

# DATA OF CONDUCTION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 29CE0202-YK-01

Applicant : NIDEC SANKYO CORPORATION  
 Kind of Equipment : Contactless IC card dispenser  
 Model No. : SCTOMO-0130  
 Serial No. : R8100005  
 Power : DC24V  
 Mode : Transmitting (13.56MHz)  
 Remarks : -  
 Date : 11/27/2008  
 Phase : Single Phase  
 Temperature : 22 °C  
 Humidity : 44 %  
 Regulation : FCC Part15C § 15.207. (CISPR Pub. 22 )

Engineer : Tatsuya Arai

No.	FREQ. [MHz]	READING(N)		READING(L1)		LISN FACTOR	CABLE LOSS	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP [dB μV]	AV	QP [dB μV]	AV				QP [dB]	AV [dB μV]	QP [dB μV]	AV [dB μV]	QP [dB]	AV [dB]
1.	0.1500	34.8	-	34.8	-	0.1	0.1	0.0	35.0	-	66.0	56.0	31.0	-
2.	1.5675	29.4	-	30.8	-	0.2	0.2	0.0	31.2	-	56.0	46.0	24.8	-
3.	2.3517	33.5	-	32.0	-	0.2	0.2	0.0	33.9	-	56.0	46.0	22.1	-
4.	3.1379	29.0	-	32.1	-	0.2	0.2	0.0	32.5	-	56.0	46.0	23.5	-
5.	5.3322	38.2	-	37.5	-	0.3	0.3	0.0	38.8	-	60.0	50.0	21.2	-
6.	10.6669	38.5	-	36.6	-	0.6	0.5	0.0	39.6	-	60.0	50.0	20.4	-
7.	13.5600	33.4	-	31.9	-	0.8	0.5	0.0	34.7	-	60.0	50.0	25.3	-
8.	21.3361	41.7	-	39.6	-	1.1	0.7	0.0	43.5	-	60.0	50.0	16.5	-
9.	26.6680	28.7	-	32.8	-	1.3	0.8	0.0	34.9	-	60.0	50.0	25.1	-

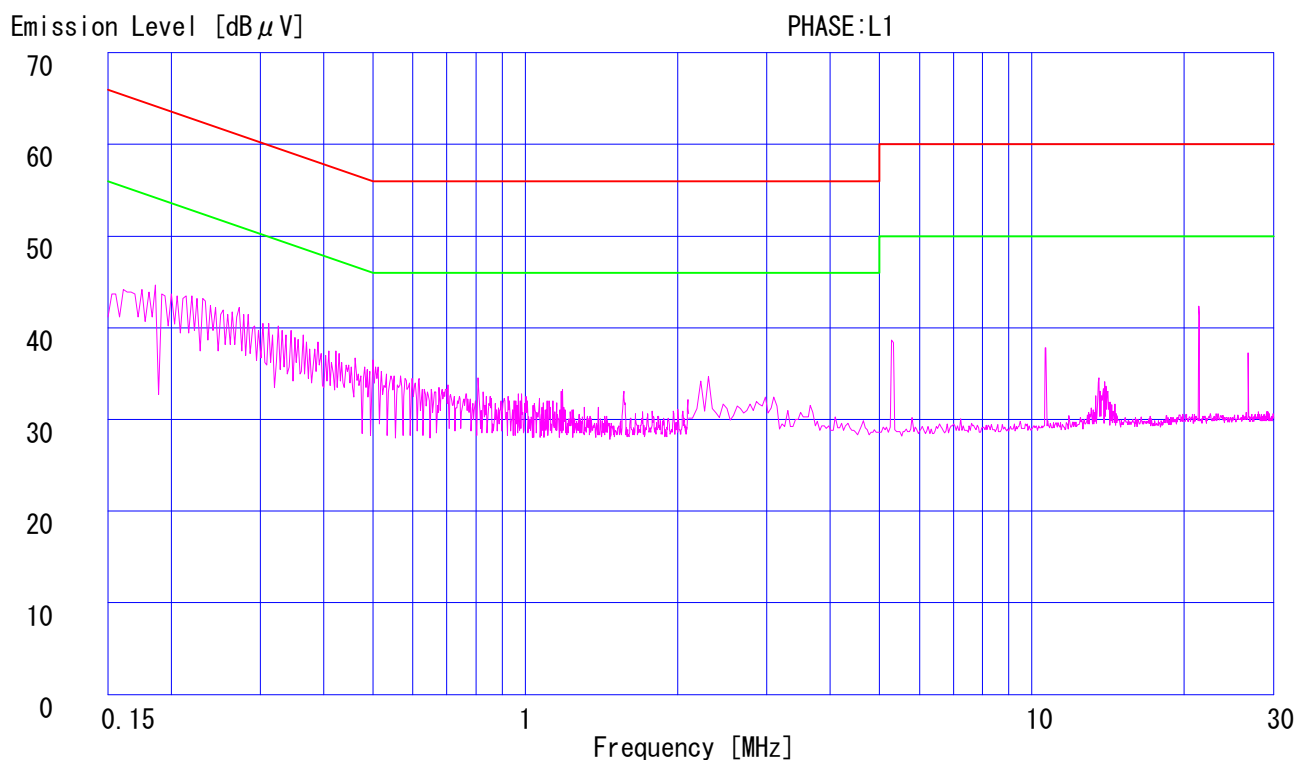
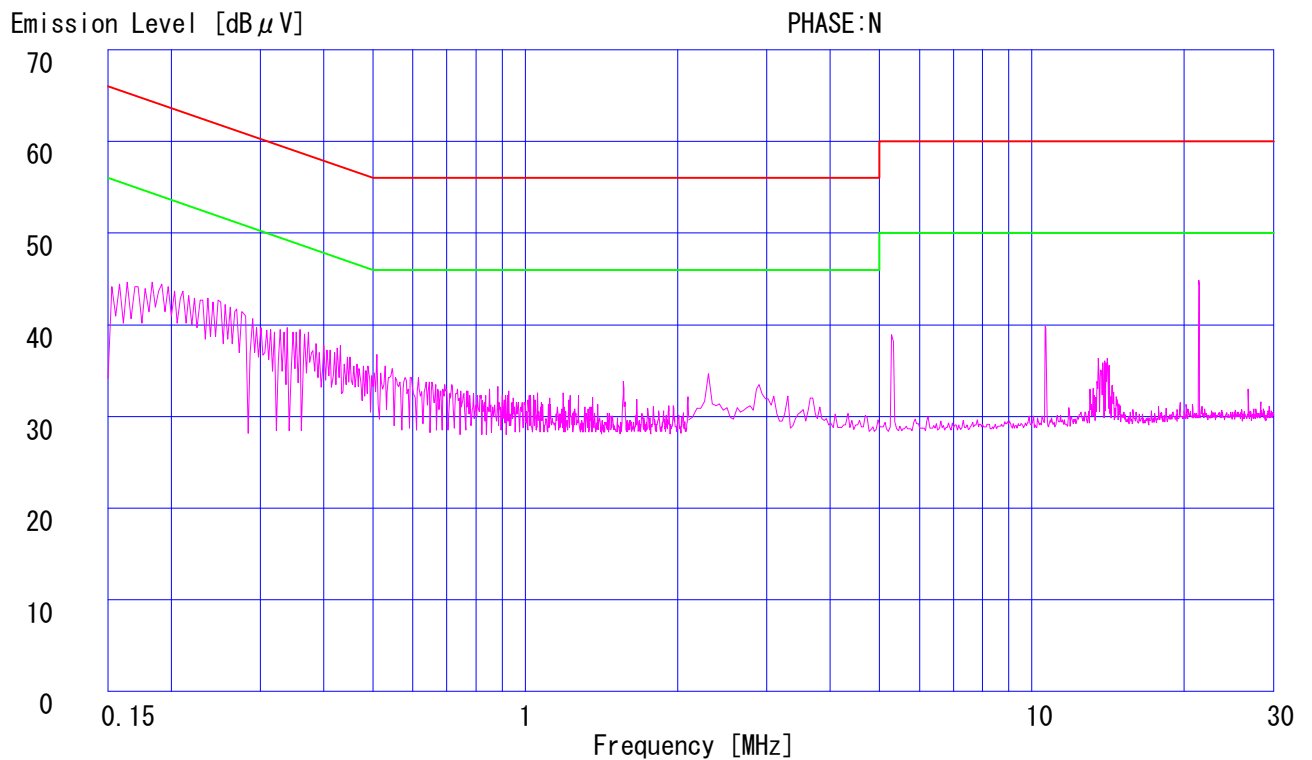
CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

■ LISN: KLS-05 (NSLK8126) ■ COAXIAL CABLE: KCC-33\_34  
 ■ EMI RECEIVER: KTR-03 (ESHS10)

# DATA OF CONDUCTION TEST CHART

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 29CE0202-YK-01

Applicant : NIDEC SANKYO CORPORATION  
Kind of Equipment : Contactless IC card dispenser  
Model No. : SCTOM0-0130  
Serial No. : R8100005  
Power : DC24V  
Mode : Transmitting (13.56MHz)  
Remarks : -  
Date : 11/27/2008  
Phase : Single Phase  
Temperature : 22 °C  
Humidity : 44 %  
Regulation 1 : FCC Part15C § 15.207. (CISPR Pub. 22 )  
Regulation 2 : None  
Engineer : Tatsuya Arai

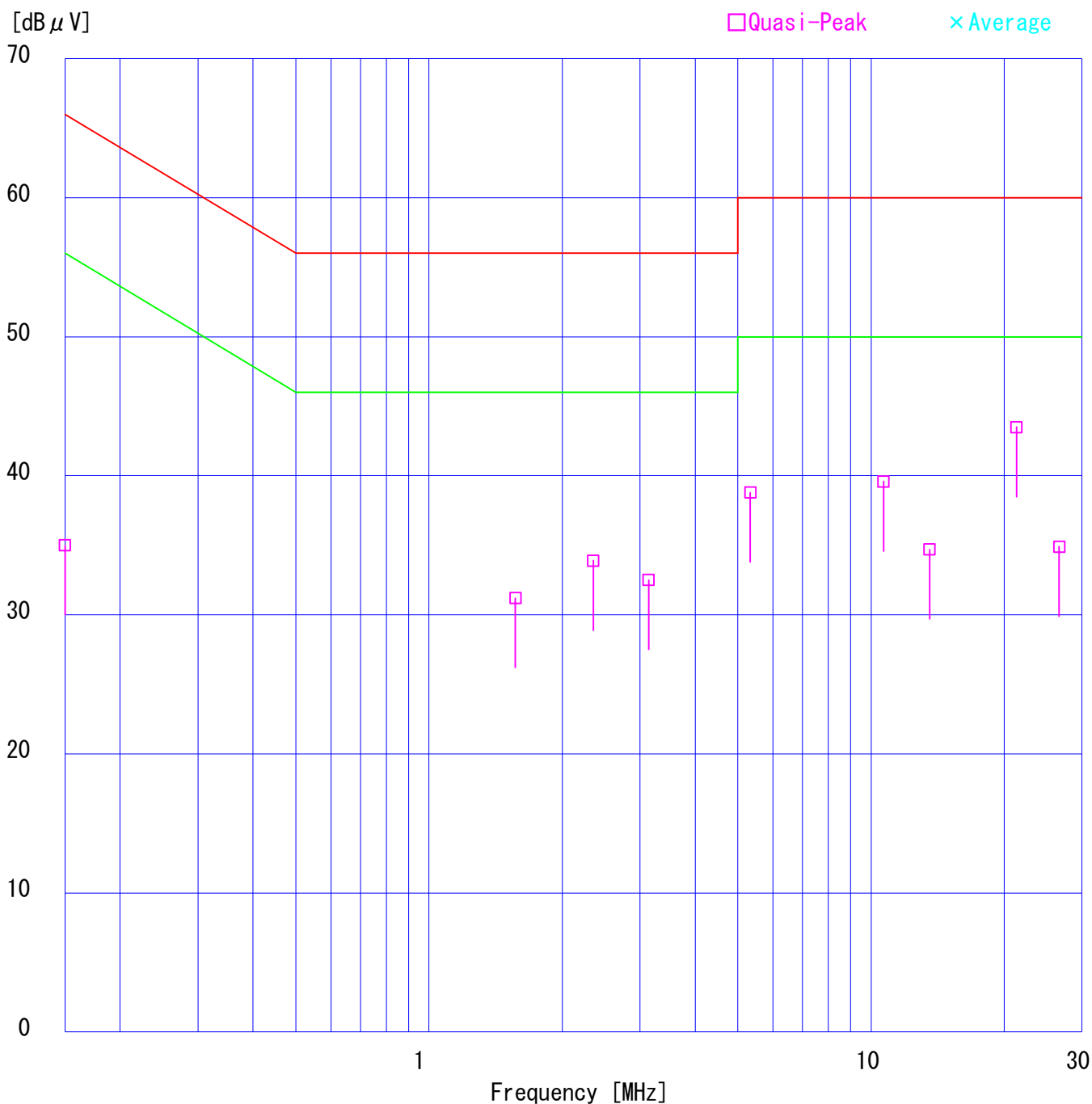


# DATA OF CONDUCTION TEST

UL Japan, Inc.  
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Report No. : 29CE0202-YK-01

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Kind of Equipment : Contactless IC card dispenser  
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Temperature : 22 °C  
Humidity : 44 %  
Regulation : FCC Part15C § 15. 207. (CISPR Pub. 22 )

Engineer : Tatsuya Arai



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

UL Japan, Inc.  
YAMAKITA No1 Anechoic Chamber

Company : NIDEC SANKYO CORPORATION	Report No. : 29DE0202-YK-01
Equipment : Contactless IC card dispenser	Regulation : FCC Part15 SupartC 15.225(a)(b)(c)
Model : SCT0M0-0130	Test Distance : 3m
Sample No. : R8100005	Date : 2008/11/27
Power : DC24V	Temperature : 22deg.C
Mode : Transmitting (13.56MHz)	Humidity : 44%

ENGINEER : Tatsuya Arai

**Field strength**

No.	FREQ [MHz]	T/R Reading		ANT Factor [dB]	ATTEN [dB]	CABLE LOSS [dB]	AMP GAIN [dB]	RESULT		LIMIT (3m) [dBuV/m]	MARGIN	
		H [dBuV]	V [dBuV]					Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.560	60.8	44.6	19.7	6.0	0.7	28.4	58.8	42.6	124.0	65.2	81.4

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

**Outside Field strength**

No.	FREQ [MHz]	T/R Reading		ANT Factor [dB]	ATTEN [dB]	CABLE LOSS [dB]	AMP GAIN [dB]	RESULT		LIMIT (3m) [dBuV/m]	MARGIN	
		H [dBuV]	V [dBuV]					Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.110	26.1	26.0	19.7	6.0	0.7	28.4	24.1	24.0	69.5	45.4	45.5
2	13.410	31.8	26.4	19.7	6.0	0.7	28.4	29.8	24.4	80.5	50.7	56.1
3	13.553	50.0	30.3	19.7	6.0	0.7	28.4	48.0	28.3	90.5	42.5	62.2
4	13.567	41.3	29.4	19.7	6.0	0.7	28.4	39.3	27.4	90.5	51.2	63.1
5	13.710	30.3	26.2	19.8	6.0	0.7	28.4	28.4	24.3	80.5	52.1	56.2
6	14.010	26.2	26.1	19.8	6.0	0.7	28.4	24.3	24.2	69.5	45.2	45.3

Outside filed strength frequencies

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

$F_c = 13.56\text{MHz}$

Limits (3m)

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

# DATA OF RADIATION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 29CE0202-YK-01

Applicant : NIDEC SANKYO CORPORATION  
Kind of Equipment : Contactless IC card dispenser  
Model No. : SCTOMO-0130  
Serial No. : R8100005  
Power : DC24V  
Mode : Transmitting (13.56MHz)  
Remarks : Hor:Z, Ver:335°  
Date : 11/28/2008  
Test Distance : 3 m  
Temperature : 19 °C Engineer : Tatsuya Arai  
Humidity : 52 %  
Regulation : FCC Part15C § 15.209 9KHz-30MHz (3m)

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER	HOR [dB]	VER		
1.	1.06	BB	37.6	45.3	19.6	28.4	0.2	6.0	35.0	42.7	67.1	32.1	24.4	
2.	26.67	BB	26.1	36.1	21.4	28.4	1.1	6.0	26.2	36.2	69.5	43.3	33.3	
3.	27.12	BB	27.3	31.0	21.4	28.4	1.1	6.0	27.4	31.1	69.5	42.1	38.4	

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

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

■ CABLE: KCC-30/31/32/34 ■ PREAMP: KAF-05 (8447D) ■ EMI RECEIVER: KTR-03 (ESHS10)

# DATA OF RADIATION TEST

UL Japan, Inc.  
YAMAKITA No.1 ANECHOIC CHAMBER  
Report No. : 29CE0202-YK-01

Applicant : NIDEC SANKYO CORPORATION  
 Kind of Equipment : Contactless IC card dispenser  
 Model No. : SCTOMO-0130  
 Serial No. : R8100005  
 Power : DC24V  
 Mode : Transmitting (13.56MHz)  
 Remarks : -  
 Date : 11/28/2008  
 Test Distance : 3 m  
 Temperature : 19 °C  
 Humidity : 52 %  
 Regulation : FCC Part15C § 15.209 30MHz-1000MHz

Engineer : Tatsuya Arai

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER	HOR [dB]	VER		
1.	40.68	BB	25.7	33.9	13.5	27.5	1.3	6.0	19.0	27.2	40.0	21.0	12.8	
2.	54.24	BB	30.7	38.7	9.3	27.7	1.5	6.0	19.8	27.8	40.0	20.2	12.2	
3.	67.80	BB	32.4	44.1	6.7	27.5	1.7	6.0	19.3	31.0	40.0	20.7	9.0	
4.	74.64	BB	46.3	43.4	6.4	27.7	1.8	6.0	32.8	29.9	40.0	7.2	10.1	
5.	81.36	BB	35.2	39.7	6.6	27.5	1.9	6.0	22.2	26.7	40.0	17.8	13.3	
6.	90.67	BB	36.7	46.8	8.5	27.5	2.1	6.0	25.8	35.9	43.5	17.7	7.6	
7.	94.92	BB	31.8	33.0	9.2	27.5	2.1	6.0	21.6	22.8	43.5	21.9	20.7	
8.	101.38	BB	39.8	44.7	10.3	27.5	2.2	6.0	30.8	35.7	43.5	12.7	7.8	
9.	106.68	BB	33.3	44.6	11.0	27.5	2.3	6.0	25.1	36.4	43.5	18.4	7.1	
10.	108.48	BB	30.1	28.0	11.3	27.5	2.3	6.0	22.2	20.1	43.5	21.3	23.4	
11.	117.37	BB	29.1	40.3	12.5	27.5	2.4	6.0	22.5	33.7	43.5	21.0	9.8	
12.	122.04	BB	28.5	27.5	13.0	27.5	2.4	6.0	22.4	21.4	43.5	21.1	22.1	
13.	135.60	BB	25.7	29.6	13.9	27.5	2.6	6.0	20.7	24.6	43.5	22.8	18.9	
14.	192.03	BB	31.7	33.5	16.6	27.4	3.1	6.0	30.0	31.8	43.5	13.5	11.7	
15.	224.05	BB	29.3	34.4	17.1	27.3	3.4	6.0	28.5	33.6	46.0	17.5	12.4	
16.	272.05	BB	33.0	32.8	18.6	27.3	3.8	6.0	34.1	33.9	46.0	11.9	12.1	
17.	675.96	BB	28.8	33.4	20.3	27.2	6.5	6.1	34.5	39.1	46.0	11.5	6.9	
18.	831.35	BB	27.3	22.8	21.7	27.3	7.3	6.1	35.1	30.6	46.0	10.9	15.4	
19.	901.73	BB	31.3	20.5	22.1	27.1	7.7	6.1	40.1	29.3	46.0	5.9	16.7	

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

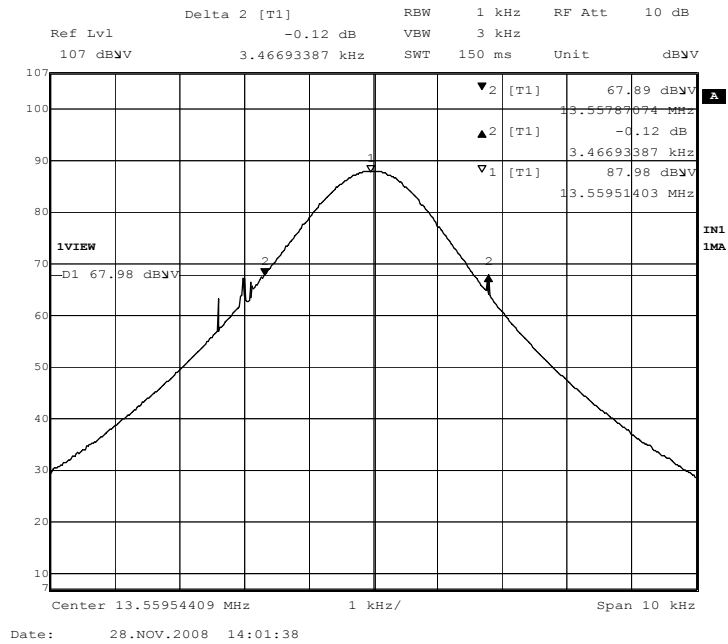
■ ANTENNA : KBA-03 (BBA9106) 30-299.99MHz / KLA-03 (USLP9143) 300-1000MHz  
 ■ CABLE : KCC-30/31/32/34 ■ PREAMP : KAF-08 (MH648A) ■ EMI RECEIVER : KTR-04 (ESVS10)

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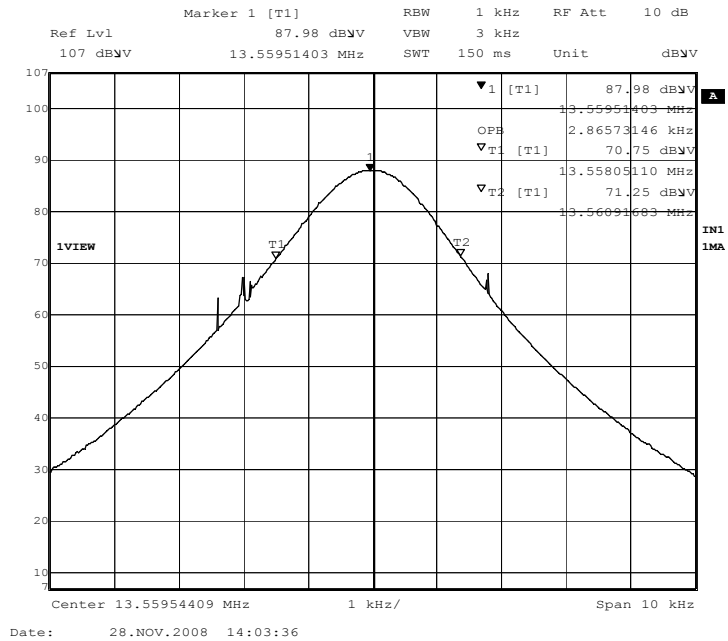
## 20dB bandwidth & Occupied bandwidth (99%): FCC 15.215(c)

		UL Japan, Inc. Yamakita No2 Shield room	
COMPANY	: NIDEC SNKYO CORPORATION.	REPORT No.	: 29CE0202-YK-01-A
Equipment	: Contactless IC card dispenser	REGULATION	: FCC Part15SubpartC 215(c)
MODEL NUMBER	: SCT0M0-0130	DATE	: 11/28/2008
SERIAL NUMBER	: R8100005	TEMP./HUMI	: 19°C/52%
POWER	: DC24V	TEST MODE	: Transmitting
		ENGINEER	: Tatsuya Arai

### 20dB Bandwidth: 3.467kHz



### OBW(99%): 2.866kHz



# Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.  
YAMAKITA No4 Shield room

Company : NIDEC SANKYO CORPORATION Report No. : 29CE0202-YK-01  
Equipment : Contactless IC card dispenser Regulation : FCC Part15 SupartC 15.225 (e)  
Model : SCT0M0-0130  
Sample No. : R8100005 Date : 2008/11/27  
Power : DC24V Temperature : 22deg.C  
Mode : Transmitting (13.56MHz) Humidity : 44%

ENGINEER : Go Ishiwata

## Temperature Variation: -20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559767	-0.000233	-0.00172	0.01
after 2minutes	13.56	13.559781	-0.000219	-0.00162	0.01
after 5minutes	13.56	13.559791	-0.000209	-0.00154	0.01
after 10minutes	13.56	13.559792	-0.000208	-0.00153	0.01

## Temperature Variation: -10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559846	-0.000154	-0.00114	0.01
after 2minutes	13.56	13.559853	-0.000147	-0.00108	0.01
after 5minutes	13.56	13.5598	-0.000200	-0.00147	0.01
after 10minutes	13.56	13.559807	-0.000193	-0.00142	0.01

## Temperature Variation: 0deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559775	-0.000225	-0.00166	0.01
after 2minutes	13.56	13.559785	-0.000215	-0.00159	0.01
after 5minutes	13.56	13.559787	-0.000213	-0.00157	0.01
after 10minutes	13.56	13.559761	-0.000239	-0.00176	0.01

## Temperature Variation: 10deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559746	-0.000254	-0.00187	0.01
after 2minutes	13.56	13.559749	-0.000251	-0.00185	0.01
after 5minutes	13.56	13.559710	-0.000290	-0.00214	0.01
after 10minutes	13.56	13.559688	-0.000312	-0.00230	0.01



# Data of Frequency Tolerance: FCC 15.225(e)

UL Japan, Inc.  
YAMAKITA No4 Shield room

Company : NIDEC SANKYO CORPORATION	Report No. : 29CE0202-YK-01
Equipment : Contactless IC card dispenser	Regulation : FCC Part15 SupartC 15.225 (e)
Model : SCT0M0-0130	
Sample No. : R8100005	Date : 2008/11/27
Power : DC24V	Temperature : 22deg.C
Mode : Transmitting (13.56MHz)	Humidity : 44%

ENGINEER : Go Ishiwata

## Temperature Variation: 20deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559711	-0.000289	-0.00213	0.01
after 2minutes	13.56	13.559705	-0.000295	-0.00218	0.01
after 5minutes	13.56	13.559682	-0.000318	-0.00235	0.01
after 10minutes	13.56	13.559658	-0.000342	-0.00252	0.01

## Temperature Variation: 30deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559697	-0.000303	-0.00223	0.01
after 2minutes	13.56	13.559723	-0.000277	-0.00204	0.01
after 5minutes	13.56	13.559666	-0.000334	-0.00246	0.01
after 10minutes	13.56	13.559651	-0.000349	-0.00257	0.01

## Temperature Variation: 40deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559731	-0.000269	-0.00198	0.01
after 2minutes	13.56	13.559728	-0.000272	-0.00201	0.01
after 5minutes	13.56	13.559672	-0.000328	-0.00242	0.01
after 10minutes	13.56	13.559651	-0.000349	-0.00257	0.01

## Temperature Variation: 50deg.C

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559744	-0.000256	-0.00189	0.01
after 2minutes	13.56	13.559768	-0.000232	-0.00171	0.01
after 5minutes	13.56	13.559731	-0.000269	-0.00198	0.01
after 10minutes	13.56	13.559655	-0.000345	-0.00254	0.01

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

UL Japan, Inc.  
YAMAKITA No.4 Shield room

Company : NIDEC SANKYO CORPORATION      Report No. : 29CE0202-YK-01  
Equipment : Contactless IC card dispenser      Regulation : FCC Part15 SupartC 15.225 (e)  
Model : SCT0M0-0130  
Sample No. : R8100005      Date : 2008/11/27  
Power : DC24V      Temperature : 22deg.C  
Mode : Transmitting (13.56MHz)      Humidity : 44%

ENGINEER : Go Ishiwata

**Input Voltage:DC20.4V**

**Temperature Variation: 20deg.C**

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559885	-0.000115	-0.00085	0.01
after 2minutes	13.56	13.559862	-0.000138	-0.00102	0.01
after 5minutes	13.56	13.559805	-0.000195	-0.00144	0.01
after 10minutes	13.56	13.559782	-0.000218	-0.00161	0.01

**Input Voltage:DC27.6V**

**Temperature Variation: 20deg.C**

Test Conditions	Original Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (kHz)	Frequency tolerance (%)	Limit (%)
startup	13.56	13.559784	-0.000216	-0.00159	0.01
after 2minutes	13.56	13.559797	-0.000203	-0.00150	0.01
after 5minutes	13.56	13.559827	-0.000173	-0.00128	0.01
after 10minutes	13.56	13.559839	-0.000161	-0.00119	0.01

### APPENDIX 3 Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
YA-CE	Conducted emission(software)	UL Japan	CE(Ver.1.6)	-	CE	-
KCC-33/34/KR M-03	Coaxial Cable/RF Relay Matrix	Fujikura/Suhner/TSJ	5D-2W/S04272B/ RFM-E421	-/01055	CE	2008/10/22 * 12
KLS-05	LISN(AMN)	Schwarzbeck	NSLK8126	8126375	CE	2008/09/12 * 12
KLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127362	CE	2008/09/12 * 12
KOS-01	Humidity Indicator	Custom	CTH-190	K-01	CE	2008/07/14 * 12
KSA-02	Spectrum Analyzer	Advantest	R3265A	55060826	CE, RE	2007/12/20 * 12
KTR-03	Test Receiver	Rohde & Schwarz	ESHS10	839698/014	CE, RE	2008/02/18 * 12
KJM-07	Measure	KOMELON	KMC-36	-	CE, RE	-
YA-RE	Radiated emission(software)	UL Japan	RE(Ver.1.5)	-	RE	-
KAEC-01	Anechoic Chamber	JSE	Semi 3m	1	RE	2008/08/06 * 12
KAF-05	Pre Amplifier	Agilent	8447D	2944A10150	RE	2008/04/08 * 12
KAF-08	Pre Amplifier	Anritsu	MH648A	M90147	RE	2008/06/03 * 12
KAT6-01	Attenuator	INMET	18N-6dB	-	RE	2008/03/17 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1926	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	-/01055	RE	2008/10/22 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	170	RE	2007/12/27 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	K-02	RE	2008/07/07 * 12
KLP-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	827779/008	RE	2008/06/19 * 12
KTR-04	Test Receiver	Rohde & Schwarz	ESVS10	825475/006	RE	2008/10/20 * 12
KCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-1KT	14007630	FT	2007/12/26 * 12
KFC-01	Microwave Counter	Advantest	R5373	120100309	FT	2008/04/23 * 12
KCC-A1	Coaxial Cable	Fujikura	5D2W	-	FT	-
KSCA-01	Search coil	TSJ	SC01	-	FT, BW	Pre Check
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	100054/040	BW	2008/04/18 * 12
kCC-E3	Coaxial Cable	-	-	-	BW	Pre Check

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,  
FT: Frequency tolerance,  
BW: Bandwidth,