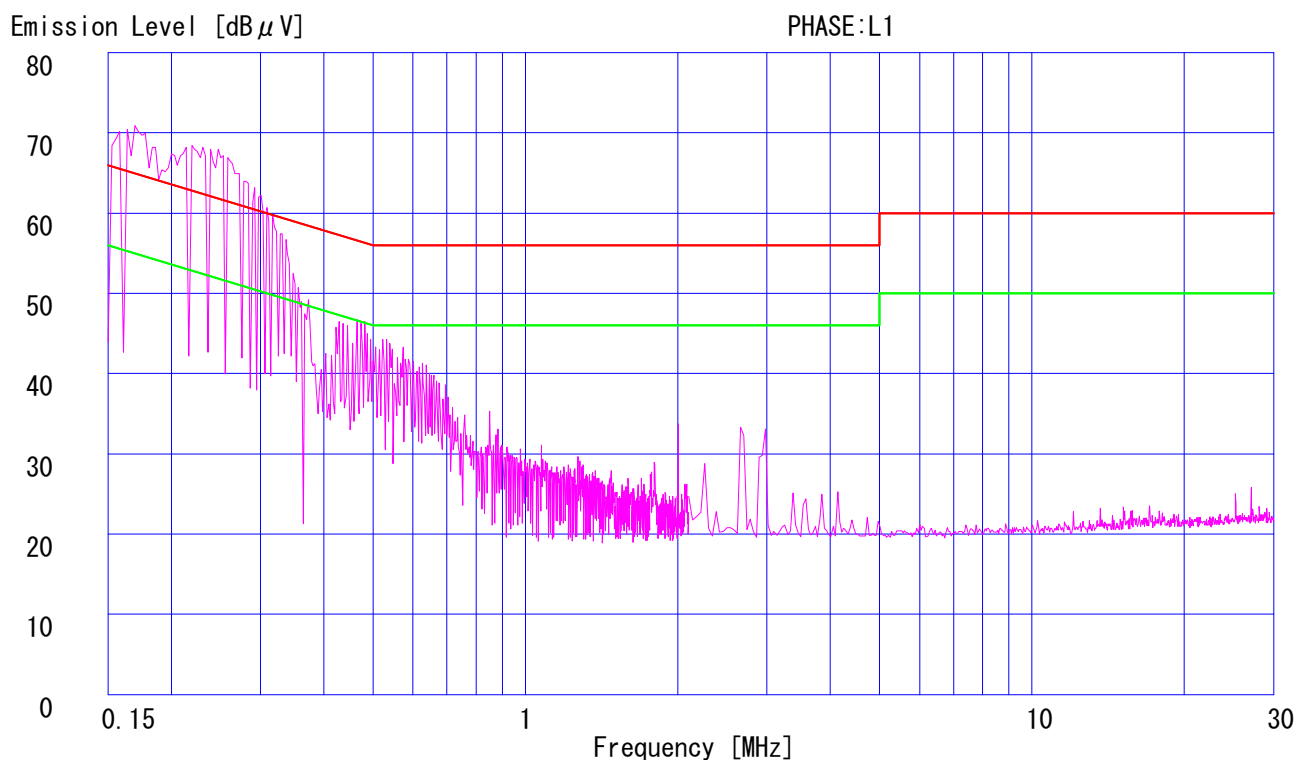
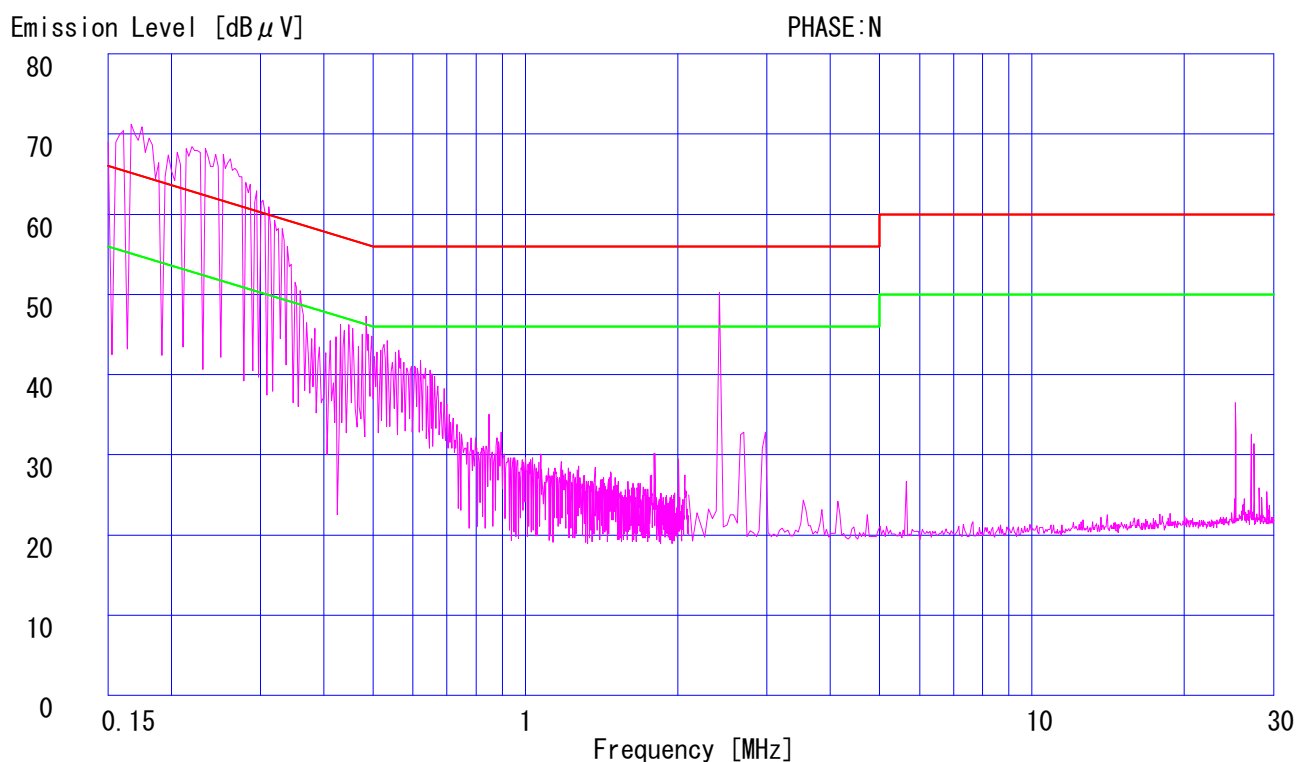
UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:915.25MHz
Remarks : ANT:Mini
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki



DATA OF CONDUCTION TEST CHART

UL Japan, Inc.

YAMAKITA No.1 SHIELD ROOM

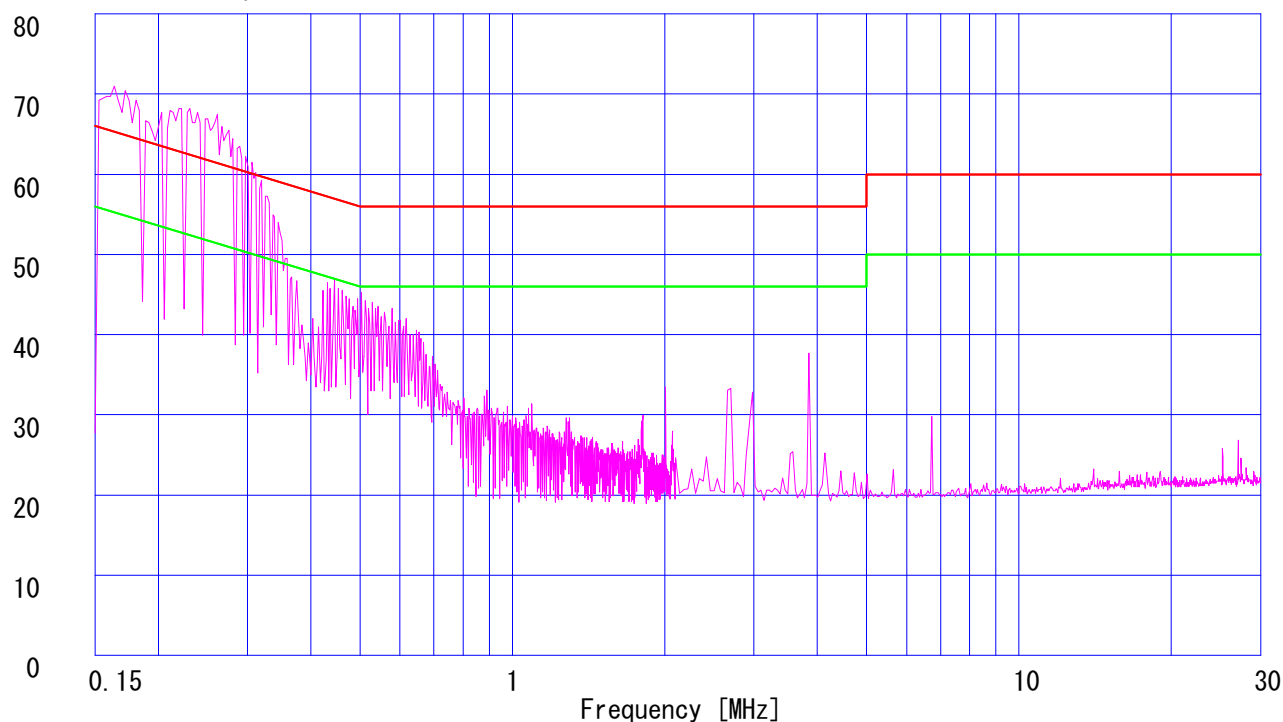
Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : AC100V/50Hz (Module:DC5V)
Mode : Transmitting:927.25MHz
Remarks : ANT:Mini
Date : 6/27/2008
Phase : Single Phase
Temperature : 21 °C
Humidity : 66 %
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22)
Regulation 2 : FCC Part15C § 15.207. (CISPR Pub. 22)

Engineer : Takahiro Suzuki

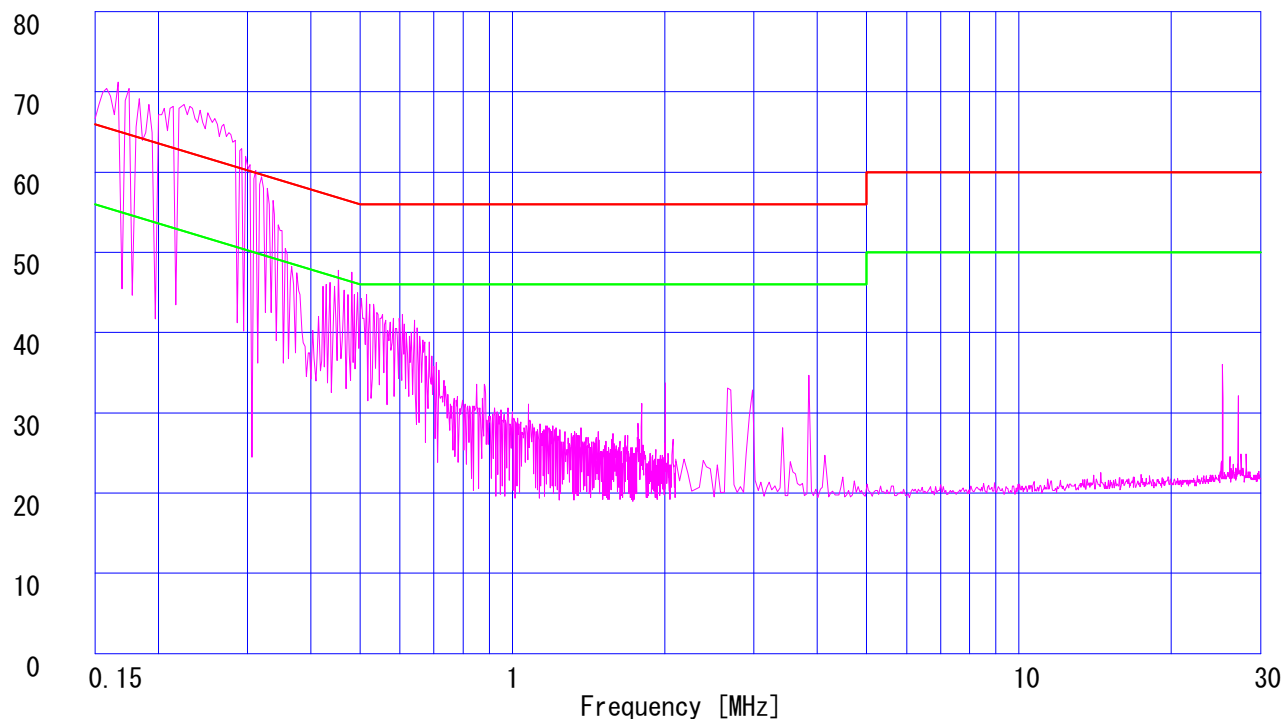
Emission Level [dB μ V]

PHASE:N



Emission Level [dB μ V]

PHASE:L1



Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

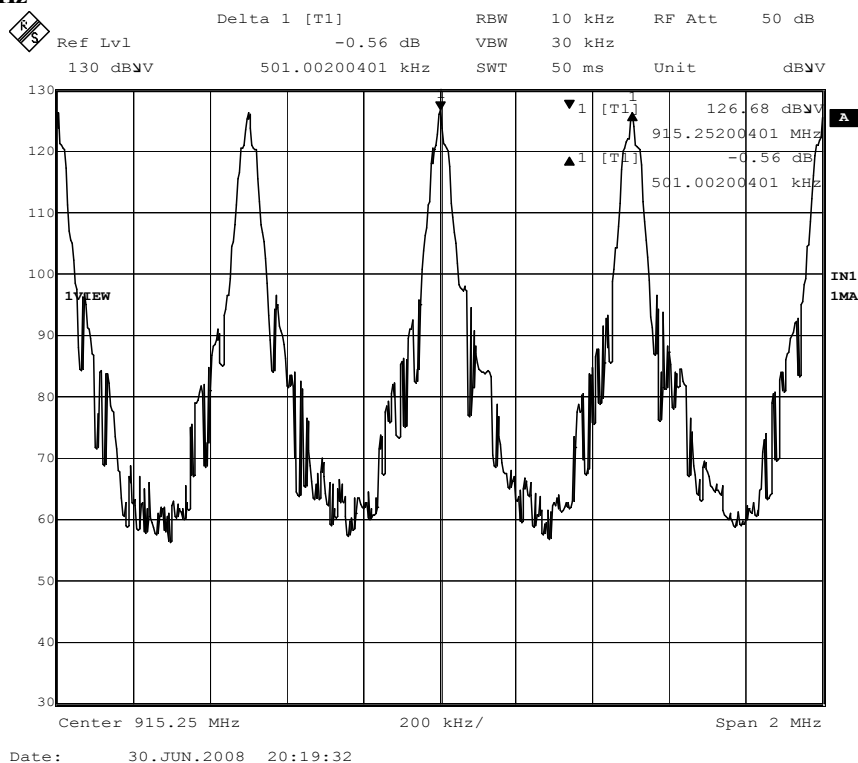
Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

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

UL Japan, Inc. Yamakita EMC lab. No.2 shielded room
Date: 2008.06.30
Temp/Humid.: 24 deg. C. / 70 %
Engineer: Makoto Hosaka
Test mode: Transmitting

Limit: ≥ 25 kHz

1. Hopping: 501.00 kHz



Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

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

UL Japan, Inc. Yamakita EMC lab.

Date:

Temp./Humid.:

Engineer:

Test mode:

No.2 shielded room

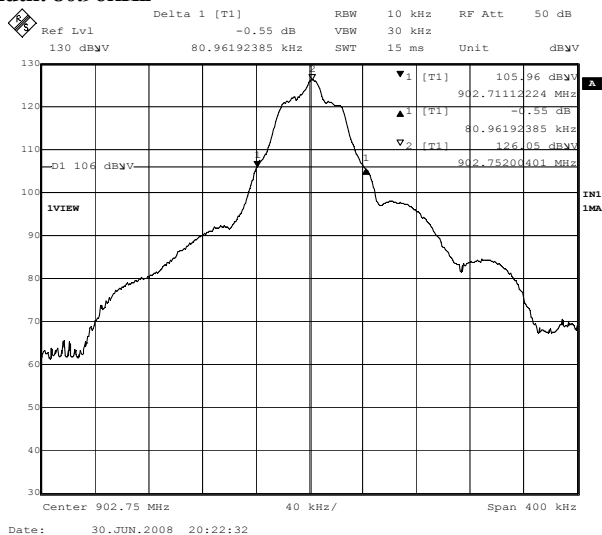
2008.06.30

24 deg. C. / 70 %

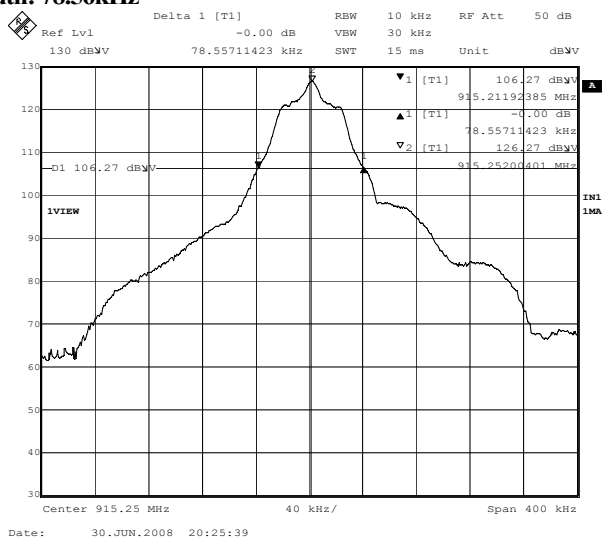
Makoto Hosaka

Transmitting

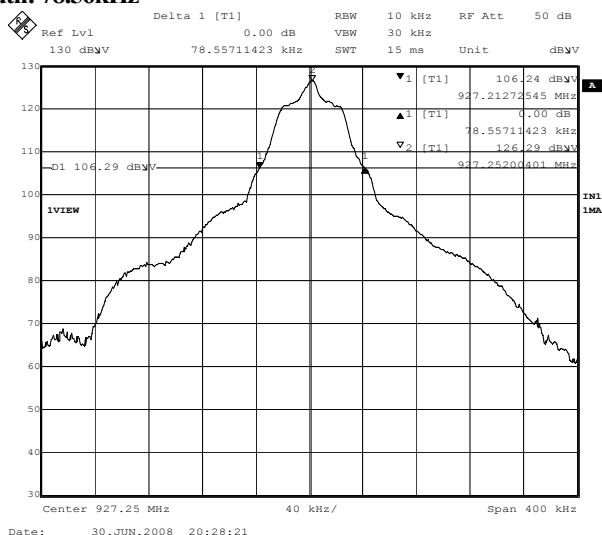
1. ch : 902.750MHz/20dB Bandwidth: 80.96kHz



2. ch : 915.25MHz/20dB Bandwidth: 78.56kHz



3. ch : 927.25MHz/20dB Bandwidth: 78.56kHz

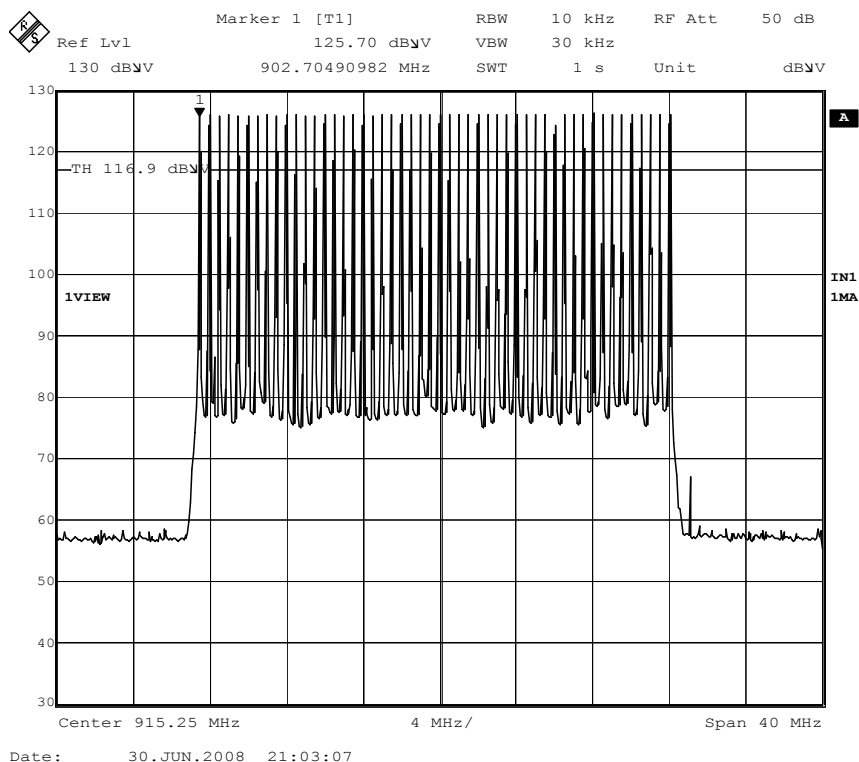


Channel Utilization (Regulation: FCC 15.247(a)(1)(i))

UL Japan, Inc. Yamakita EMC lab.	No.2	shielded room
Date:	2008.06.30	
Temp./Humid.:	24	deg. C. / 70 %
Engineer:	Makoto Hosaka	
Test mode:	Transmitting	

Hopping: 50ch

1.



Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

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

UL Japan, Inc. Yamakita EMC lab.

No.2 shielded room

Date:

2008.06.30

Temp/Humid.:

24 deg. C. / 70 %

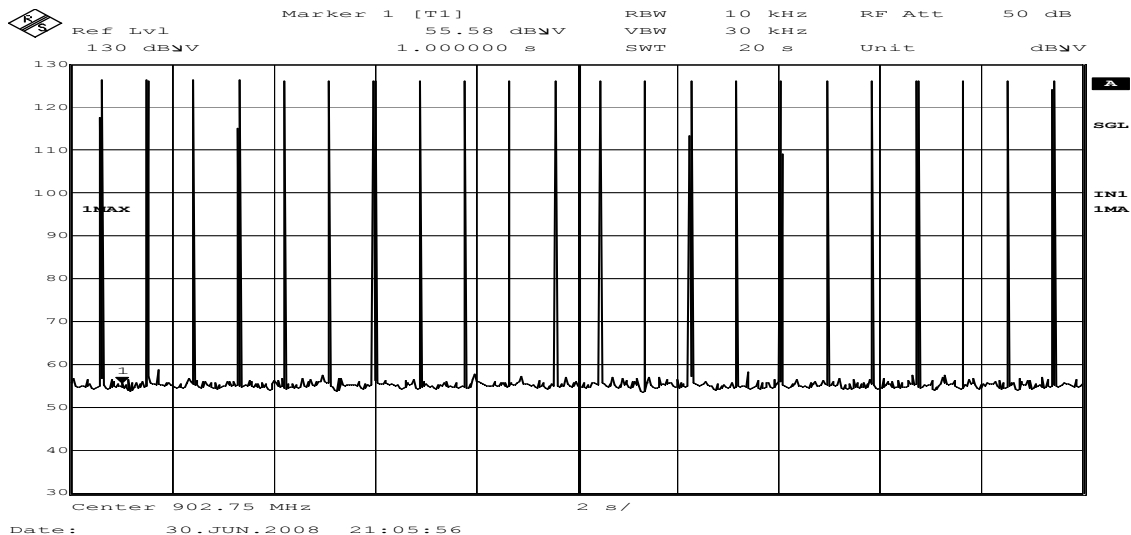
Engineer:

Makoto Hosaka

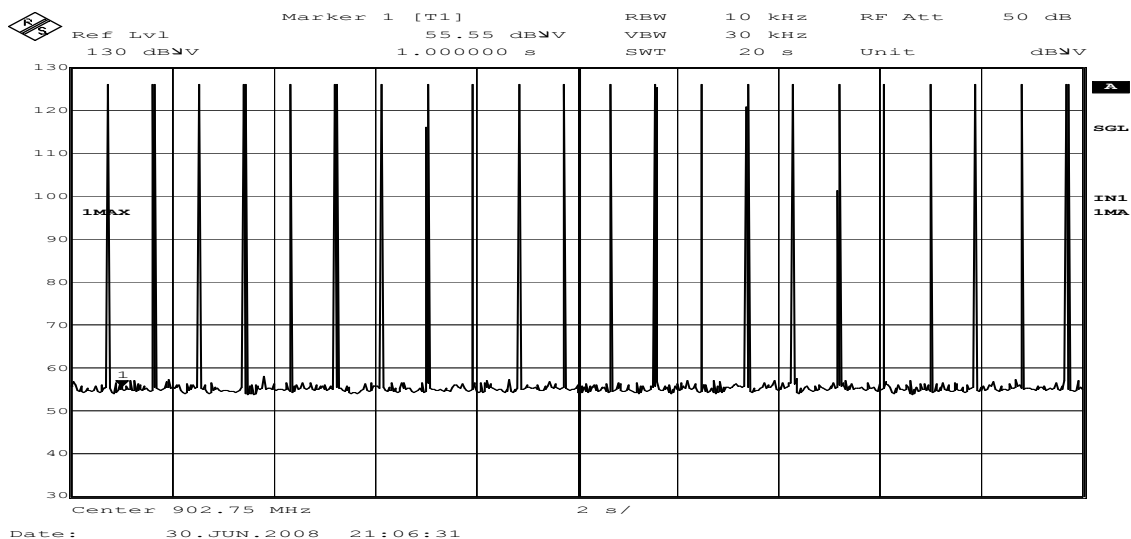
Test mode:

Transmitting

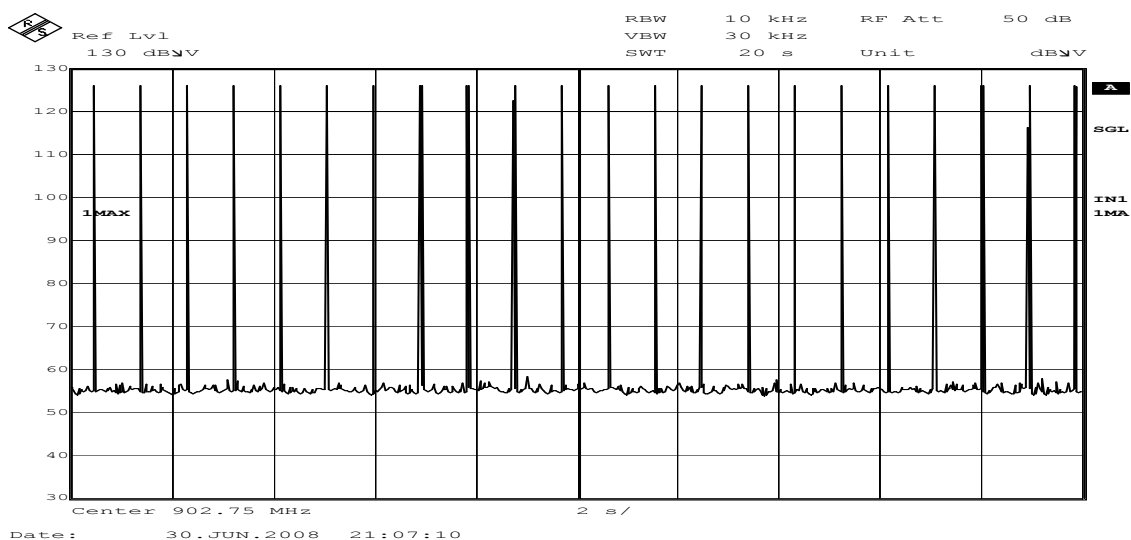
Hopping (902.750MHz) Count 1



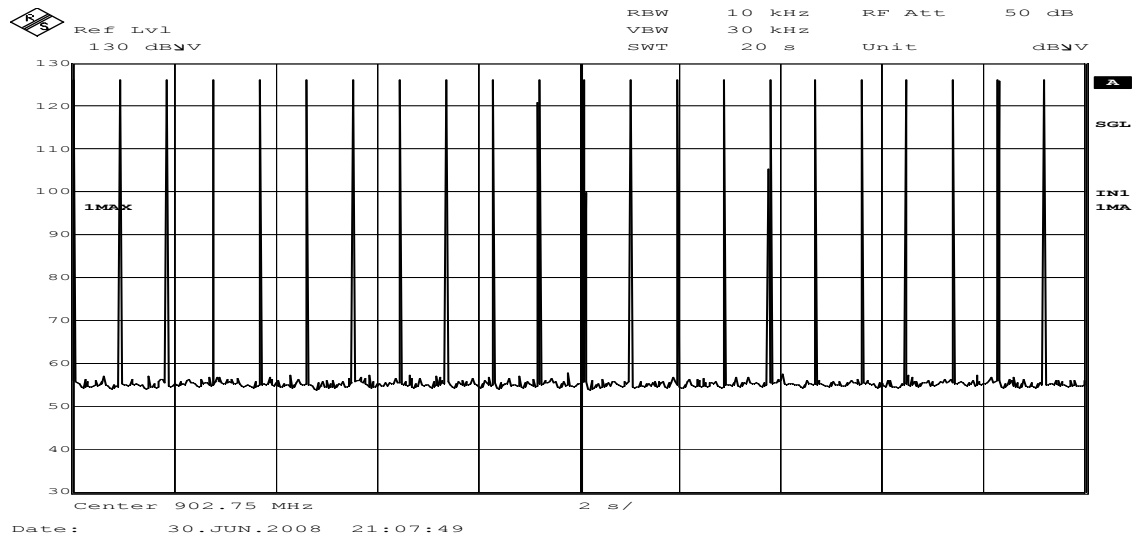
Count 2



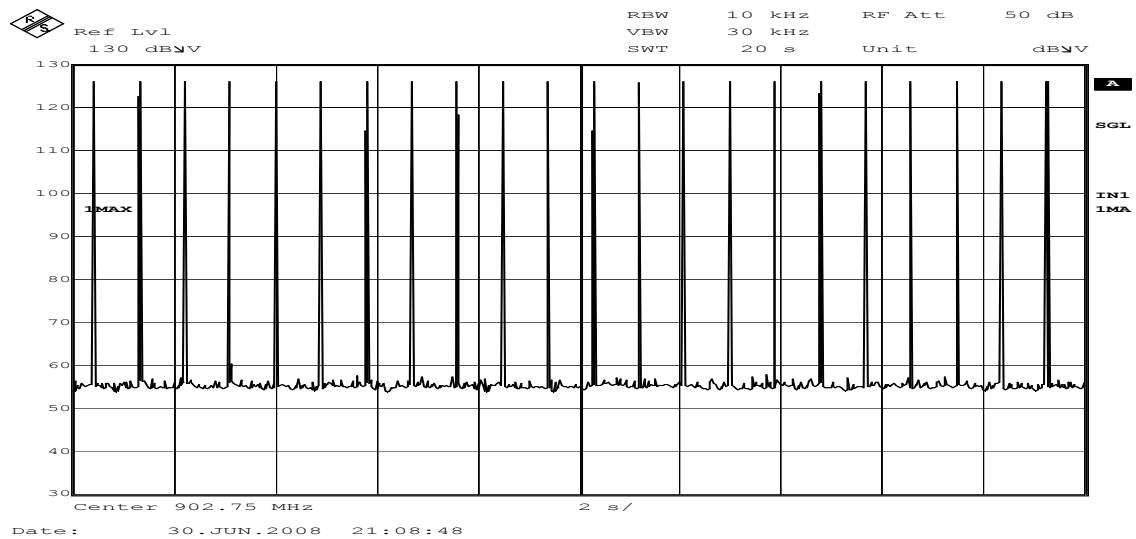
Count 3



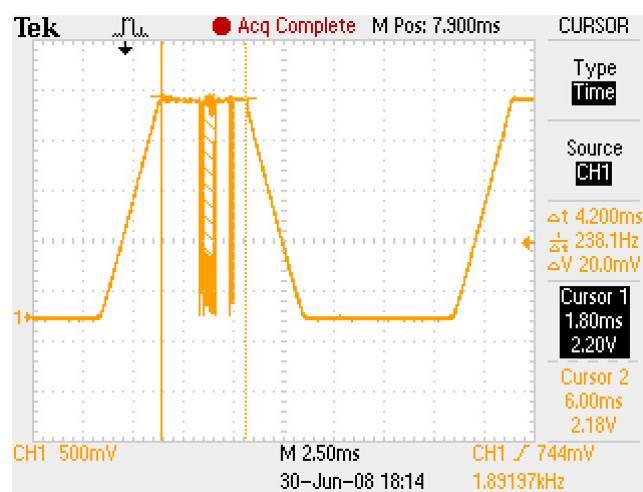
Count 4



Count 5



Duty cycle(Hopping)



Average times of rising in 20 sec. of sweep = $(22 + 22 + 22 + 22 + 22) / 5 = 22$

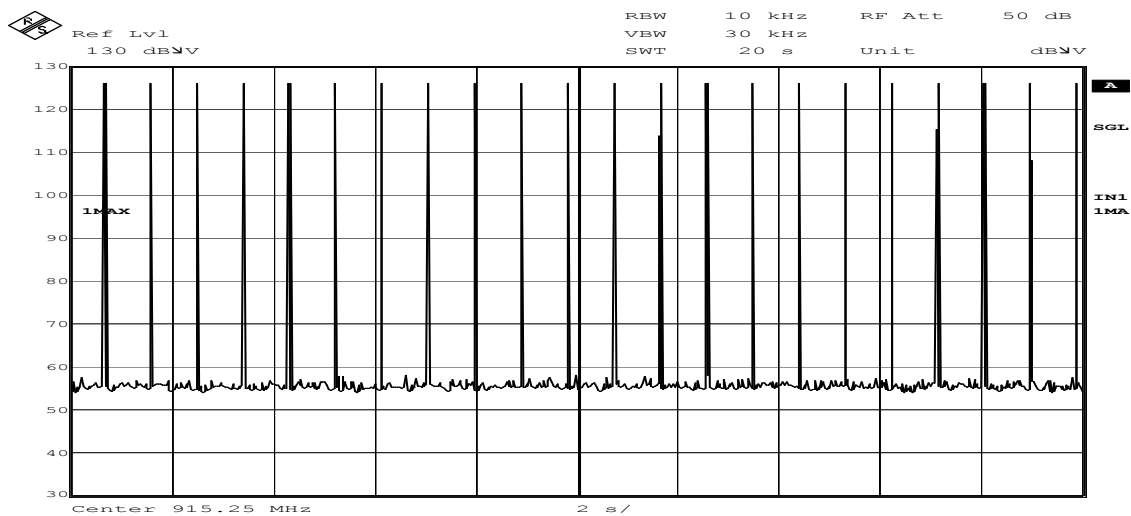
Dwell time = $22 * 4.2[\text{ms}] = 92.4 [\text{ms}]$

Limit : Dwell Time < 0.4[s]

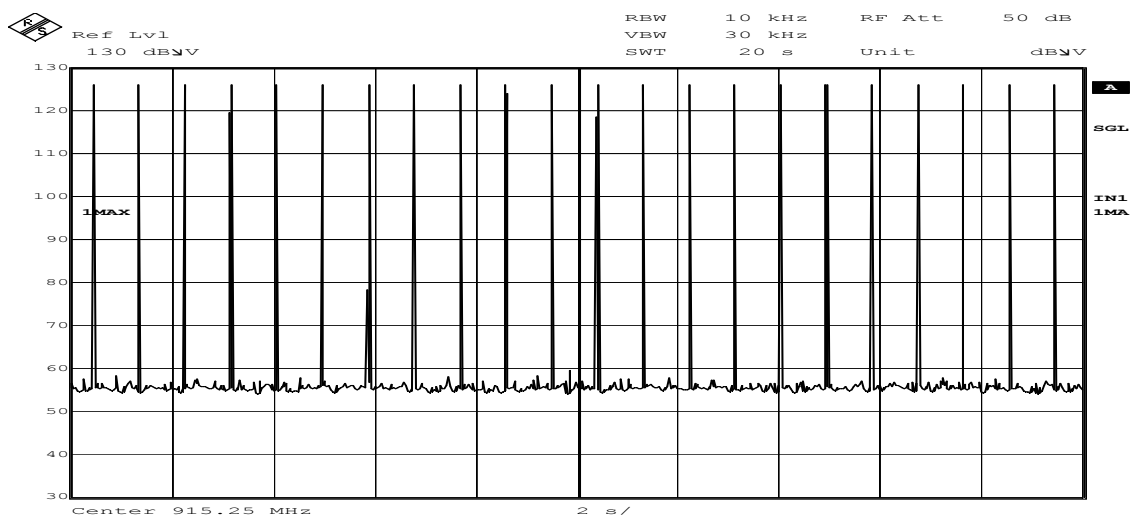
Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

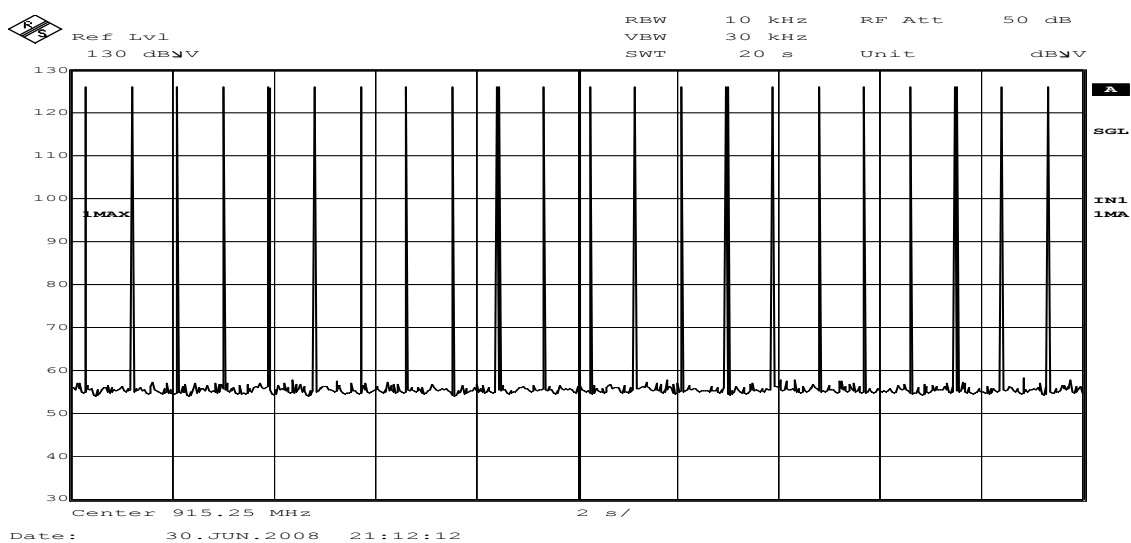
Hopping
(915.250MHz)
Count 1



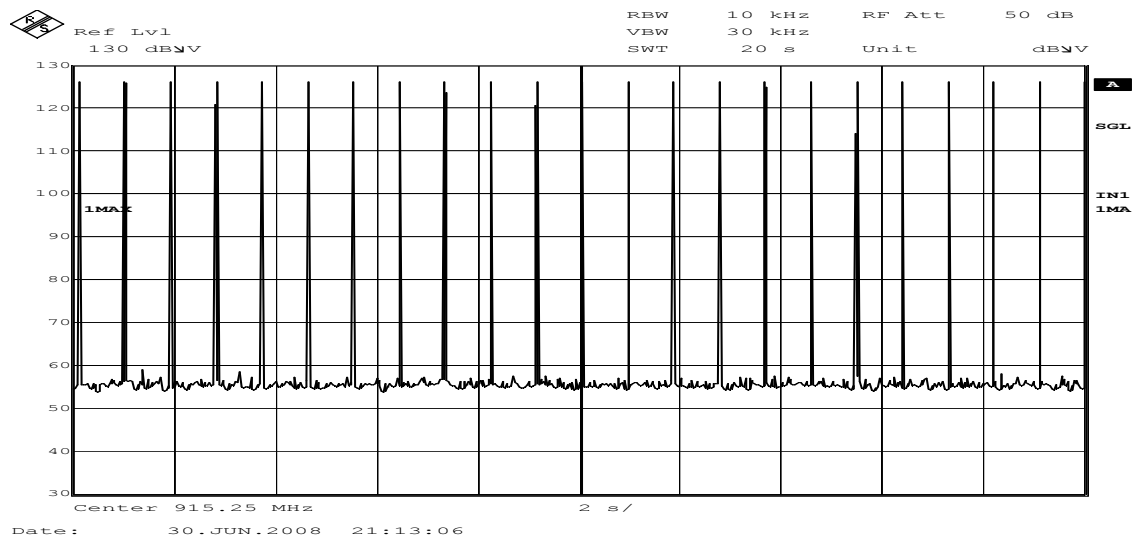
Count 2



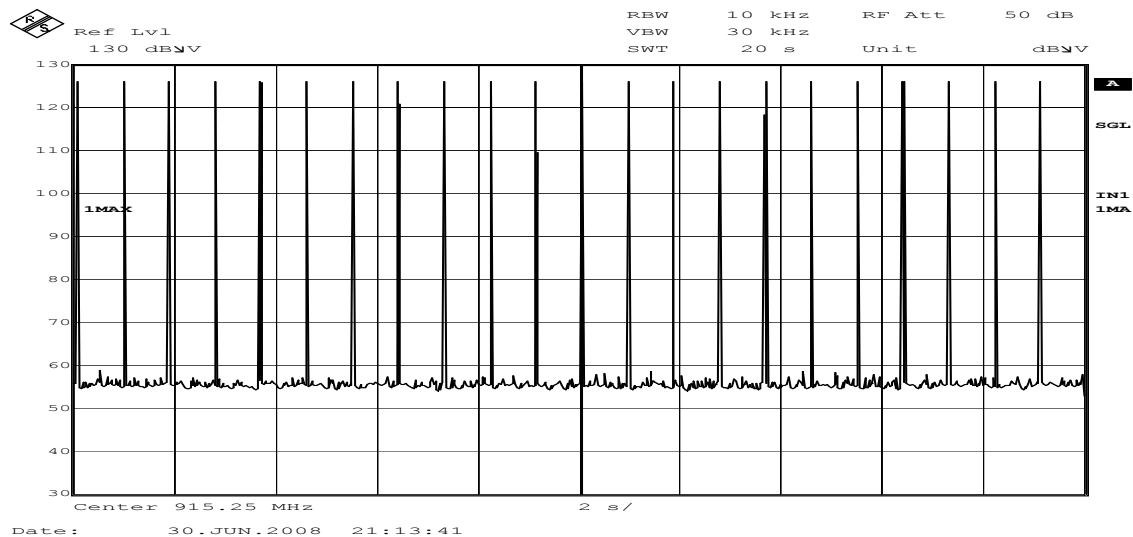
Count 3



Count 4



Count 5



Duty cycle(Hopping)

Average times of rising in 20 sec. of sweep = $(22 + 22 + 22 + 23 + 22) / 5 = 22.2$

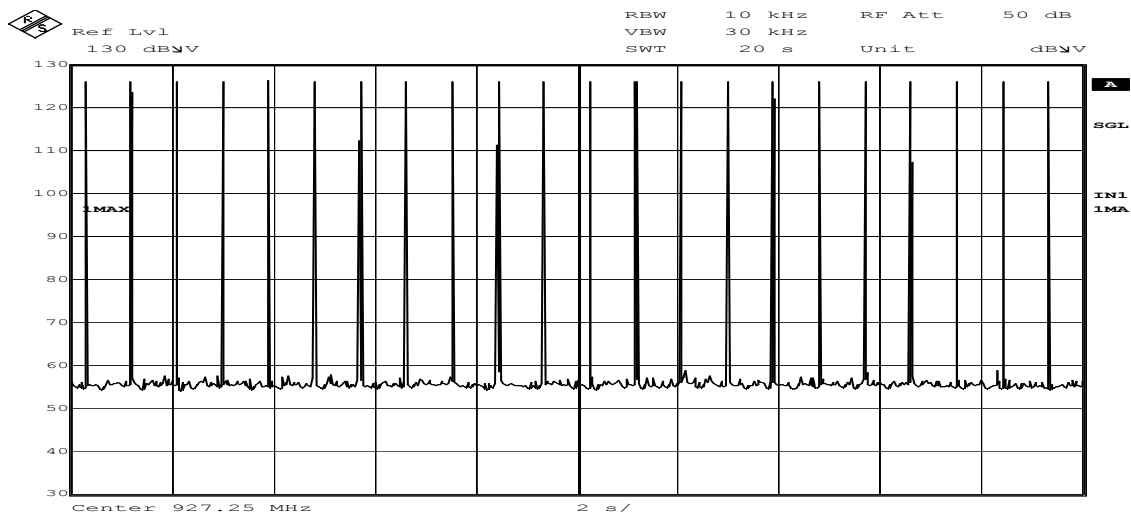
Dwell time = $22.2 * 4.2[\text{ms}] = 93.24 [\text{ms}]$

Limit : Dwell Time < 0.4[s]

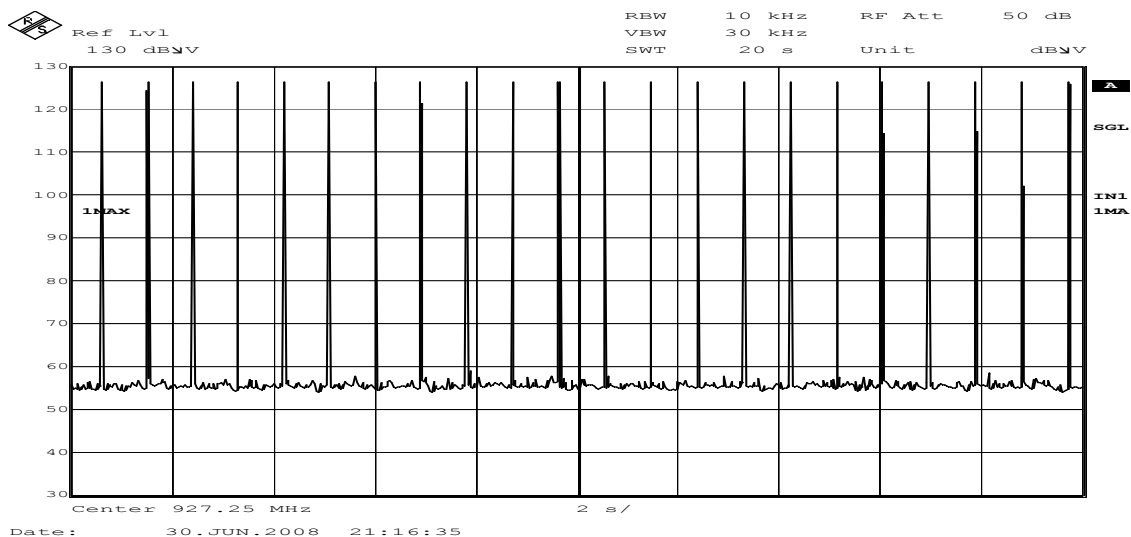
Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

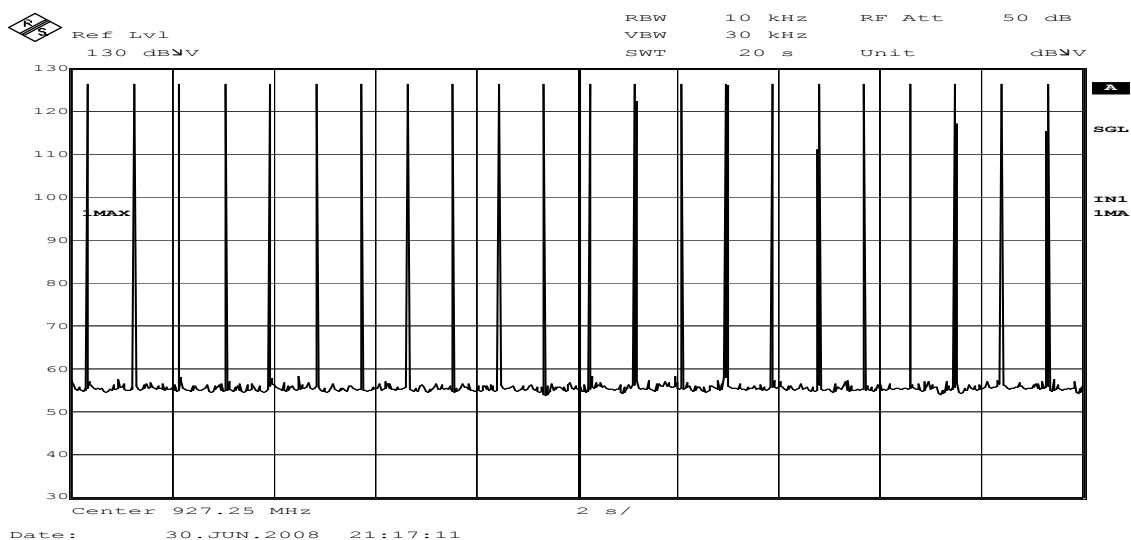
Hopping
(927.250MHz)
Count 1



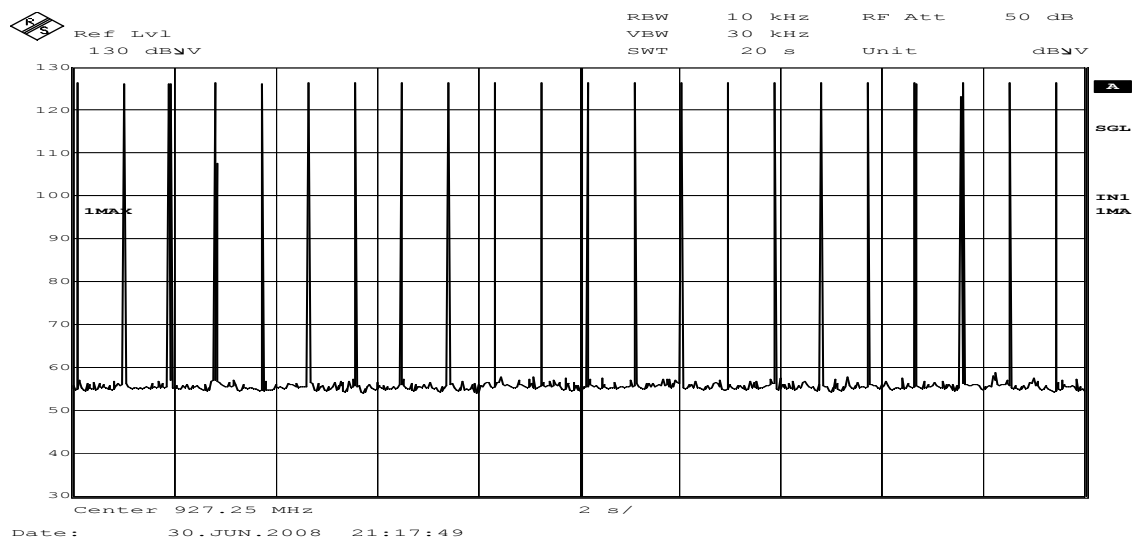
Count 2



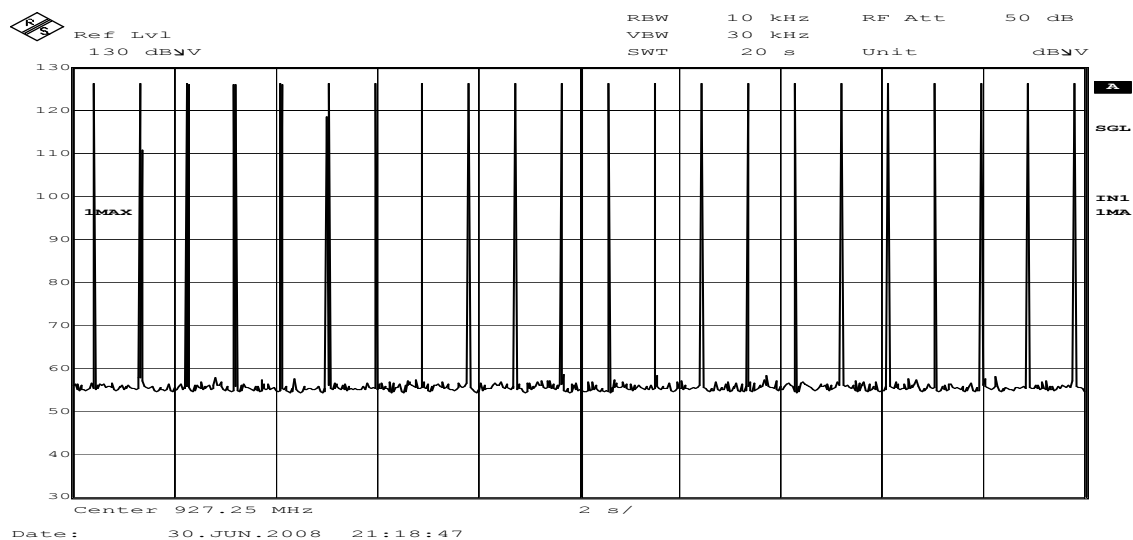
Count 3



Count 4



Count 5



Duty cycle(Hopping)

Average times of rising in 20 sec. of sweep = $(22 + 22 + 22 + 22 + 22) / 5 = 22$

Dwell time = $22 * 4.2[\text{ms}] = 92.4 [\text{ms}]$

Limit : Dwell Time < 0.4[s]

Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

Maximum Peak Conducted Output Power (Regulation: FCC 15.247(b)(2))

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

DATE: 2008.06.30
TEMP./HUMID.: 24deg.C/ 70%
TEST MODE: Transmitting

ENGINEER: Makoto Hosaka

CH	FREQ [GHz]	P/M Reading [dBm]	Cable Loss [dB]	Results [dBm]	Limit (1W) [dBm]	MARGIN [dB]
Low	902.750	19.25	0.68	19.93	30.00	10.07
Mid	915.250	19.26	0.68	19.94	30.00	10.06
High	927.250	19.37	0.69	20.06	30.00	9.94
Hopping	-	19.37	0.68	20.05	30.00	9.95

Limit: 1W=30dBm

P/M: Power Meter

CABLE LOSS: Customer's cable + KCC-A7

Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

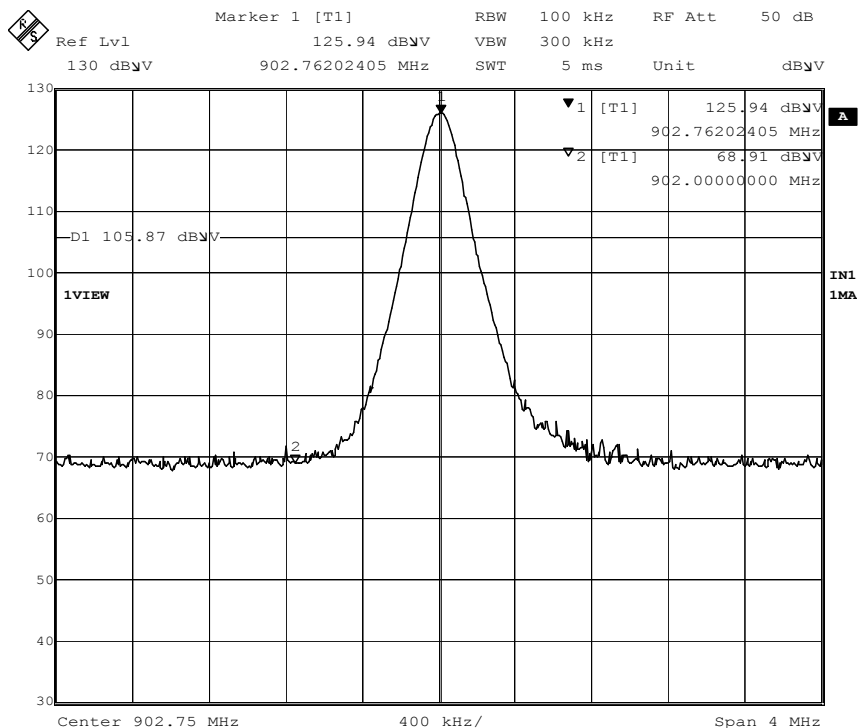
Report No.: 28JE0227-YK-B
Model No.: M5e
Power: DC5.0V

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

UL Japan, Inc. Yamakita EMC lab. No.2 shielded room
Date: 2008.06.30
Temp/Humid.: 24 deg. C. / 70 %
Engineer: Makoto Hosaka
Test mode: Transmitting

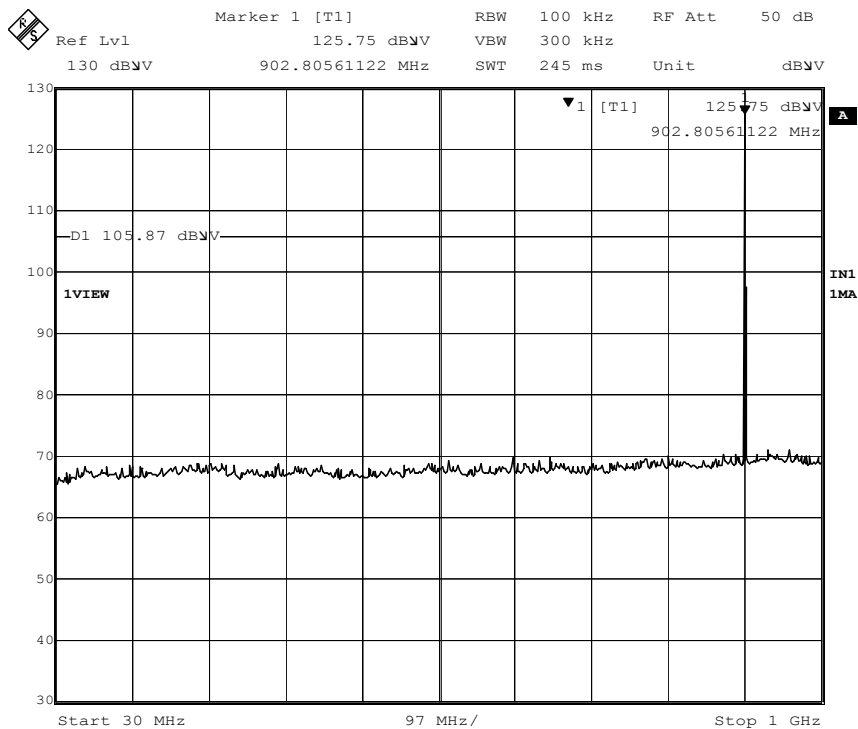
[Transmitting]
Ch:902.750MHz

1.



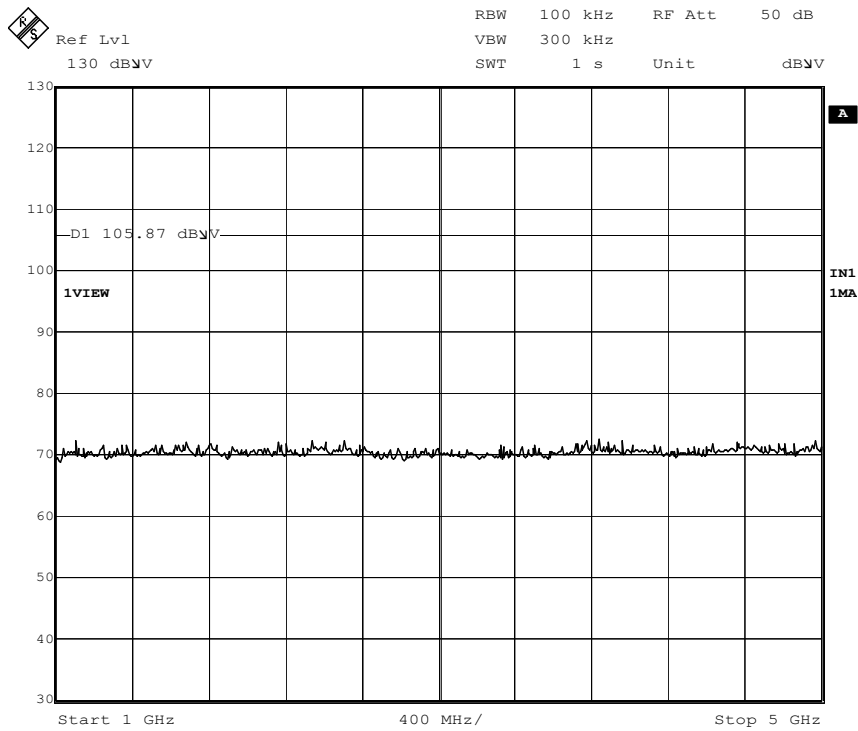
Date: 1.JUL.2008 00:10:31

2.



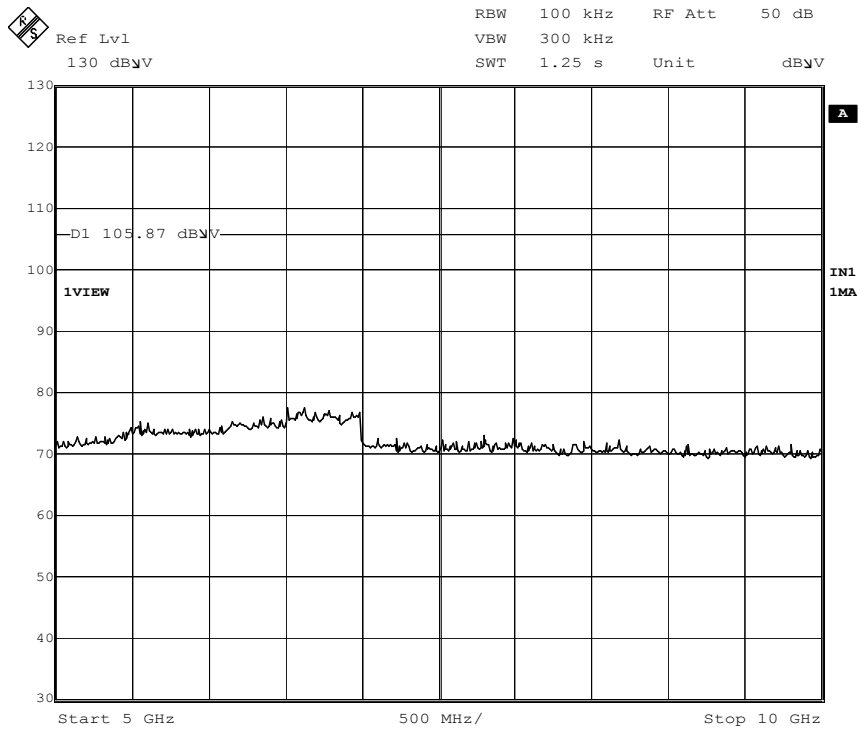
Date: 1.JUL.2008 00:11:28

[Transmitting]
Ch:902.750MHz
3.



Date: 1.JUL.2008 00:12:16

4.



Date: 1.JUL.2008 00:13:38

Company:
Kind of Equipment:
Serial No.:

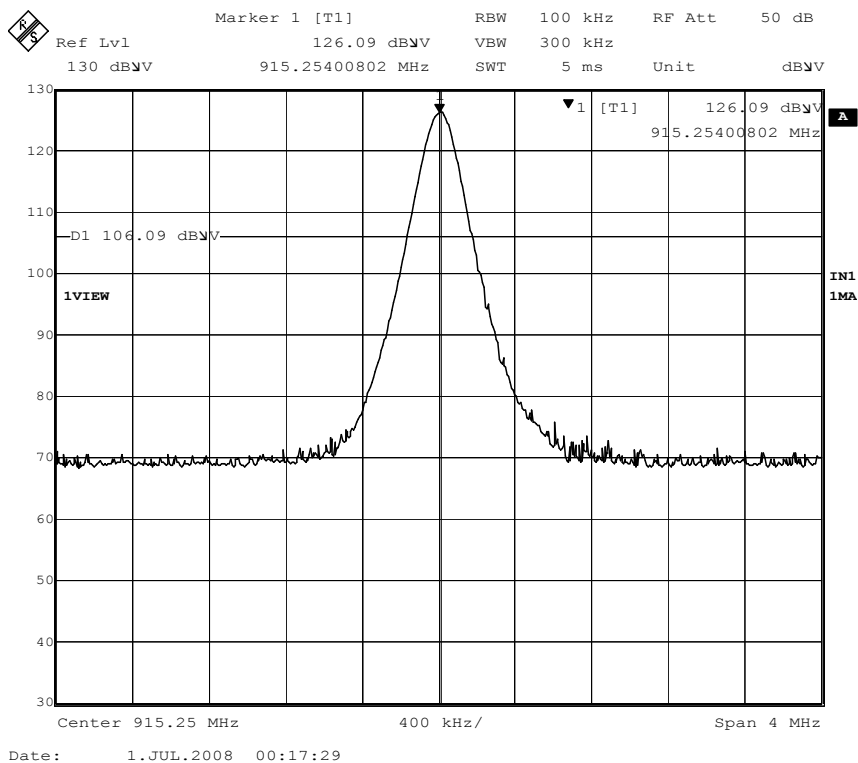
SATO CORPORATION
RFID Reader Module
110801101018

Report No.:
Model No.:
Power:

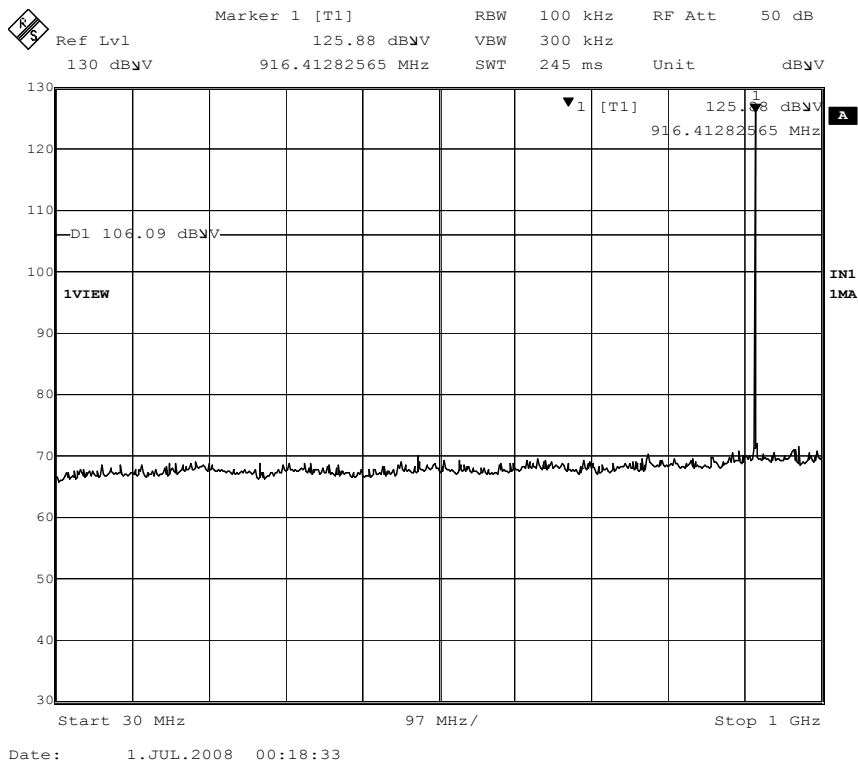
28JE0227-YK-B
M5e
DC5.0V

[Transmitting]
Ch:915.250MHz

1.



2.



Company:
Kind of Equipment:
Serial No.:

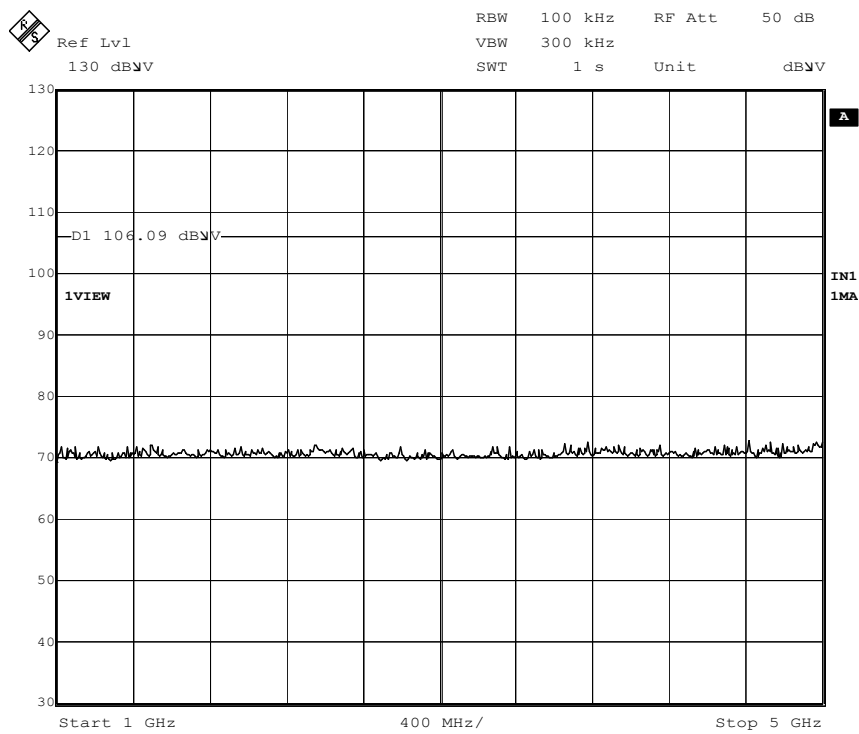
SATO CORPORATION
RFID Reader Module
110801101018

Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

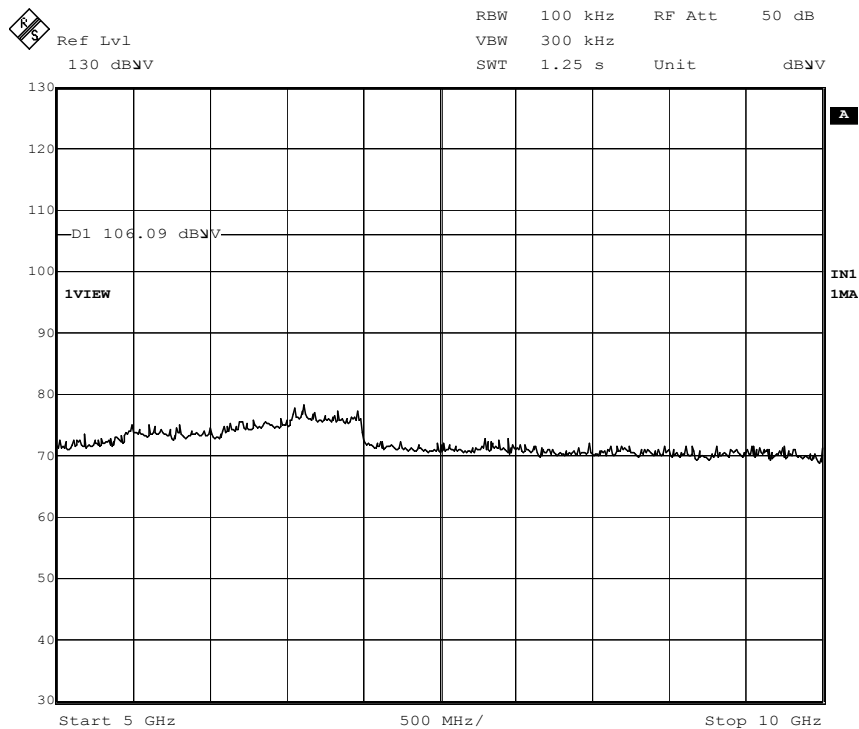
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3.



Date: 1.JUL.2008 00:19:43

4.



Date: 1.JUL.2008 00:21:11

Company:
Kind of Equipment:
Serial No.:

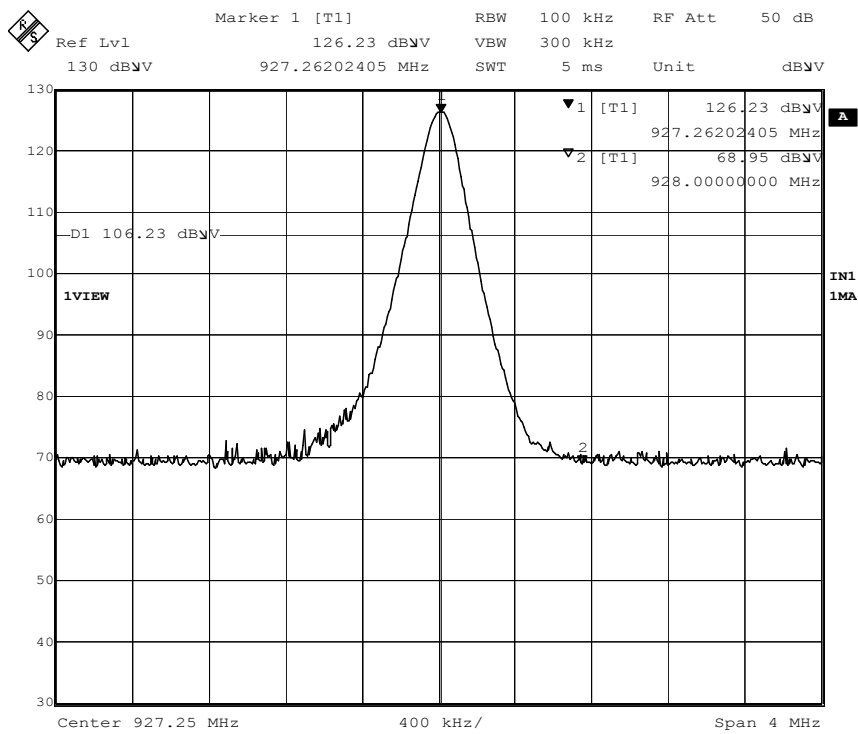
SATO CORPORATION
RFID Reader Module
110801101018

Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

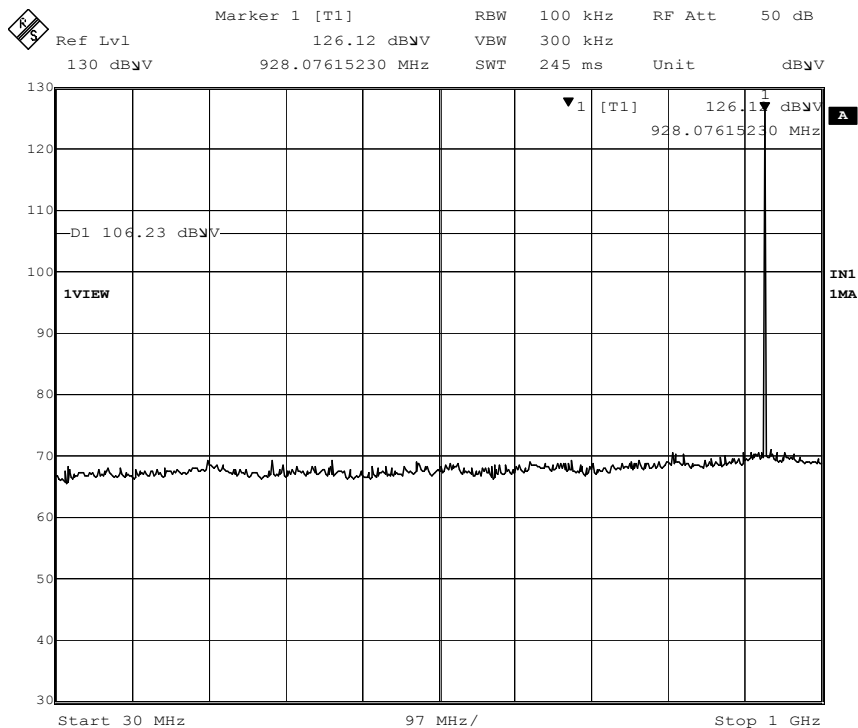
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1.



Date: 1.JUL.2008 01:16:08

2.



Date: 1.JUL.2008 01:16:53

Company:
Kind of Equipment:
Serial No.:

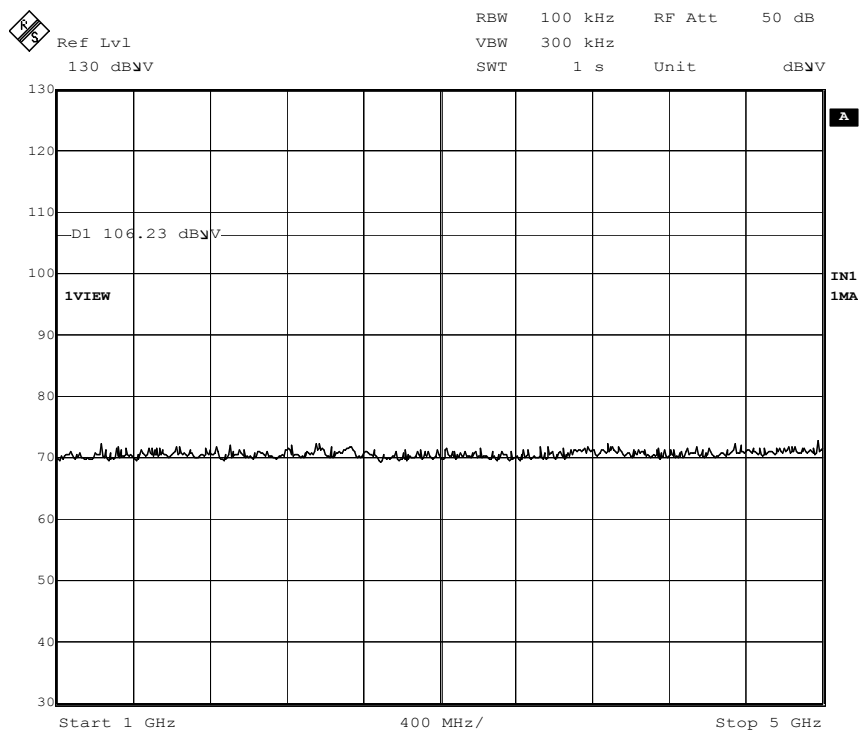
SATO CORPORATION
RFID Reader Module
110801101018

Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

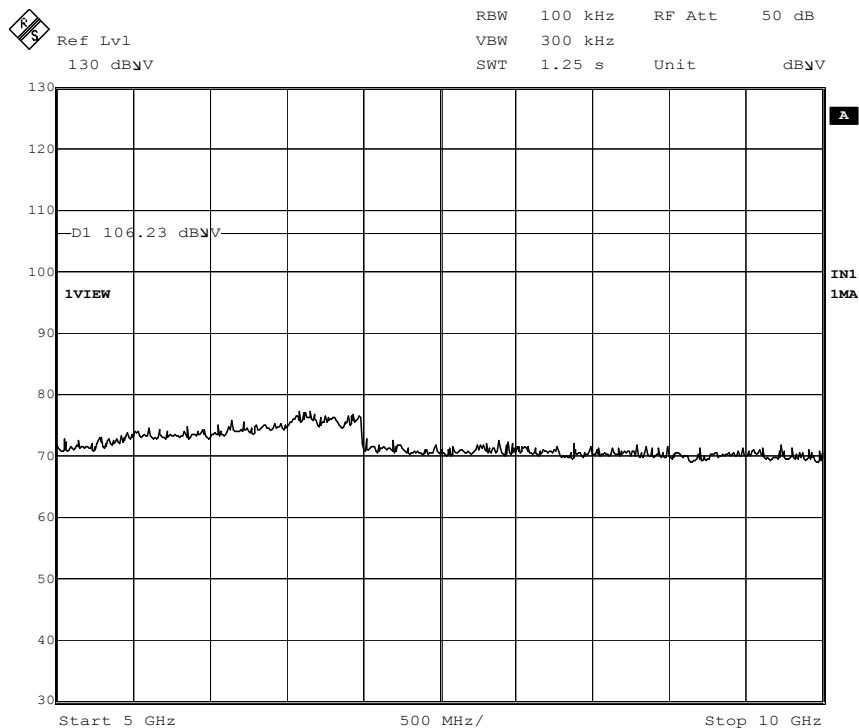
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Ch:927.250MHz

3.



Date: 1.JUL.2008 01:18:00

4.



Date: 1.JUL.2008 01:19:00

Company:
Kind of Equipment:
Serial No.:

SATO CORPORATION
RFID Reader Module
110801101018

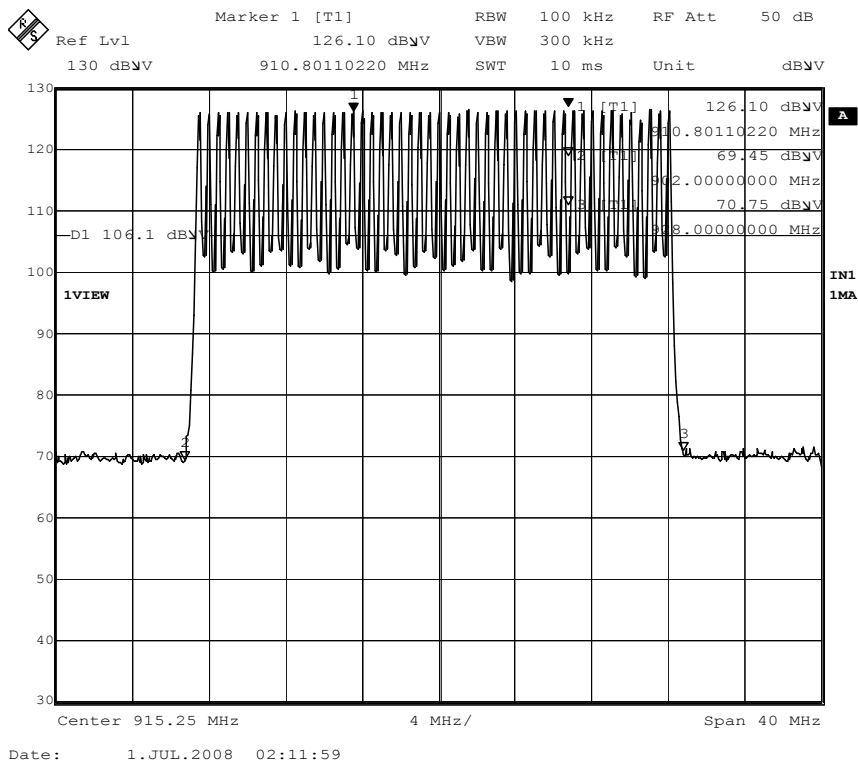
Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

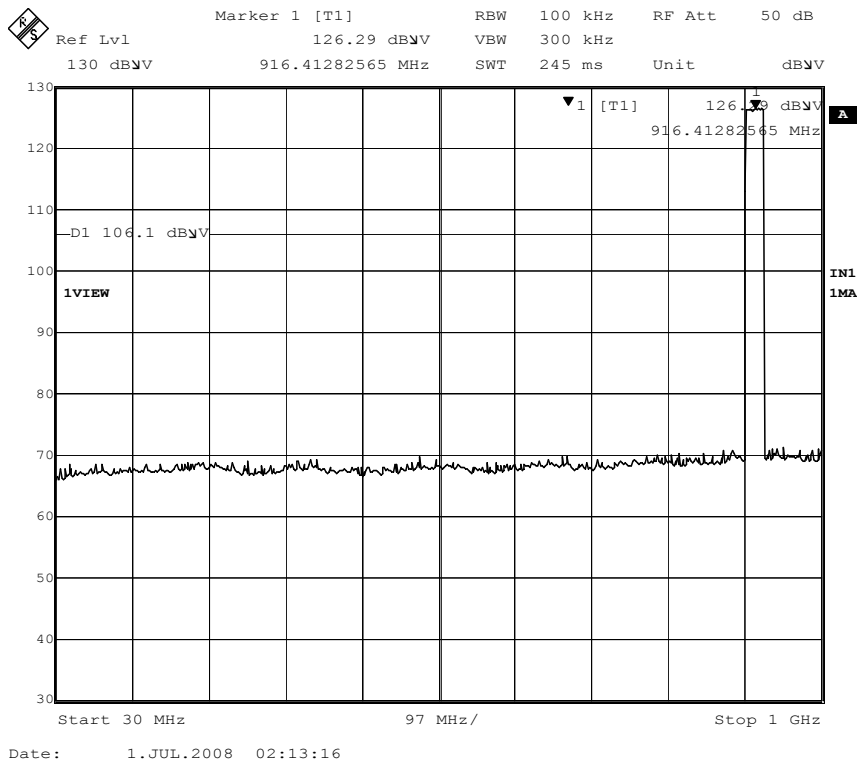
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Hopping

1.



2.



Company:
Kind of Equipment:
Serial No.:

SATO CORPORATION
RFID Reader Module
110801101018

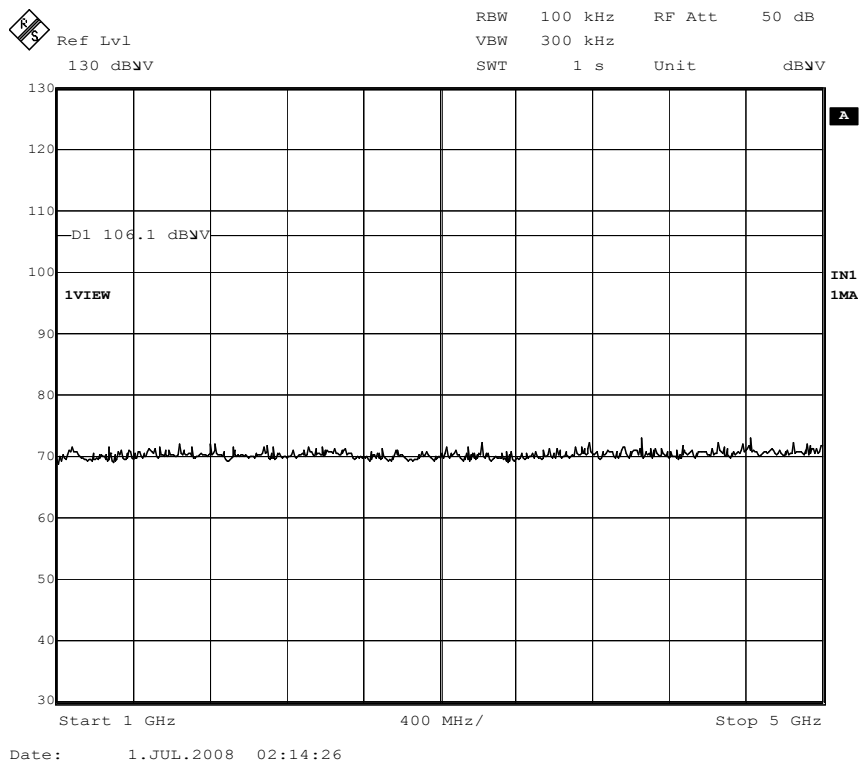
Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

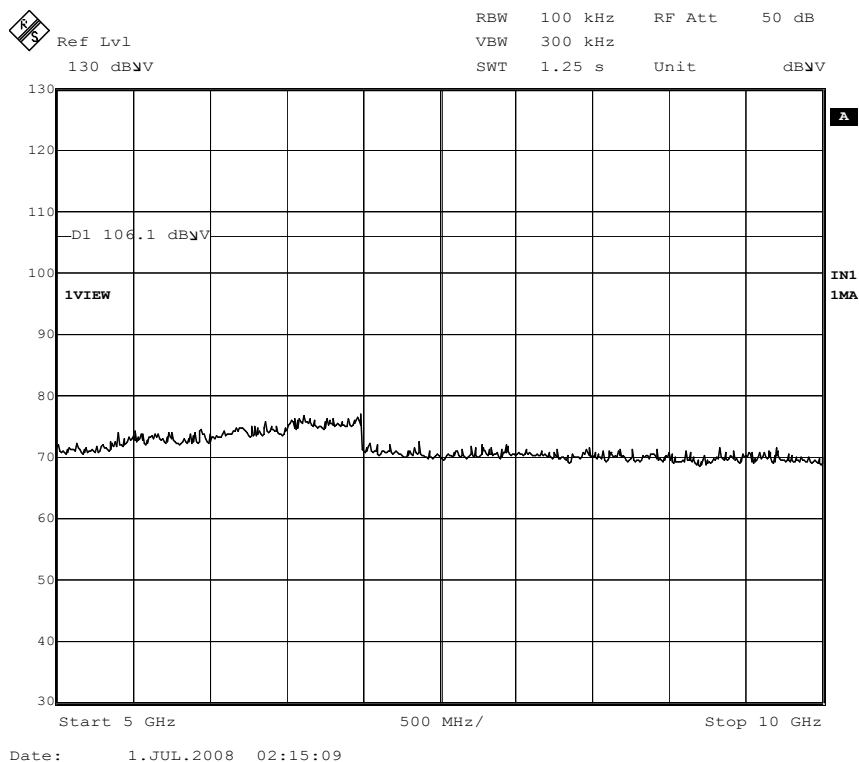
[Transmitting]

Hopping

3.



4.



DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 OPEN TEST SITE

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:902.75MHz
 Remarks : Antenna type: Dipole
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 76 %
 Regulation : FCC Part15C § 15.209

Engineer : Toyokazu Imamura

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.	43.05	BB	32.0	43.7	12.6	27.6	1.3	6.0	24.3	36.0	40.0	15.7	4.0
2.	50.35	BB	30.9	47.1	10.1	27.7	1.4	6.0	20.7	36.9	40.0	19.3	3.1
3.	64.07	BB	32.1	46.4	7.3	27.5	1.6	6.0	19.5	33.8	40.0	20.5	6.2
4.	128.21	BB	45.3	40.9	13.4	27.5	2.4	6.0	39.6	35.2	43.5	3.9	8.3
5.	138.15	BB	41.4	46.9	14.1	27.4	2.5	6.0	36.6	42.1	43.5	6.9	1.4
6.	201.39	BB	24.4	37.7	16.8	27.5	3.1	6.0	22.8	36.1	43.5	20.7	7.4
7.	249.87	BB	22.7	37.8	17.3	27.3	3.4	6.0	22.1	37.2	46.0	23.9	8.8
8.	377.61	BB	35.8	43.8	16.6	27.3	4.3	6.0	35.4	43.4	46.0	10.6	2.6
9.	599.84	BB	32.7	28.8	20.1	27.2	5.6	6.0	37.2	33.3	46.0	8.8	12.7
10.	902.00	BB	34.6	27.9	22.1	27.1	7.1	6.1	42.8	36.1	46.0	3.2	9.9

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 OPEN TEST SITE

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:915.25MHz
 Remarks : Antenna type: Dipole
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 76 %
 Regulation : FCC Part15C § 15.209

Engineer : Toyokazu Imamura

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.	43.05	BB	32.0	46.2	12.6	27.6	1.3	6.0	24.3	38.5	40.0	15.7	1.5
2.	50.35	BB	31.1	46.0	10.1	27.7	1.4	6.0	20.9	35.8	40.0	19.1	4.2
3.	64.07	BB	32.4	46.8	7.3	27.5	1.6	6.0	19.8	34.2	40.0	20.2	5.8
4.	129.15	BB	44.3	47.4	13.5	27.5	2.4	6.0	38.7	41.8	43.5	4.8	1.7
5.	138.15	BB	44.6	47.7	14.1	27.4	2.5	6.0	39.8	42.9	43.5	3.7	0.6
6.	201.39	BB	24.4	24.8	16.8	27.5	3.1	6.0	22.8	23.2	43.5	20.7	20.3
7.	249.94	BB	24.3	36.1	17.3	27.3	3.4	6.0	23.7	35.5	46.0	22.3	10.5
8.	377.61	BB	31.7	42.5	16.6	27.3	4.3	6.0	31.3	42.1	46.0	14.7	3.9
9.	599.84	BB	30.8	30.7	20.1	27.2	5.6	6.0	35.3	35.2	46.0	10.7	10.8
10.	819.25	BB	28.8	26.5	21.6	27.3	6.7	6.1	35.9	33.6	46.0	10.1	12.4

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 OPEN TEST SITE

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:927.25MHz
 Remarks : Antenna type: Dipole
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 76 %
 Regulation : FCC Part15C § 15.209

Engineer : Toyokazu Imamura

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.	43.05	BB	30.0	38.6	12.6	27.6	1.3	6.0	22.3	30.9	40.0	17.7	9.1
2.	50.35	BB	31.7	43.6	10.1	27.7	1.4	6.0	21.5	33.4	40.0	18.5	6.6
3.	64.07	BB	32.4	47.0	7.3	27.5	1.6	6.0	19.8	34.4	40.0	20.2	5.6
4.	129.15	BB	45.7	46.9	13.5	27.5	2.4	6.0	40.1	41.3	43.5	3.4	2.2
5.	138.15	BB	41.4	47.3	14.1	27.4	2.5	6.0	36.6	42.5	43.5	6.9	1.0
6.	201.39	BB	24.4	32.5	16.8	27.5	3.1	6.0	22.8	30.9	43.5	20.7	12.6
7.	249.94	BB	23.3	39.8	17.3	27.3	3.4	6.0	22.7	39.2	46.0	23.3	6.8
8.	377.61	BB	33.3	42.2	16.6	27.3	4.3	6.0	32.9	41.8	46.0	13.1	4.2
9.	599.84	BB	30.0	30.8	20.1	27.2	5.6	6.0	34.5	35.3	46.0	11.5	10.7
10.	872.75	BB	28.1	23.8	21.9	27.2	7.0	6.1	35.9	31.6	46.0	10.1	14.4
11.	928.00	BB	32.3	26.9	22.5	26.7	7.2	6.1	41.4	36.0	46.0	4.6	10.0

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:902.75MHz
 Remarks : Antenna type: Mini
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209

Engineer : Takahiro Suzuki

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.	37.76	BB	35.6	43.9	15.0	27.6	1.2	6.0	30.2	38.5	40.0	9.8	1.5
2.	42.30	BB	34.1	41.8	12.9	27.6	1.3	6.0	26.7	34.4	40.0	13.3	5.6
3.	50.35	BB	32.3	46.2	10.1	27.7	1.4	6.0	22.1	36.0	40.0	17.9	4.0
4.	60.07	BB	35.2	46.0	7.9	27.7	1.6	6.0	23.0	33.8	40.0	17.0	6.2
5.	75.53	BB	42.4	48.1	6.4	27.7	1.8	6.0	28.9	34.6	40.0	11.1	5.4
6.	123.13	BB	45.6	43.5	13.0	27.5	2.4	6.0	39.5	37.4	43.5	4.0	6.1
7.	131.15	BB	43.4	46.7	13.6	27.5	2.4	6.0	37.9	41.2	43.5	5.6	2.3
8.	377.61	BB	35.1	41.6	16.6	27.3	4.3	6.0	34.7	41.2	46.0	11.3	4.8
9.	599.84	BB	31.8	33.2	20.1	27.2	5.6	6.0	36.3	37.7	46.0	9.7	8.3
10.	902.00	BB	32.2	26.9	22.1	27.1	7.1	6.1	40.4	35.1	46.0	5.6	10.9

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:915.25MHz
 Remarks : Antenna type: Mini
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209

Engineer : Takahiro Suzuki

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.	37.76	BB	35.1	43.1	15.0	27.6	1.2	6.0	29.7	37.7	40.0	10.3	2.3
2.	42.30	BB	33.6	42.0	12.9	27.6	1.3	6.0	26.2	34.6	40.0	13.8	5.4
3.	50.35	BB	32.8	46.6	10.1	27.7	1.4	6.0	22.6	36.4	40.0	17.4	3.6
4.	60.07	BB	34.7	45.3	7.9	27.7	1.6	6.0	22.5	33.1	40.0	17.5	6.9
5.	75.53	BB	42.7	48.7	6.4	27.7	1.8	6.0	29.2	35.2	40.0	10.8	4.8
6.	123.13	BB	45.1	44.2	13.0	27.5	2.4	6.0	39.0	38.1	43.5	4.5	5.4
7.	131.15	BB	44.3	47.1	13.6	27.5	2.4	6.0	38.8	41.6	43.5	4.7	1.9
8.	377.61	BB	36.0	42.9	16.6	27.3	4.3	6.0	35.6	42.5	46.0	10.4	3.5
9.	599.84	BB	33.2	32.8	20.1	27.2	5.6	6.0	37.7	37.3	46.0	8.3	8.7

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:927.25MHz
 Remarks : Antenna type: Mini
 Date : 6/24/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209

Engineer : Takahiro Suzuki

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.	37.76	BB	36.3	44.2	15.0	27.6	1.2	6.0	30.9	38.8	40.0	9.1	1.2
2.	42.30	BB	34.4	42.3	12.9	27.6	1.3	6.0	27.0	34.9	40.0	13.0	5.1
3.	50.35	BB	32.5	46.9	10.1	27.7	1.4	6.0	22.3	36.7	40.0	17.7	3.3
4.	60.07	BB	35.6	46.4	7.9	27.7	1.6	6.0	23.4	34.2	40.0	16.6	5.8
5.	75.53	BB	42.9	48.4	6.4	27.7	1.8	6.0	29.4	34.9	40.0	10.6	5.1
6.	123.13	BB	46.0	44.0	13.0	27.5	2.4	6.0	39.9	37.9	43.5	3.6	5.6
7.	131.15	BB	43.8	47.5	13.6	27.5	2.4	6.0	38.3	42.0	43.5	5.2	1.5
8.	377.61	BB	35.8	42.5	16.6	27.3	4.3	6.0	35.4	42.1	46.0	10.6	3.9
9.	599.84	BB	33.0	33.5	20.1	27.2	5.6	6.0	37.5	38.0	46.0	8.5	8.0
10.	928.00	BB	30.9	26.2	22.5	26.7	7.2	6.1	40.0	35.3	46.0	6.0	10.7

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 (HM648A) ■ EMI RECEIVER: KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:902.75MHz
Remarks : ANT:Dipole, PK (RBW:1MHz, VBW:1MHz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2708.25	BB	47.8	45.5	29.0	37.2	5.0	0.8	45.4	43.1	74.0	28.6	30.9
2.	3611.00	BB	47.5	47.2	30.4	36.9	6.0	0.7	47.7	47.4	74.0	26.3	26.6
3.	4513.75	BB	46.4	46.6	31.9	36.5	6.8	0.8	49.4	49.6	74.0	24.6	24.4
4.	5416.50	BB	46.2	46.0	33.7	36.3	7.7	1.1	52.4	52.2	74.0	21.6	21.8

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:902.75MHz
Remarks : ANT:Dipole, AV (RBW:1MHz, VBW:100Hz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
Regulation : FCC Part15C § 15.209 (AV 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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2708.25	BB	33.8	33.2	29.0	37.2	5.0	0.8	31.4	30.8	54.0	22.6	23.2
2.	3611.00	BB	36.1	36.4	30.4	36.9	6.0	0.7	36.3	36.6	54.0	17.7	17.4
3.	4513.75	BB	32.6	32.2	31.9	36.5	6.8	0.8	35.6	35.2	54.0	18.4	18.8
4.	5416.50	BB	33.8	33.4	33.7	36.3	7.7	1.1	40.0	39.6	54.0	14.0	14.4

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:915.25MHz
Remarks : ANT:Dipole, PK (RBW:1MHz, VBW:1MHz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2745.75	BB	47.1	46.4	29.1	37.2	5.0	0.8	44.8	44.1	74.0	29.2	29.9
2.	3661.00	BB	47.3	46.5	30.5	36.8	6.0	0.7	47.7	46.9	74.0	26.3	27.1
3.	4576.25	BB	46.6	46.5	32.1	36.5	6.9	0.7	49.8	49.7	74.0	24.2	24.3
4.	5491.50	BB	46.7	46.5	33.7	36.3	7.7	1.2	53.0	52.8	74.0	21.0	21.2

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:915.25MHz
 Remarks : ANT:Dipole, AV (RBW:1MHz, VBW:100Hz)
 Date : 6/26/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209 (AV Detection) 1-26GHz:3m/26-40GHz:1m
 Engineer : Takahiro Suzuki

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.	2745.75	BB	33.4	33.5	29.1	37.2	5.0	0.8	31.1	31.2	54.0	22.9	22.8
2.	3661.00	BB	36.8	36.6	30.5	36.8	6.0	0.7	37.2	37.0	54.0	16.8	17.0
3.	4576.25	BB	32.7	32.9	32.1	36.5	6.9	0.7	35.9	36.1	54.0	18.1	17.9
4.	5491.50	BB	33.9	33.4	33.7	36.3	7.7	1.2	40.2	39.7	54.0	13.8	14.3

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:927.25MHz
Remarks : ANT:Dipole, PK (RBW:1MHz, VBW:1MHz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2781.75	BB	47.9	48.1	29.2	37.2	5.0	0.7	45.6	45.8	74.0	28.4	28.2
2.	3709.00	BB	46.6	46.9	30.6	36.8	6.0	0.7	47.1	47.4	74.0	26.9	26.6
3.	4636.25	BB	46.8	46.5	32.3	36.5	7.0	0.7	50.3	50.0	74.0	23.7	24.0
4.	5563.50	BB	47.1	46.6	33.9	36.3	7.8	1.1	53.6	53.1	74.0	20.4	20.9

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:927.25MHz
Remarks : ANT:Dipole, AV (RBW:1MHz, VBW:100Hz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
Regulation : FCC Part15C § 15.209 (AV 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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2781.75	BB	33.9	34.3	29.2	37.2	5.0	0.7	31.6	32.0	54.0	22.4	22.0
2.	3709.00	BB	36.5	37.1	30.6	36.8	6.0	0.7	37.0	37.6	54.0	17.0	16.4
3.	4636.25	BB	33.3	32.9	32.3	36.5	7.0	0.7	36.8	36.4	54.0	17.2	17.6
4.	5563.50	BB	34.1	33.9	33.9	36.3	7.8	1.1	40.6	40.4	54.0	13.4	13.6

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:902.75MHz
Remarks : ANT:Mini, PK (RBW:1MHz, VBW:1MHz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
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.	2708.25	BB	47.6	45.7	29.0	37.2	5.0	0.8	45.2	43.3	74.0	28.8	30.7
2.	3611.00	BB	47.4	47.0	30.4	36.9	6.0	0.7	47.6	47.2	74.0	26.4	26.8
3.	4513.75	BB	46.2	46.8	31.9	36.5	6.8	0.8	49.2	49.8	74.0	24.8	24.2
4.	5416.50	BB	46.1	46.4	33.7	36.3	7.7	1.1	52.3	52.6	74.0	21.7	21.4

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:902.75MHz
 Remarks : ANT:Mini, AV (RBW:1MHz, VBW:100Hz)
 Date : 6/26/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209 (AV Detection) 1-26GHz:3m/26-40GHz:1m
 Engineer : Takahiro Suzuki

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.	2708.25	BB	33.6	33.5	29.0	37.2	5.0	0.8	31.2	31.1	54.0	22.8	22.9
2.	3611.00	BB	36.4	36.1	30.4	36.9	6.0	0.7	36.6	36.3	54.0	17.4	17.7
3.	4513.75	BB	32.2	32.5	31.9	36.5	6.8	0.8	35.2	35.5	54.0	18.8	18.5
4.	5416.50	BB	33.4	33.2	33.7	36.3	7.7	1.1	39.6	39.4	54.0	14.4	14.6

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
 Kind of Equipment : RFID Reader Module
 Model No. : M5e
 Serial No. : 110801101018
 Power : DC5V
 Mode : Transmitting:915.25MHz
 Remarks : ANT:Mini, PK (RBW:1MHz, VBW:1MHz)
 Date : 6/26/2008
 Test Distance : 3 m
 Temperature : 22 °C
 Humidity : 71 %
 Regulation : FCC Part15C § 15.209 (PK Detection) 1-26GHz:3m/26-40GHz:1m
 Engineer : Takahiro Suzuki

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.	2745.75	BB	47.3	46.2	29.1	37.2	5.0	0.8	45.0	43.9	74.0	29.0	30.1
2.	3661.00	BB	47.6	46.8	30.5	36.8	6.0	0.7	48.0	47.2	74.0	26.0	26.8
3.	4576.25	BB	46.4	46.3	32.1	36.5	6.9	0.7	49.6	49.5	74.0	24.4	24.5
4.	5491.50	BB	46.5	46.7	33.7	36.3	7.7	1.2	52.8	53.0	74.0	21.2	21.0

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:915.25MHz
Remarks : ANT:Mini, AV (RBW:1MHz, VBW:100Hz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
Regulation : FCC Part15C § 15.209 (AV 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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2745.75	BB	33.5	33.8	29.1	37.2	5.0	0.8	31.2	31.5	54.0	22.8	22.5
2.	3661.00	BB	36.6	36.3	30.5	36.8	6.0	0.7	37.0	36.7	54.0	17.0	17.3
3.	4576.25	BB	32.5	32.7	32.1	36.5	6.9	0.7	35.7	35.9	54.0	18.3	18.1
4.	5491.50	BB	33.7	33.6	33.7	36.3	7.7	1.2	40.0	39.9	54.0	14.0	14.1

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:927.25MHz
Remarks : ANT:Mini, PK (RBW:1MHz, VBW:1MHz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2781.75	BB	47.6	47.6	29.2	37.2	5.0	0.7	45.3	45.3	74.0	28.7	28.7
2.	3709.00	BB	46.9	46.6	30.6	36.8	6.0	0.7	47.4	47.1	74.0	26.6	26.9
3.	4636.25	BB	46.6	46.1	32.3	36.5	7.0	0.7	50.1	49.6	74.0	23.9	24.4
4.	5563.50	BB	46.7	46.4	33.9	36.3	7.8	1.1	53.2	52.9	74.0	20.8	21.1

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28JE0227-YK-B

Applicant : SATO CORPORATION
Kind of Equipment : RFID Reader Module
Model No. : M5e
Serial No. : 110801101018
Power : DC5V
Mode : Transmitting:927.25MHz
Remarks : ANT:Mini, AV (RBW:1MHz, VBW:100Hz)
Date : 6/26/2008
Test Distance : 3 m
Temperature : 22 °C Engineer : Takahiro Suzuki
Humidity : 71 %
Regulation : FCC Part15C § 15.209 (AV 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 μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	2781.75	BB	33.7	34.1	29.2	37.2	5.0	0.7	31.4	31.8	54.0	22.6	22.2
2.	3709.00	BB	36.2	36.6	30.6	36.8	6.0	0.7	36.7	37.1	54.0	17.3	16.9
3.	4636.25	BB	33.1	32.6	32.3	36.5	7.0	0.7	36.6	36.1	54.0	17.4	17.9
4.	5563.50	BB	33.9	33.8	33.9	36.3	7.8	1.1	40.4	40.3	54.0	13.6	13.7

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D18/D19 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ES140)

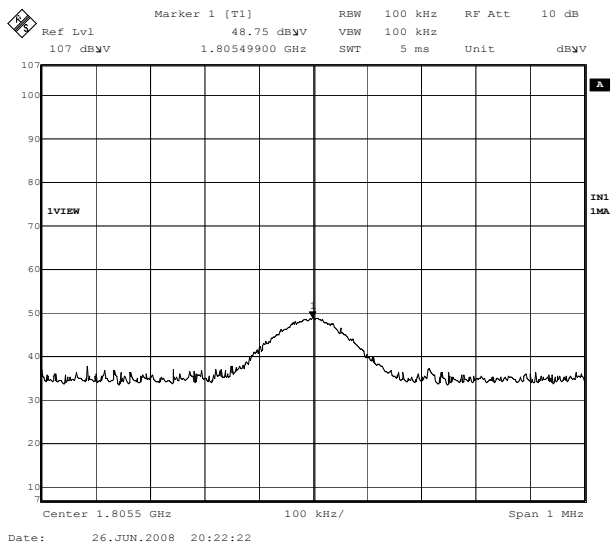
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Dipole

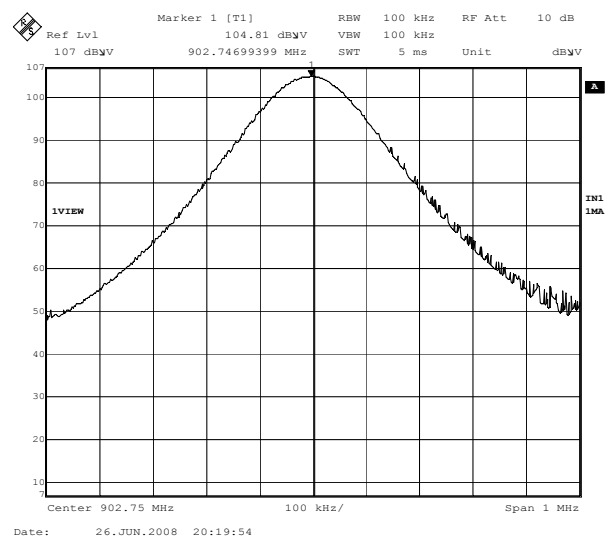
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C/ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 902.75MHz]

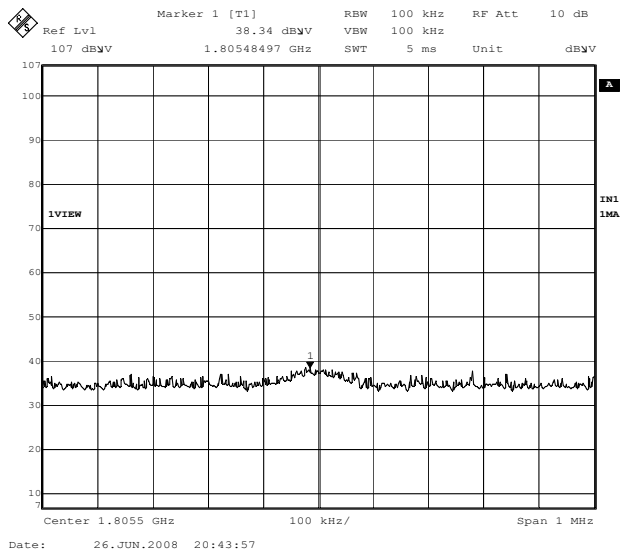
1. Spurious emission (1805.50MHz-Horizontal)



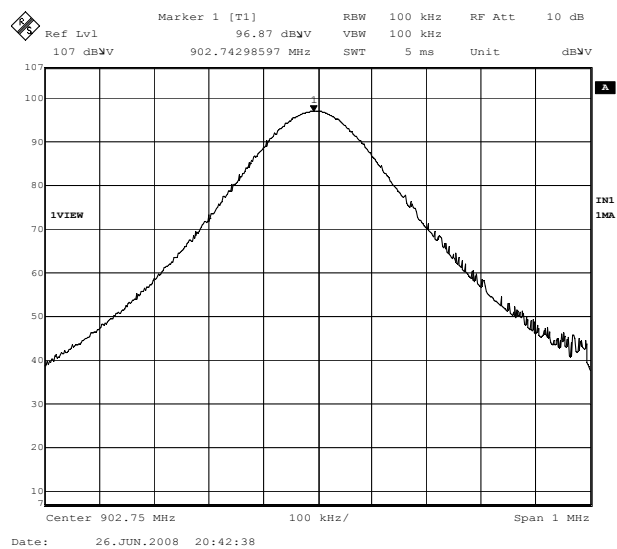
2. Fundamental (902.75MHz-Horizontal)



3. Spurious emission (1805.50MHz-Vertical)



4. Fundamental (902.75MHz-Vertical)



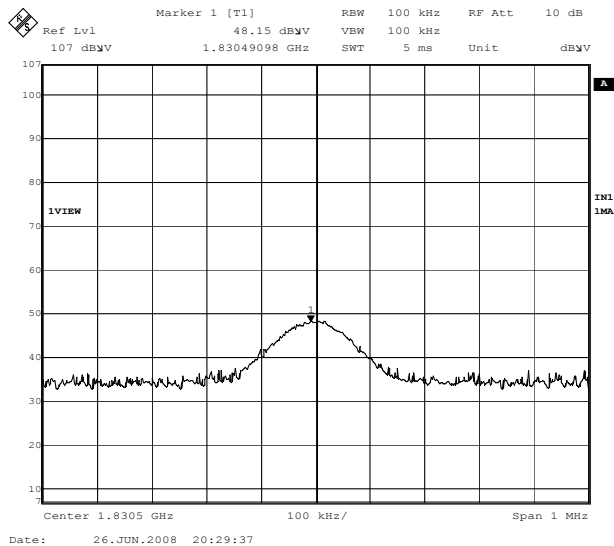
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Dipole

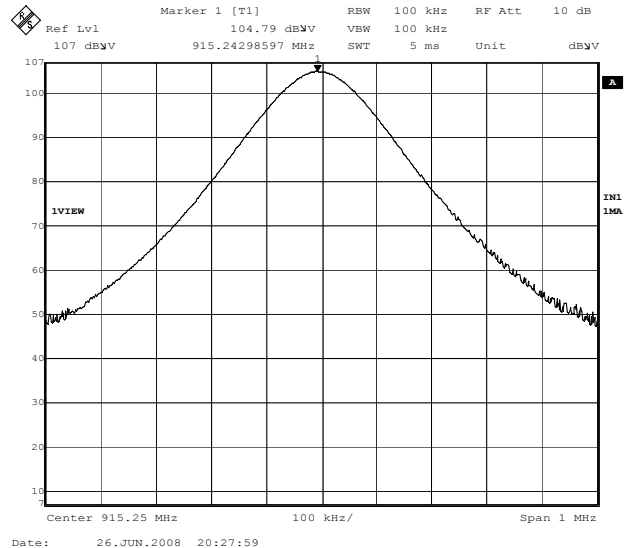
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C./ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 915.25MHz]

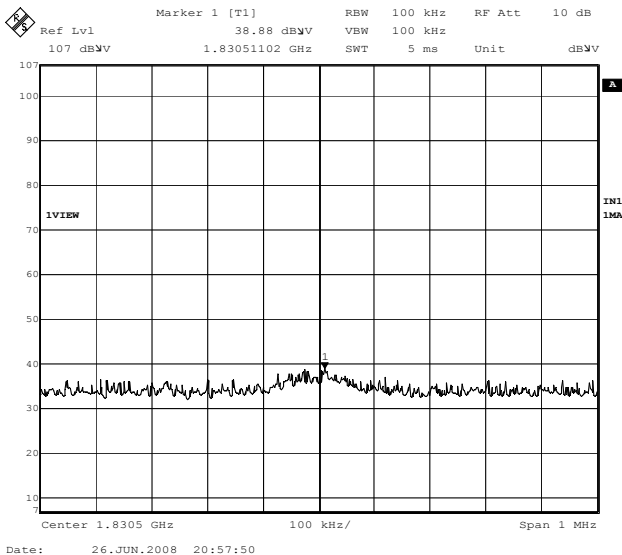
1. Spurious emission (1830.50MHz-Horizontal)



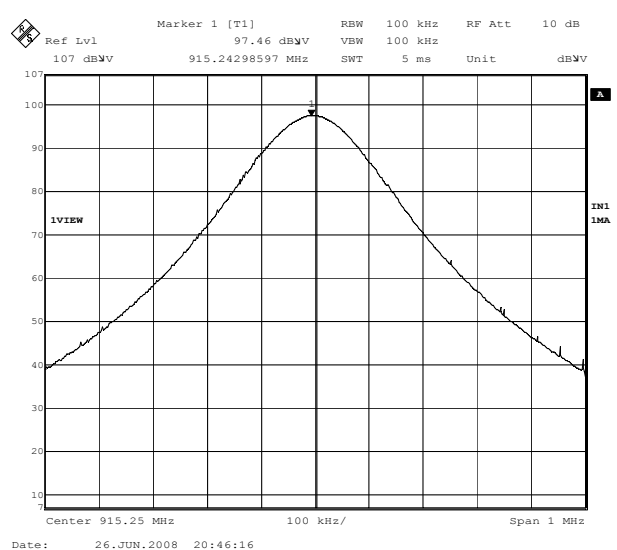
2. Fundamental (915.25MHz-Horizontal)



3. Spurious emission (1830.50MHz-Vertical)



4. Fundamental (915.25MHz-Vertical)



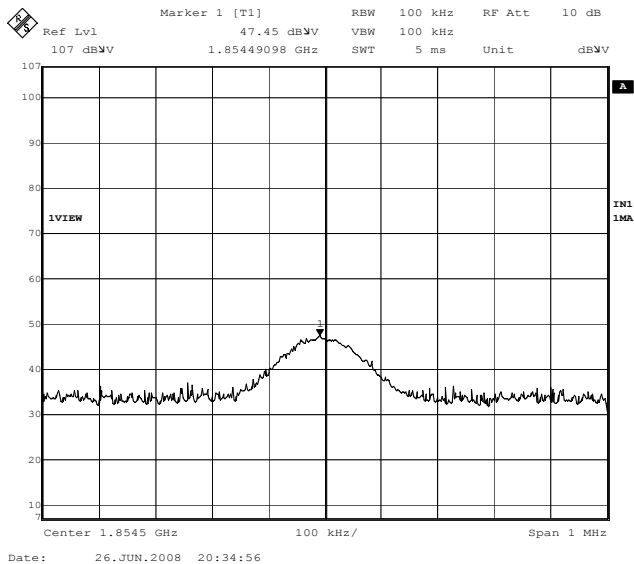
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Dipole

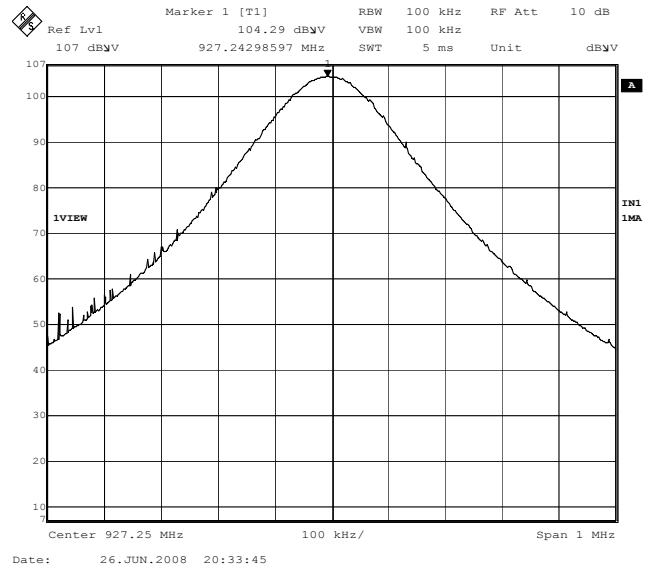
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C/ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 927.25MHz]

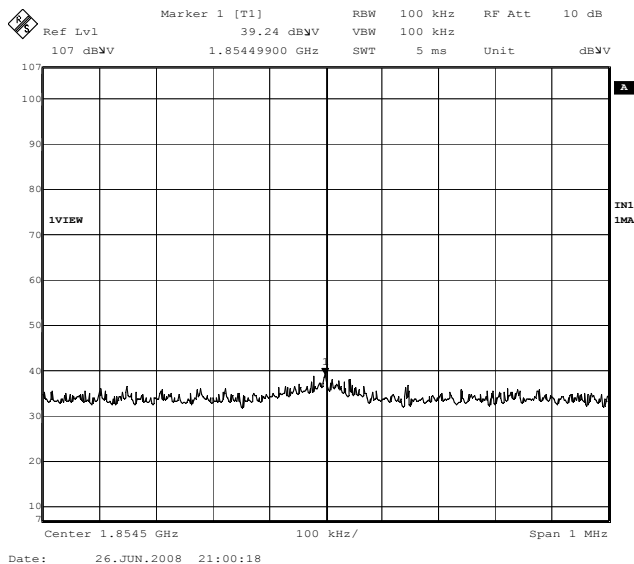
1. Spurious emission (1854.50MHz-Horizontal)



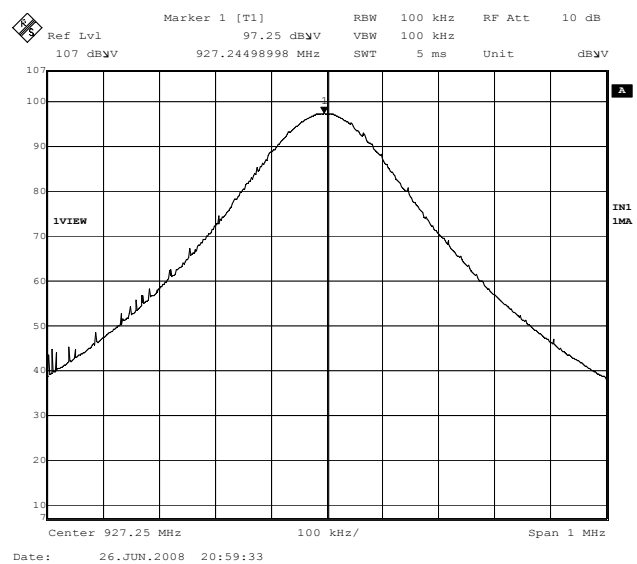
2. Fundamental (927.25MHz-Horizontal)



3. Spurious emission (1854.50MHz-Vertical)



4. Fundamental (927.25MHz-Vertical)



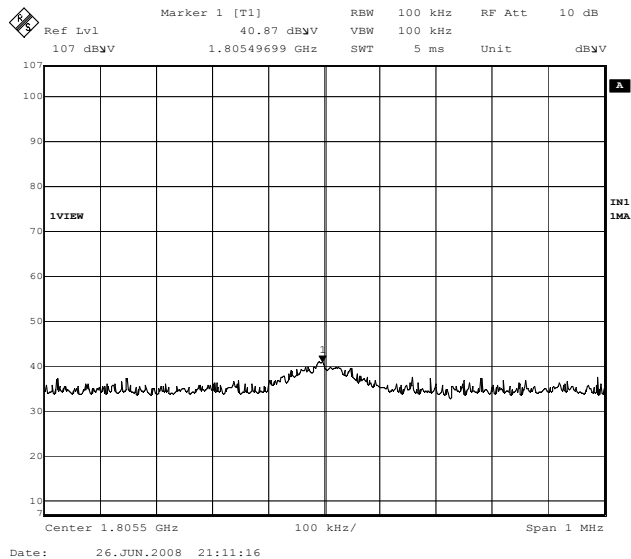
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Mini

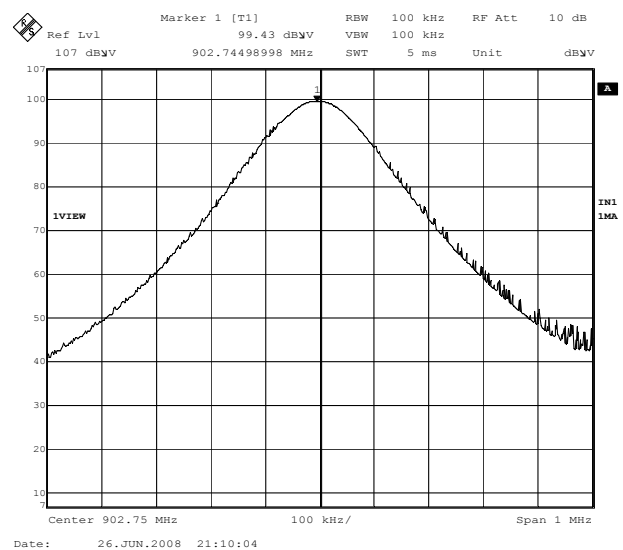
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C./ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 902.75MHz]

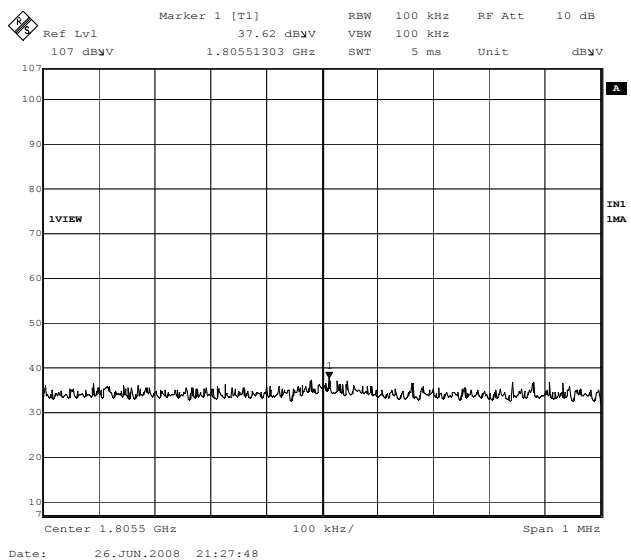
1. Spurious emission (1805.50MHz-Horizontal)



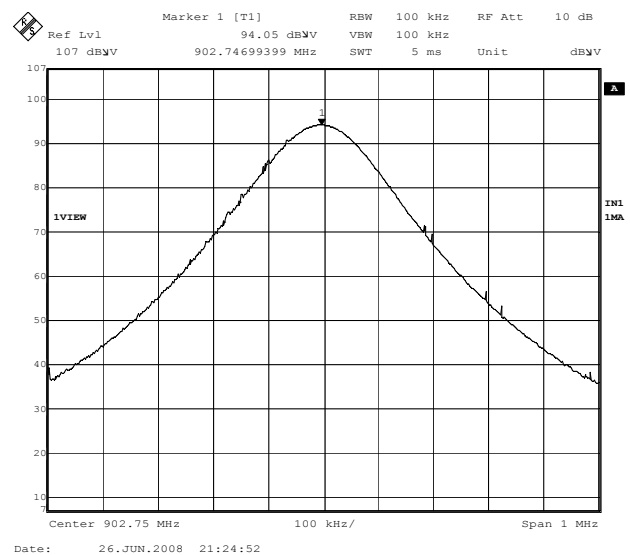
2. Fundamental (902.75MHz-Horizontal)



3. Spurious emission (1805.50MHz-Vertical)



4. Fundamental (902.75MHz-Vertical)



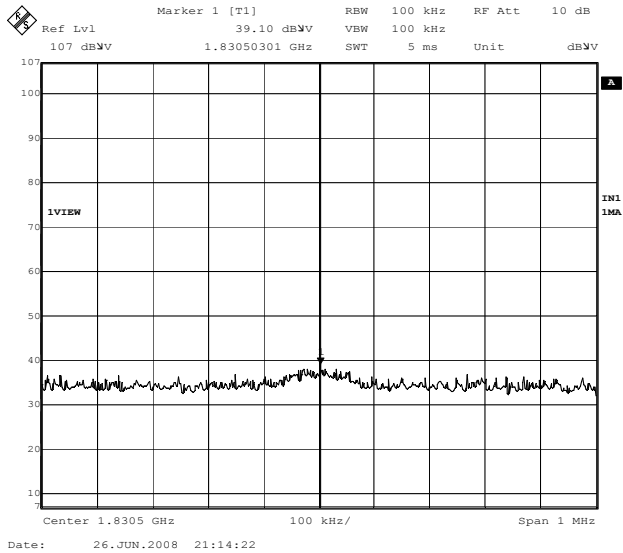
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Mini

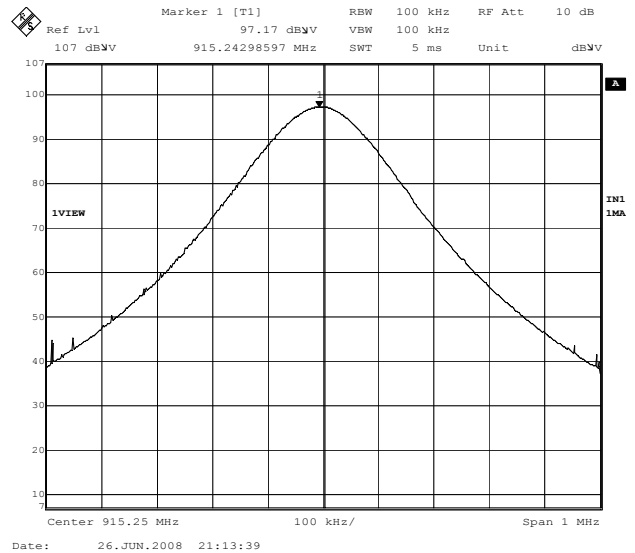
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C./ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 915.25MHz]

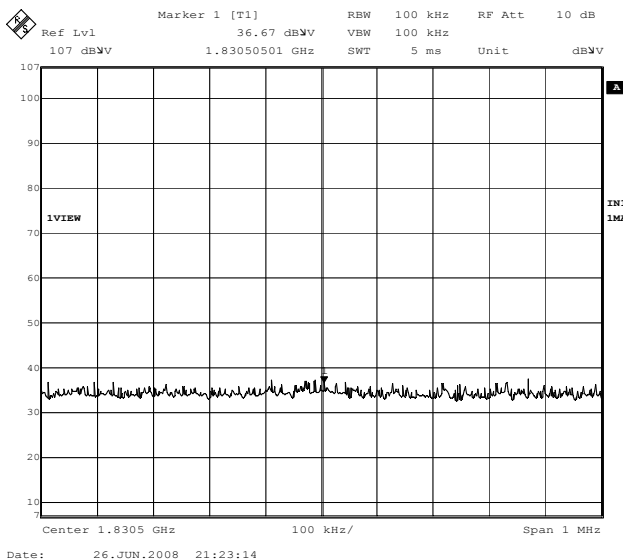
1. Spurious emission (1830.50MHz-Horizontal)



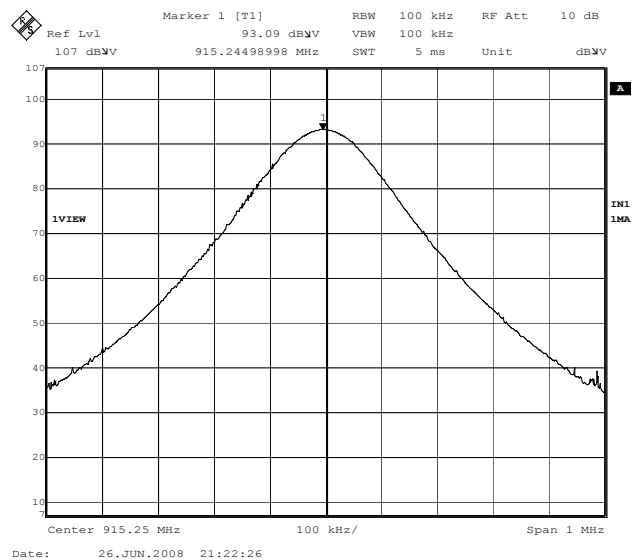
2. Fundamental (915.25MHz-Horizontal)



3. Spurious emission (1830.50MHz-Vertical)



4. Fundamental (915.25MHz-Vertical)



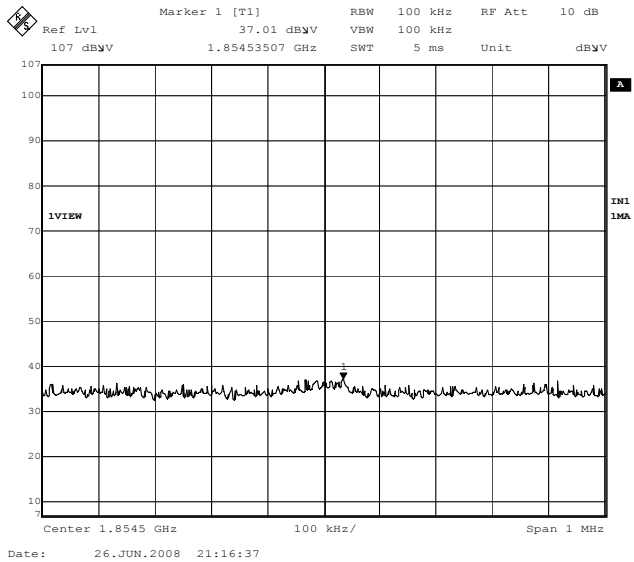
Out of Band Emission (Radiated): FCC 15.247(d)

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V
Remarks : ANT_Mini

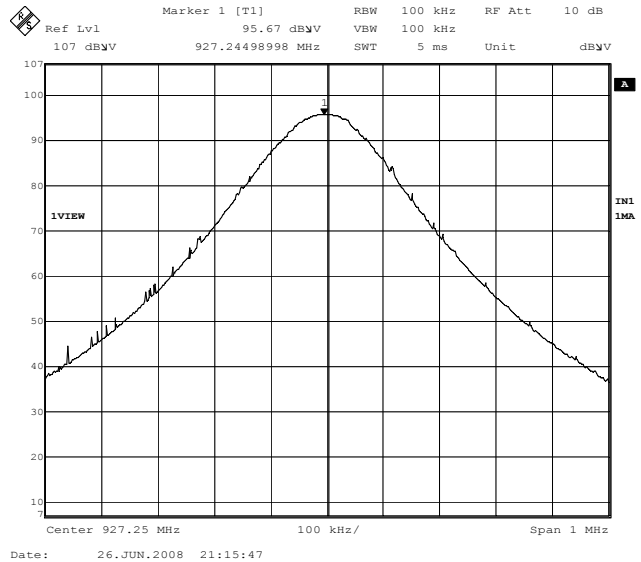
REPORT NO : 28JE0227-YK-B
REGULATION : FCC Part15 SubpartC 247(d)
DATE : 2008/6/26
TEMP./HUMI : 22deg.C./ 71%
TEST MODE : Transmitting
ENGINEER : Takahiro Suzuki

[Ch: 927.25MHz]

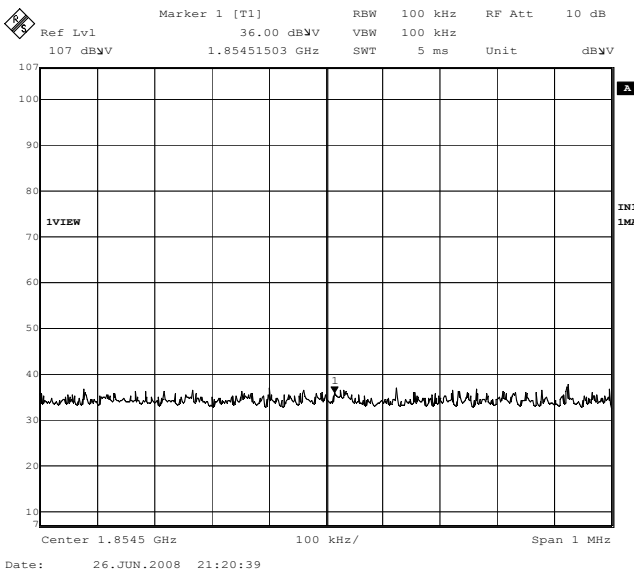
1. Spurious emission (1854.50MHz-Horizontal)



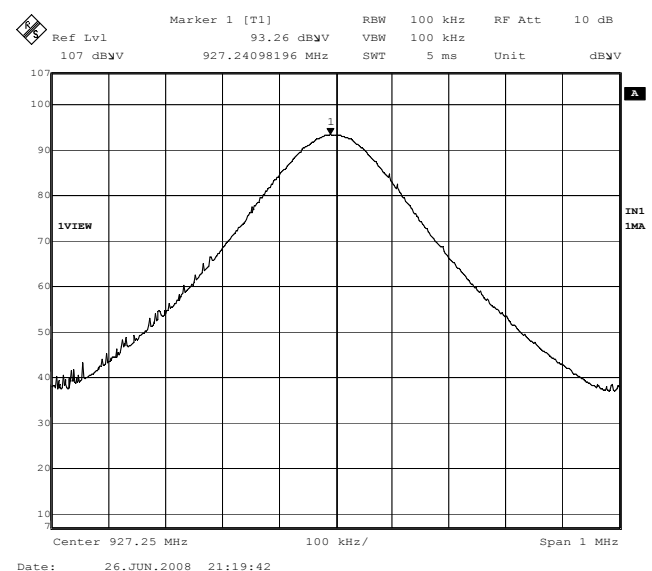
2. Fundamental (927.25MHz-Horizontal)



3. Spurious emission (1854.50MHz-Vertical)



4. Fundamental (927.25MHz-Vertical)

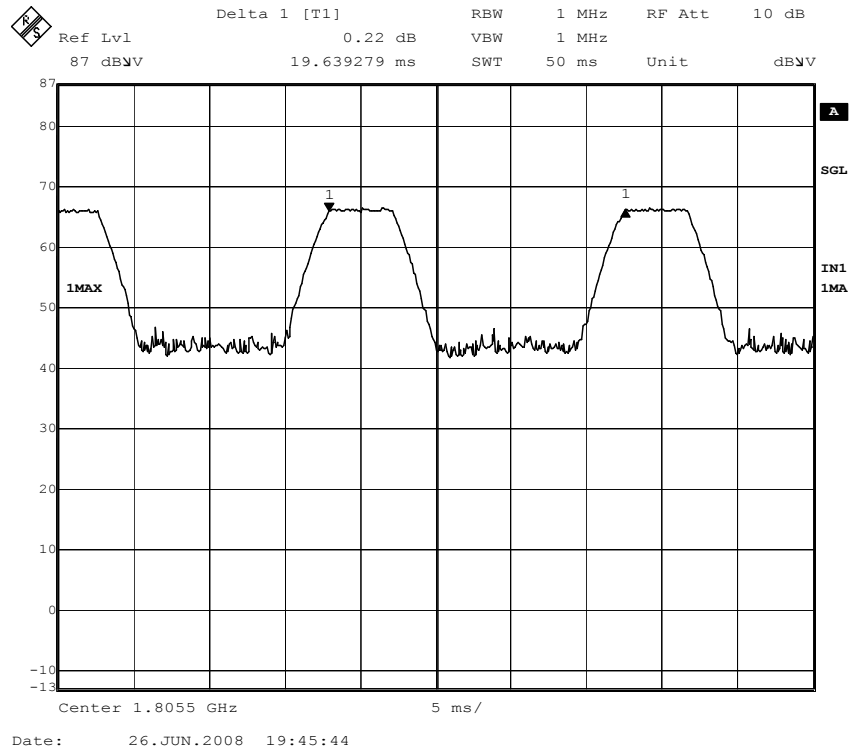


Duty Cycle

COMPANY : SATO CORPORATION
EQUIPMENT : RFID Reader Module
MODEL NUMBER: M5e
SERIAL NUMBER: 110801101018
POWER : DC5V

REPORT NO : 28JE0227-YK-B
DATE : 2008/06/26
TEMP./HUMI : 22deg.C./71%
TEST MODE : Tx 902.750MHz
ENGINEER : Takahiro Suzuki

Tx902.750MHz (1805.50MHz)



Duty Cycle: 19.64ms

AV Detector VBW: $1000 / 19.64\text{ms} = 50.92\text{Hz} \rightarrow 100\text{Hz}$

* All the measured noise was pulse emission.

* Duty cycle was within 100msec.

Company: SATO CORPORATION
Kind of Equipment: RFID Reader Module
Serial No.: 110801101018

Report No.:
Model No.:
Power:

28JE0227-YK-B
M5e
DC5.0V

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

UL Japan, Inc. Yamakita EMC lab.

No.2 shielded room

Date:

2008.06.30

Temp./Humid.:

24 deg. C. / 70 %

Engineer:

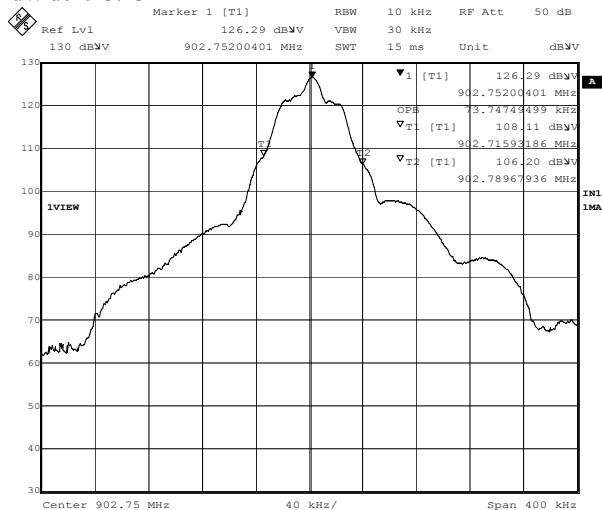
Makoto Hosaka

Test mode:

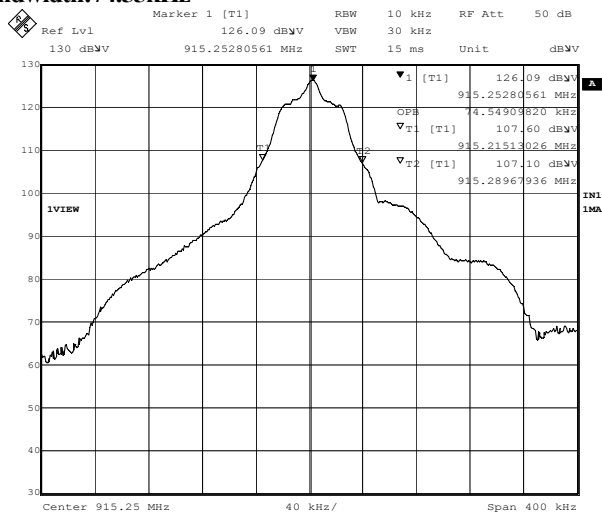
Transmitting

[Hopping off]

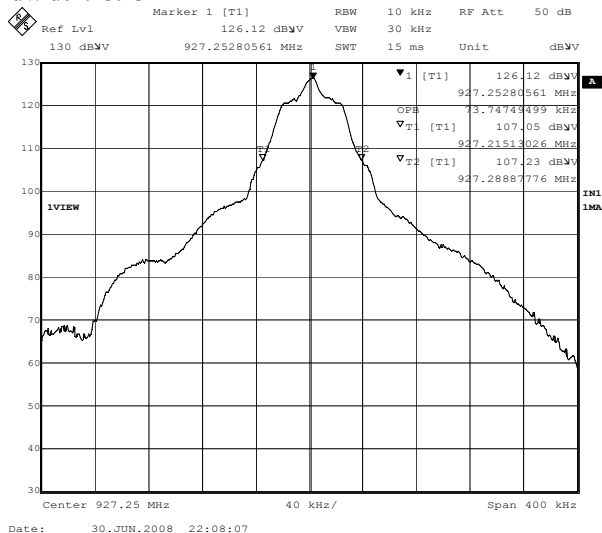
1. ch : 902.750MHz/Occupied Bandwidth:73.75kHz



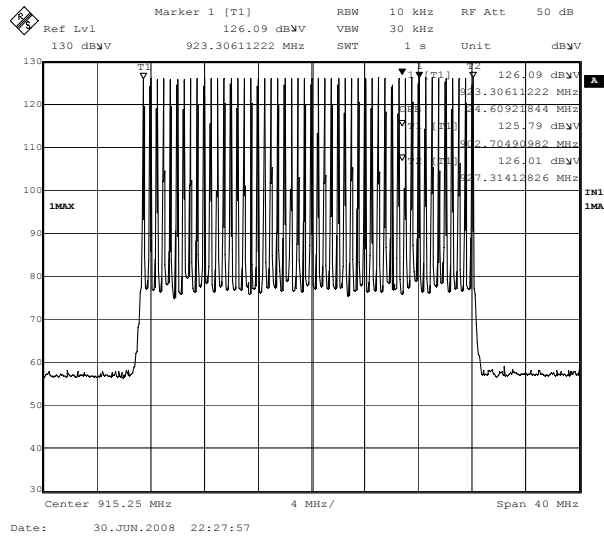
2. ch : 915.250MHz/Occupied Bandwidth:74.55kHz



3. ch : 927.250MHz/Occupied Bandwidth:73.75kHz



4. Hopping/Occupied Bandwidth: 24.61MHz



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-14/15/16 /18/KPL-01/K RM-01	Coaxial Cable/Pulse Limiter/RF Relay Matrix	Fujikura/Suhner/PMM/ TSJ	5D-2W/8D-2W/S04272 B/S04272B/PL01/-	CE	2008/05/15 * 12
KLS-01	LISN(AMN)	Schwarzbeck	NSLK8126	CE	2008/04/07 * 12
KLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2008/08/01 * 12
KSA-04	Spectrum Analyzer	Advantest	R3271A	CE	2007/09/25 * 12
KTM-01	Terminator	TME	CT-01BP	CE	2007/10/30 * 12
KTR-02	Test Receiver	Rohde & Schwarz	ESCS30	CE	2007/09/05 * 12
KOS-04	Humidity Indicator	SATO	PC-5000TRH	CE	2008/07/07 * 12
KJM-08	Measure	KOMELON	KMC-36	CE	-
YA-RE	Radiated emission(software)	UL Japan	RE(Ver.1.5)	RE	-
KAEC-01(NSA)	Anechoic Chamber	JSE	Semi 3m	RE	2007/08/26 * 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
KTR-01	Test Receiver	Rohde & Schwarz	ES140	RE/AT 1,2,3,4,6	2008/04/18 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	RE	2008/07/07 * 12
KJM-01	Measure	TAJIMA	GL19-55	RE	-
KAF-08	Pre Amplifier	Anritsu	MH648A	RE	2008/06/03 * 12
APSPA04	Spectrum Analyzer	Advantest	R3265	RE	2008/07/28 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	RE	2008/04/11 * 12
KFL-07	High Pass Filter	K&L MICROWAVE	11SH10-2000/U8000-0 /0	RF	2008/04/22 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2007/08/14 * 12
KCC-D18/D19	Coaxial cable	Suhner	SCOFLEX104	RE	2008/07/07 * 12
KOSC-01	Oscilloscope	Tektronix	TDS-2022B	AT 4	2008/05/07 * 12
KDT-01	Coaxial Crystal Detector	Agilent	8473C	AT 4	Pre Check
KPM-05	Power meter	Agilent	E4417A	AT 5	2008/03/21 * 12
KPSS-01	Power sensor	Agilent	E9327A	AT 5	2008/03/27 * 12
KCC-A7	Coaxial Cable	Fujikura	5D-2W	AT 1,2,3,4,5	2007/11/01 * 12
KCC-D16	Coaxial Cable	INSULATED WIRE INC	KPS-1501-200-KPS	AT 6	2008/02/21 * 12
KOS-01	Humidity Indicator	Custom	CTH-190	AT all	2008/07/14 * 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: Out of Band Emission (Radiated)
- AT: Antenna terminal conducted test
 - 1: Carrier Frequency Separation
 - 2: 20dB Bandwidth
 - 3: Number of Hopping Frequency
 - 4: Dwell time
 - 5: Maximum Peak Output Power
 - 6: Out of Band Emission (Conducted)

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