

APPENDIX 2: Data of EMI test

Conducted emission Modulated wave transmission mode, Low Power Connected Antenna

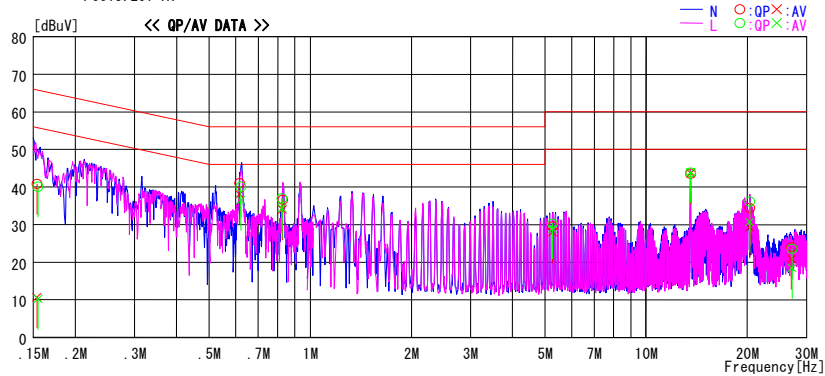
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg.C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks: Modulated wave transmission mode, Low Power_ANT1, Connected Antenna

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP	AV		QP	AV	QP	AV	QP	AV	
[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.15350	40.6	10.4	0.2	40.8	10.6	65.8	55.8	25.0	45.2	N
0.61624	40.8	37.8	0.3	41.1	38.1	56.0	46.0	14.9	7.9	N
0.82692	36.3	33.7	0.3	36.6	34.0	56.0	46.0	19.4	12.0	N
5.26124	28.7	27.2	0.8	29.5	28.0	60.0	50.0	30.5	22.0	N
13.55960	42.3	42.4	1.3	43.6	43.7	60.0	50.0	16.4	6.3	N
20.33790	32.7	27.5	1.7	34.4	29.2	60.0	50.0	25.6	20.8	N
27.03760	22.1	19.0	1.9	24.0	20.9	60.0	50.0	36.0	29.1	N
0.15481	39.9	10.0	0.2	40.1	10.2	65.7	55.7	25.6	45.5	L
0.62106	39.9	36.2	0.3	40.2	36.5	56.0	46.0	15.8	9.5	L
0.82428	36.7	34.1	0.3	37.0	34.4	56.0	46.0	19.0	11.6	L
5.26270	29.5	28.1	0.8	30.3	28.9	60.0	50.0	29.7	21.1	L
13.55992	42.6	42.7	1.3	43.9	44.0	60.0	50.0	16.1	6.0	L
20.33760	34.4	29.0	1.7	36.1	30.7	60.0	50.0	23.9	19.3	L
27.14140	21.7	16.6	1.9	23.6	18.5	60.0	50.0	36.4	31.5	L

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted emission
Modulated wave transmission mode, Low Power
Terminated Antenna Terminal

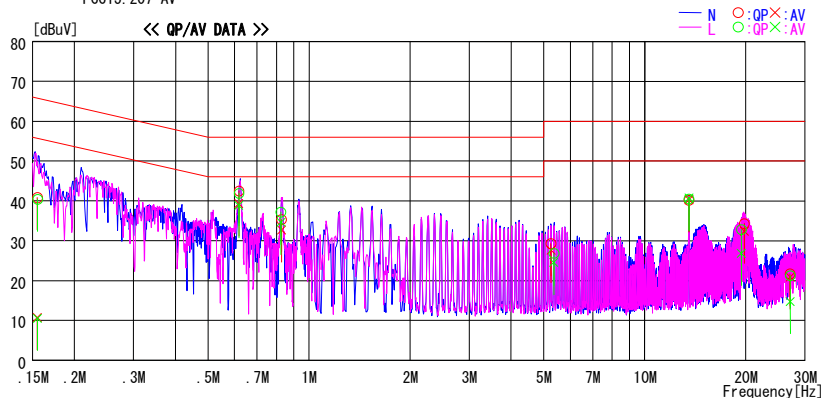
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg.C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, Low Power_ANT1, Terminated Antenna Terminal

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15492	40.6	10.5	0.2	40.8	10.7	65.7	55.7	24.9	45.0	N
0.61792	42.2	39.0	0.3	42.5	39.3	56.0	46.0	13.5	6.7	N
0.82782	35.0	32.4	0.3	35.3	32.7	56.0	46.0	20.7	13.3	N
5.26006	28.5	26.8	0.8	29.3	27.6	60.0	50.0	30.7	22.4	N
13.55992	38.9	39.0	1.3	40.2	40.3	60.0	50.0	19.8	9.7	N
19.81300	32.7	30.8	1.6	34.3	32.4	60.0	50.0	25.7	17.6	N
27.12180	19.8	19.0	1.9	21.7	20.9	60.0	50.0	38.3	29.1	N
0.15520	40.2	10.3	0.2	40.4	10.5	65.7	55.7	25.3	45.2	L
0.61804	41.6	38.5	0.3	41.9	38.8	56.0	46.0	14.1	7.2	L
0.82452	36.9	34.3	0.3	37.2	34.6	56.0	46.0	18.8	11.4	L
5.36120	26.0	23.7	0.8	26.8	24.5	60.0	50.0	33.2	25.5	L
13.55984	39.2	39.4	1.3	40.5	40.7	60.0	50.0	19.5	9.3	L
19.40350	31.2	25.2	1.6	32.8	26.8	60.0	50.0	27.2	23.2	L
27.14660	19.4	12.8	1.9	21.3	14.7	60.0	50.0	38.7	35.3	L

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted emission
Modulated wave transmission mode, High Power
Connected Antenna

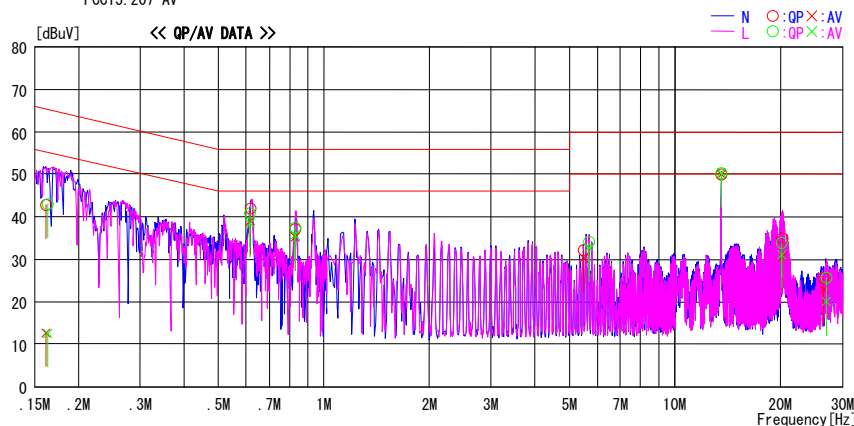
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg. C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, High Power_ANT1, Connected Antenna

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.16131	42.6	12.5	0.2	42.8	12.7	65.4	55.4	22.6	42.7	N	
0.16364	42.8	12.4	0.2	43.0	12.6	65.3	55.3	22.3	42.7	L	
0.61884	41.6	38.7	0.3	41.9	39.0	56.0	46.0	14.1	7.0	N	
0.61756	40.5	38.2	0.3	40.8	38.5	56.0	46.0	15.2	7.5	L	
0.82810	36.8	35.0	0.3	37.1	35.3	56.0	46.0	18.9	10.7	N	
0.82724	37.2	35.4	0.3	37.5	35.7	56.0	46.0	18.5	10.3	L	
5.48628	31.4	29.5	0.8	32.2	30.3	60.0	50.0	27.8	19.7	N	
5.69270	33.4	31.9	0.8	34.2	32.7	60.0	50.0	25.8	17.3	L	
13.55901	48.9	49.1	1.3	50.2	50.4	60.0	50.0	9.8	-0.4	L	Reference data
13.55901	48.6	48.6	1.3	49.9	49.9	60.0	50.0	10.1	0.1	N	Reference data
20.29010	33.2	29.0	1.7	34.9	30.7	60.0	50.0	25.1	19.3	N	
20.19140	32.1	29.4	1.7	33.8	31.1	60.0	50.0	26.2	18.9	L	
26.49516	24.0	21.1	1.8	25.8	22.9	60.0	50.0	34.2	27.1	N	
27.00000	23.9	18.2	1.9	25.8	20.1	60.0	50.0	34.2	29.9	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C.F. [dB] (LISN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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Conducted emission
Modulated wave transmission mode, High Power
Terminated Antenna Terminal

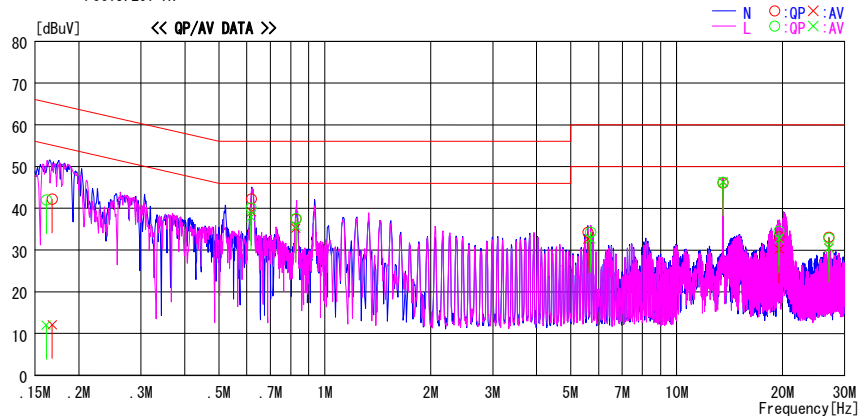
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg. C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, High Power_ANT1, Terminated Antenna Terminal

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.16148	41.8	11.8	0.2	42.0	12.0	65.4	55.4	23.4	43.4	L
0.16784	42.0	11.9	0.2	42.2	12.1	65.1	55.1	22.9	43.0	N
0.61668	39.8	37.6	0.3	40.1	37.9	56.0	46.0	15.9	8.1	L
0.61880	42.0	38.9	0.3	42.3	39.2	56.0	46.0	13.7	6.8	N
0.82720	37.1	34.9	0.3	37.4	35.2	56.0	46.0	18.6	10.8	N
0.82772	37.3	35.5	0.3	37.6	35.8	56.0	46.0	18.4	10.2	L
5.58756	33.5	31.8	0.8	34.3	32.6	60.0	50.0	25.7	17.4	N
5.69130	33.5	31.9	0.8	34.3	32.7	60.0	50.0	25.7	17.3	L
13.55930	44.9	45.0	1.3	46.2	46.3	60.0	50.0	13.8	3.7	L
13.56000	44.8	45.0	1.3	46.1	46.3	60.0	50.0	13.9	3.7	N
19.55654	32.9	31.1	1.6	34.5	32.7	60.0	50.0	25.5	17.3	L
19.55990	31.6	28.6	1.6	33.2	30.2	60.0	50.0	26.8	19.8	N
27.11200	30.9	28.5	1.9	32.8	30.4	60.0	50.0	27.2	19.6	L
27.11888	31.2	28.6	1.9	33.1	30.5	60.0	50.0	26.9	19.5	N

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
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Test report No. : 33AE0207-HO-02-R1
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Issued date : September 12, 2012
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Conducted emission
RF-Tag read test mode, Low Power

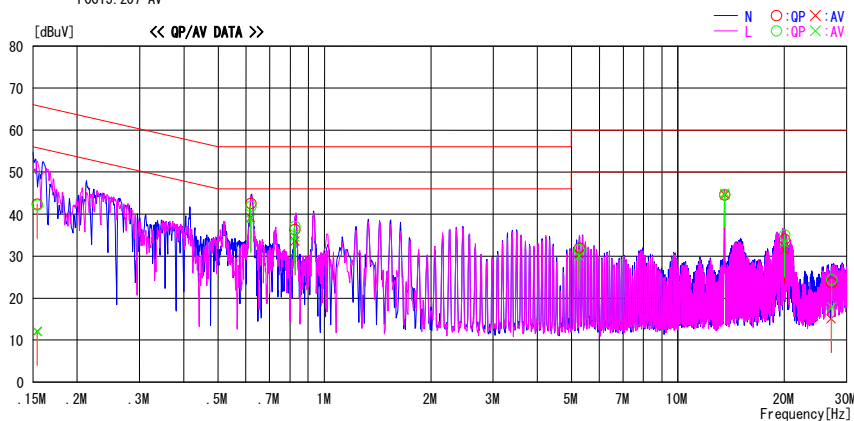
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg. C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, Low Power_ANT1

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15444	42.0	11.8	0.2	42.2	12.0	65.8	55.8	23.6	43.8	L
0.15414	42.2	11.9	0.2	42.4	12.1	65.8	55.8	23.4	43.7	N
0.61805	41.6	38.5	0.3	41.9	38.8	56.0	46.0	14.1	7.2	L
0.61860	42.2	38.9	0.3	42.5	39.2	56.0	46.0	13.5	6.8	N
0.82472	36.8	34.3	0.3	37.1	34.6	56.0	46.0	18.9	11.4	L
0.82628	36.1	33.3	0.3	36.4	33.6	56.0	46.0	19.6	12.4	N
5.26016	30.8	29.2	0.8	31.6	30.0	60.0	50.0	28.4	20.0	L
5.25984	31.1	29.7	0.8	31.9	30.5	60.0	50.0	28.1	19.5	N
13.55832	43.2	43.3	1.3	44.5	44.6	60.0	50.0	15.5	5.4	N
13.55972	43.5	43.7	1.3	44.8	45.0	60.0	50.0	15.2	5.0	L
20.01200	33.4	31.4	1.7	35.1	33.1	60.0	50.0	24.9	16.9	L
27.23508	22.5	16.0	1.9	24.4	17.9	60.0	50.0	35.6	32.1	L
20.01144	32.3	29.8	1.7	34.0	31.5	60.0	50.0	26.0	18.5	N
27.13220	21.8	13.2	1.9	23.7	15.1	60.0	50.0	36.3	34.9	N

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table: adequate margin data below the limits.

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UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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Conducted emission
RF-Tag read test mode, High Power

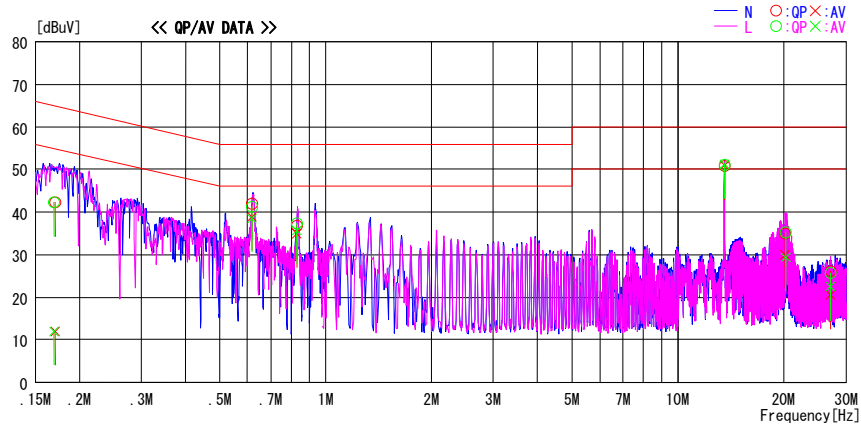
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2008/10/27

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25deg. C / 44%
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, High Power_ANT1

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.17080	42.0	11.8	0.2	42.2	12.0	64.9	54.9	22.7	42.9	N	Reference data
0.61912	41.7	38.6	0.3	42.0	38.9	56.0	46.0	14.0	7.1	N	
0.82868	36.5	34.6	0.3	36.8	34.9	56.0	46.0	19.2	11.1	N	
13.55944	49.5	49.6	1.3	50.8	50.9	60.0	50.0	9.2	-0.9	N	
20.18440	33.2	28.3	1.7	34.9	30.0	60.0	50.0	25.1	20.0	N	
27.11880	24.2	18.6	1.9	26.1	20.5	60.0	50.0	33.9	29.5	N	Reference data
0.16908	42.0	11.8	0.2	42.2	12.0	65.0	55.0	22.8	43.0	L	
0.61896	41.0	38.2	0.3	41.3	38.5	56.0	46.0	14.7	7.5	L	
0.82760	37.1	35.4	0.3	37.4	35.7	56.0	46.0	18.6	10.3	L	
13.55932	49.8	49.9	1.3	51.1	51.2	60.0	50.0	8.9	-1.2	L	
20.28820	33.5	27.7	1.7	35.2	29.4	60.0	50.0	24.8	20.6	L	
27.11200	23.9	20.6	1.9	25.8	22.5	60.0	50.0	34.2	27.5	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C.F [dB] (LISN LOSS + CABLE LOSS)
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Test report No. : 33AE0207-HO-02-R1
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Issued date : September 12, 2012
Revised date : September 25, 2012
FCC ID : PU8RF001-4

Radiated emission (Fundamental emission and Spectrum Mask)
Modulated wave transmission mode, Low Power

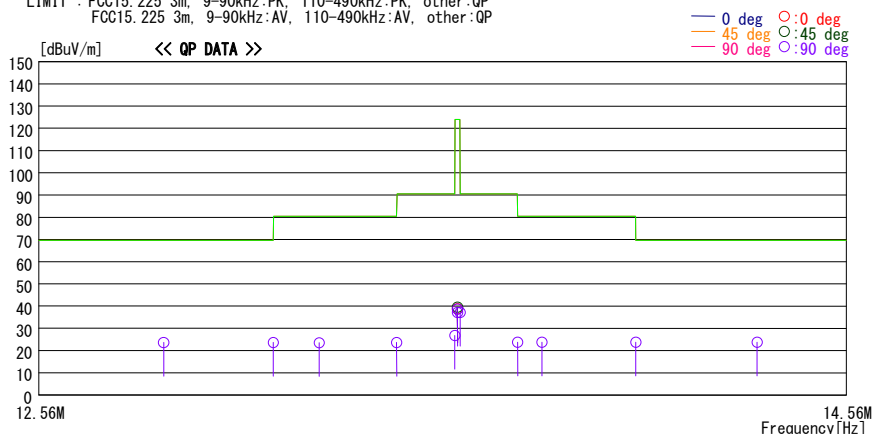
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks: Modulated wave transmission mode, Low Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg.]	
12.85000	40.9	QP	20.2	0.7	38.2	23.6	69.5	45.9	90deg	130	
13.11000	40.9	QP	20.2	0.7	38.2	23.6	69.5	45.9	90deg	130	
13.22130	40.8	QP	20.2	0.7	38.2	23.5	80.5	57.0	90deg	130	
13.41000	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	130	
13.55300	44.1	QP	20.2	0.7	38.2	26.8	90.4	63.6	90deg	130	
13.56000	56.1	QP	20.2	0.7	38.2	38.8	123.9	85.1	0deg	180	
13.56000	56.8	QP	20.2	0.7	38.2	39.5	123.9	84.4	45deg	120	
13.56000	55.9	QP	20.2	0.7	38.2	38.6	123.9	85.3	90deg	130	
13.56000	54.4	QP	20.2	0.7	38.2	37.1	123.9	86.8	135deg	40	
13.56700	54.4	QP	20.2	0.7	38.2	37.1	90.4	53.3	90deg	130	
13.71000	41.0	QP	20.2	0.8	38.2	23.8	80.5	56.7	90deg	130	
13.77125	41.0	QP	20.2	0.8	38.2	23.8	80.5	56.7	90deg	130	
14.01000	40.9	QP	20.3	0.8	38.2	23.8	69.5	45.7	90deg	130	
14.32400	40.9	QP	20.3	0.8	38.2	23.8	69.5	45.7	90deg	130	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
CALCULATION: RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

UL Japan, Inc.
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Radiated emission (Fundamental emission and Spectrum Mask)

Modulated wave transmission mode, High Power

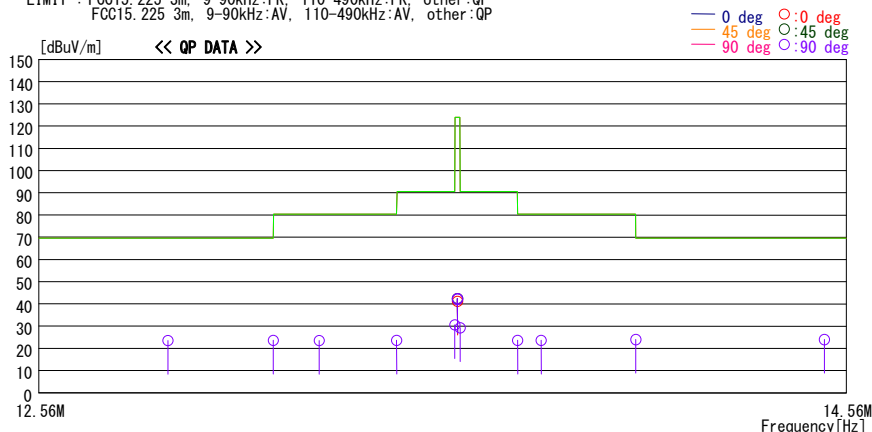
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks: Modulated wave transmission mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15. 225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15. 225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
12.86000	40.8	QP	20.2	0.7	38.2	23.5	69.5	46.0	90deg	220	
13.11000	41.0	QP	20.2	0.7	38.2	23.7	69.5	45.8	90deg	220	
13.22100	40.8	QP	20.2	0.7	38.2	23.5	80.5	57.0	90deg	220	
13.41000	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	220	
13.55300	48.0	QP	20.2	0.7	38.2	30.7	90.4	59.7	90deg	220	
13.56000	59.8	QP	20.2	0.7	38.2	42.5	123.9	81.4	90deg	220	worst
13.56000	59.5	QP	20.2	0.7	38.2	42.2	123.9	81.7	135deg	211	
13.56000	58.5	QP	20.2	0.7	38.2	41.2	123.9	82.7	0deg	355	
13.55993	59.7	QP	20.2	0.7	38.2	42.4	123.9	81.5	45deg	130	
13.56700	46.5	QP	20.2	0.7	38.2	29.2	90.4	61.2	90deg	231	
13.71000	40.9	QP	20.2	0.8	38.2	23.7	80.5	56.8	90deg	220	
13.76925	40.9	QP	20.2	0.8	38.2	23.7	80.5	56.8	90deg	220	
14.01000	41.0	QP	20.3	0.8	38.2	23.9	69.5	45.6	90deg	220	
14.50164	41.0	QP	20.3	0.8	38.2	23.9	69.5	45.6	90deg	220	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
CALCULATION: RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Test report No. : 33AE0207-HO-02-R1
Page : 25 of 44
Issued date : September 12, 2012
Revised date : September 25, 2012
FCC ID : PU8RF001-4

Radiated emission (Fundamental emission and Spectrum Mask)

RF-Tag read test mode, Low Power

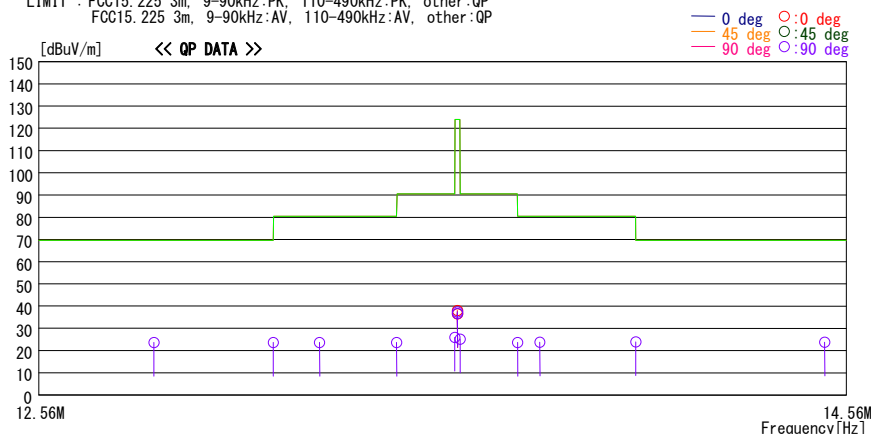
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks: RF-Tag read test mode, Low Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg.]	
12.82700	41.0	QP	20.2	0.7	38.2	23.7	69.5	45.8	90deg	120	
13.11000	41.0	QP	20.2	0.7	38.2	23.7	69.5	45.8	90deg	120	
13.22200	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	120	
13.41000	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	120	
13.55300	43.2	QP	20.2	0.7	38.2	25.9	90.4	64.5	90deg	120	
13.56000	53.9	QP	20.2	0.7	38.2	36.6	123.9	87.3	0deg	180	
13.56000	55.4	QP	20.2	0.7	38.2	38.1	123.9	85.8	45deg	120	
13.56000	54.7	QP	20.2	0.7	38.2	37.4	123.9	86.5	90deg	120	
13.56000	54.0	QP	20.2	0.7	38.2	36.7	123.9	87.2	135deg	110	
13.56700	42.4	QP	20.2	0.7	38.2	25.1	90.4	65.3	90deg	120	
13.71000	40.9	QP	20.2	0.8	38.2	23.7	80.5	56.8	90deg	120	
13.76625	41.0	QP	20.2	0.8	38.2	23.8	80.5	56.7	90deg	120	
14.01000	41.0	QP	20.3	0.8	38.2	23.9	69.5	45.6	90deg	120	
14.50225	40.9	QP	20.3	0.8	38.2	23.8	69.5	45.7	90deg	120	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
CALCULATION: RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

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Head Office EMC Lab.
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Radiated emission (Fundamental emission and Spectrum Mask)

RF-Tag read test mode, High Power

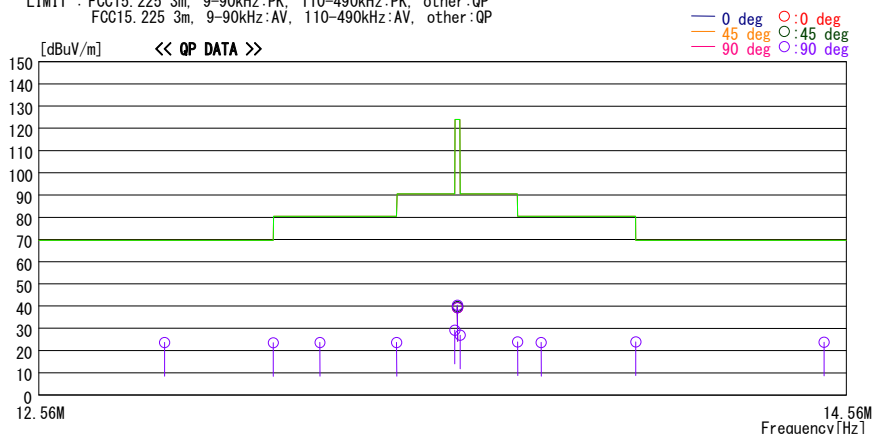
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks: RF-Tag read test mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg.]	
12.85200	40.9	QP	20.2	0.7	38.2	23.6	69.5	45.9	90deg	330	
13.11000	40.8	QP	20.2	0.7	38.2	23.5	69.5	46.0	90deg	330	
13.22300	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	330	
13.41000	40.9	QP	20.2	0.7	38.2	23.6	80.5	56.9	90deg	330	
13.55300	46.5	QP	20.2	0.7	38.2	29.2	90.4	61.2	90deg	330	
13.56000	56.6	QP	20.2	0.7	38.2	39.3	123.9	84.6	0deg	208	
13.56000	57.2	QP	20.2	0.7	38.2	39.9	123.9	84.0	45deg	289	
13.56000	57.7	QP	20.2	0.7	38.2	40.4	123.9	83.5	90deg	330	
13.56000	56.6	QP	20.2	0.7	38.2	39.3	123.9	84.6	deg	220	
13.56700	44.3	QP	20.2	0.7	38.2	27.0	90.4	63.4	90deg	330	
13.71000	41.2	QP	20.2	0.8	38.2	24.0	80.5	56.5	90deg	330	
13.76905	40.9	QP	20.2	0.8	38.2	23.7	80.5	56.8	90deg	330	
14.01000	41.0	QP	20.3	0.8	38.2	23.9	69.5	45.6	90deg	330	
14.50094	40.9	QP	20.3	0.8	38.2	23.8	69.5	45.7	90deg	330	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
CALCULATION: RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)
Modulated wave transmission mode, Low Power
Loop Antenna: 0deg., 45deg., 90deg.

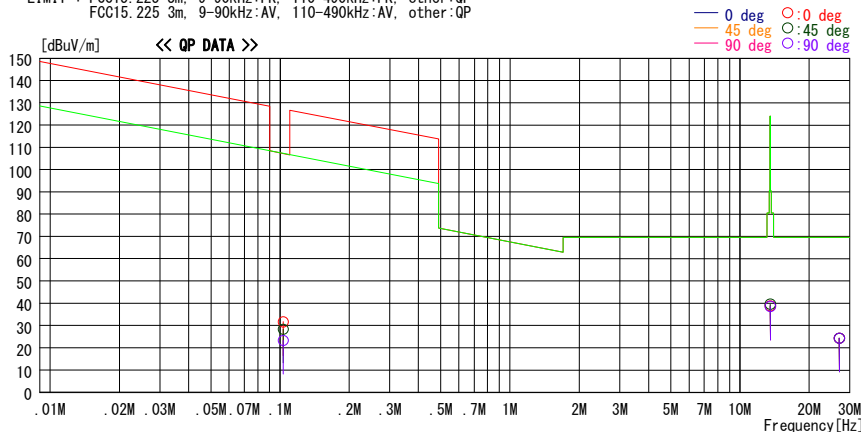
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, Low Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10328	50.3	QP	19.7	0.1	38.4	31.7	107.3	75.6	0deg	165	
0.10326	47.0	QP	19.7	0.1	38.4	28.4	107.3	78.9	45deg	165	
0.10324	41.9	QP	19.7	0.1	38.4	23.3	107.3	84.0	90deg	165	
13.56000	56.1	QP	20.2	0.7	38.2	38.8	123.9	85.1	0deg	180	
13.56000	56.8	QP	20.2	0.7	38.2	39.5	123.9	84.4	45deg	120	
13.56000	55.9	QP	20.2	0.7	38.2	38.6	123.9	85.3	90deg	130	
27.12000	40.8	QP	20.6	1.1	38.2	24.3	69.5	45.2	90deg	165	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	0deg	165	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	45deg	165	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)
Modulated wave transmission mode, Low Power
Loop Antenna: 135deg.

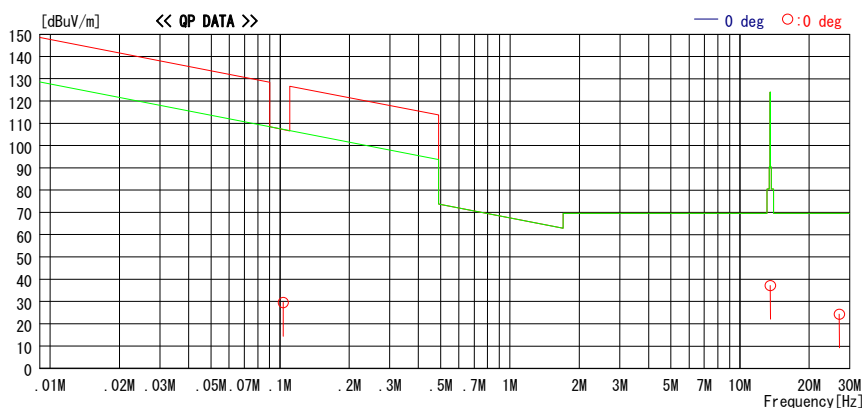
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, Low Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10327	48.1	QP	19.7	0.1	38.4	29.5	107.3	77.8	135deg	179	
13.56000	54.4	QP	20.2	0.7	38.2	37.1	123.9	86.8	135deg	40	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	135deg	179	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
CALCULATION: RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)
Modulated wave transmission mode, High Power
Loop Antenna: 0deg., 45deg., 90deg.

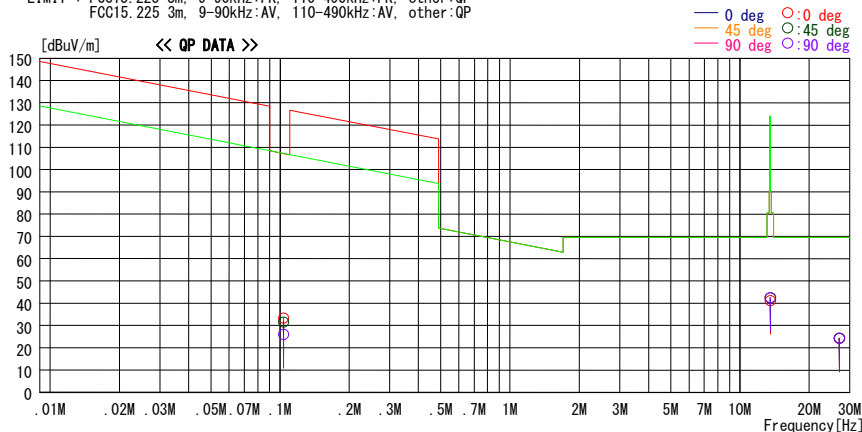
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10346	44.7	QP	19.7	0.1	38.4	26.1	107.2	81.1	90deg	120	
0.10348	52.0	QP	19.7	0.1	38.4	33.4	107.2	73.8	0deg	232	
0.10349	50.1	QP	19.7	0.1	38.4	31.5	107.2	75.7	45deg	152	
13.56000	59.7	QP	20.2	0.7	38.2	42.4	123.9	81.5	45deg	290	
13.56000	59.8	QP	20.2	0.7	38.2	42.5	123.9	81.4	90deg	230	
13.56000	58.5	QP	20.2	0.7	38.2	41.2	123.9	82.7	0deg	190	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	0deg	157	
27.12000	40.8	QP	20.6	1.1	38.2	24.3	69.5	45.2	90deg	230	
27.12000	40.8	QP	20.6	1.1	38.2	24.3	69.5	45.2	45deg	290	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)
Modulated wave transmission mode, High Power
Loop Antenna: 135deg.

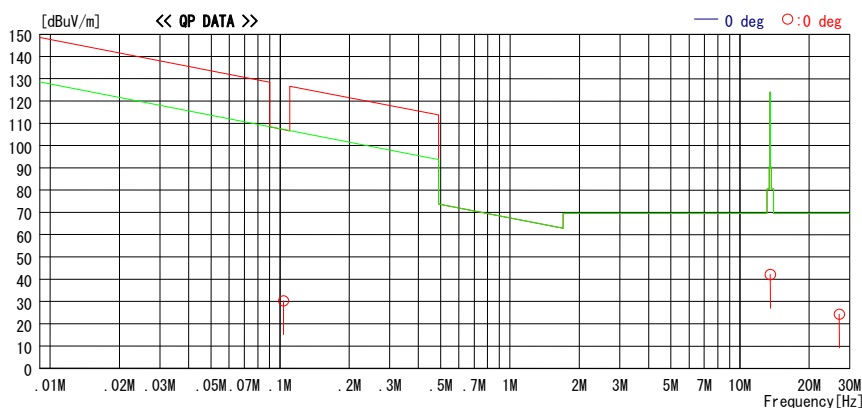
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10346	48.9	QP	19.7	0.1	38.4	30.3	107.2	76.9	135 deg	189	
13.56000	59.5	QP	20.2	0.7	38.2	42.2	123.9	81.7	135 deg	189	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	135 deg	189	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)

RF-Tag read test mode, Low Power
Loop Antenna: 0deg., 45deg., 90deg.

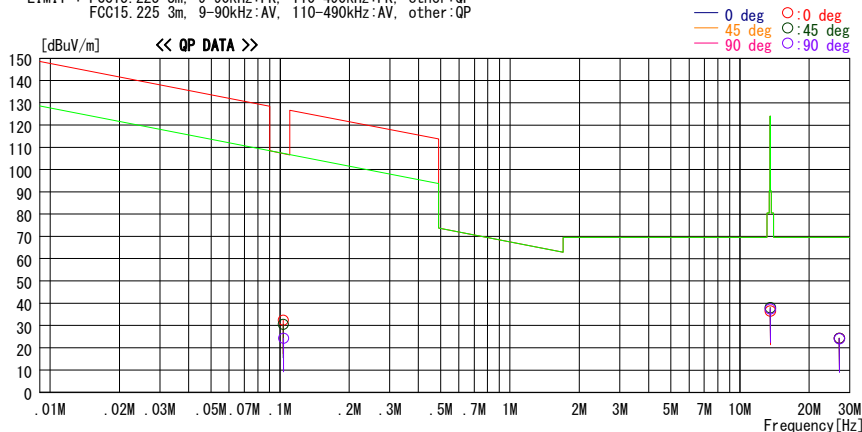
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, Low Power_ANT1, EUT-axis (Antenna: Z, Unit: X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10325	49.2	QP	19.7	0.1	38.4	30.6	107.3	76.7	45deg	178	
0.10333	42.9	QP	19.7	0.1	38.4	24.3	107.3	83.0	90deg	178	
0.10323	51.0	QP	19.7	0.1	38.4	32.4	107.3	74.9	0deg	178	
13.56000	53.9	QP	20.2	0.7	38.2	36.6	123.9	87.3	0deg	180	
13.56000	55.4	QP	20.2	0.7	38.2	38.1	123.9	85.8	45deg	120	
13.56000	54.7	QP	20.2	0.7	38.2	37.4	123.9	86.5	90deg	120	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	45deg	178	
27.12000	40.6	QP	20.6	1.1	38.2	24.1	69.5	45.4	90deg	178	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	0deg	178	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : below 30MHz)

RF-Tag read test mode, Low Power

Loop Antenna: 135deg.

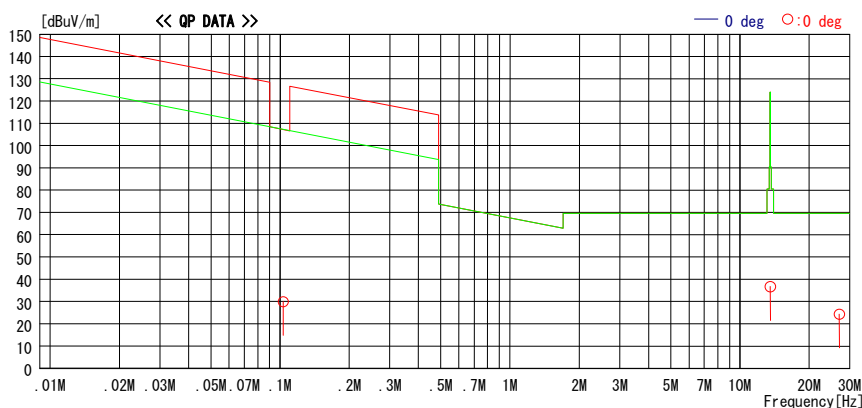
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, Low Power_ANT1, EUT-axis (Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10329	48.4	QP	19.7	0.1	38.4	29.8	107.3	77.5	135deg	181	
13.56000	54.0	QP	20.2	0.7	38.2	36.7	123.9	87.2	135deg	110	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	135deg	181	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

UL Japan, Inc.

Head Office EMC Lab.

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Facsimile : +81 596 24 8124

Radiated emission (Spurious emission : below 30MHz)

RF-Tag read test mode, High Power

Loop Antenna: 0deg., 45deg., 90deg.

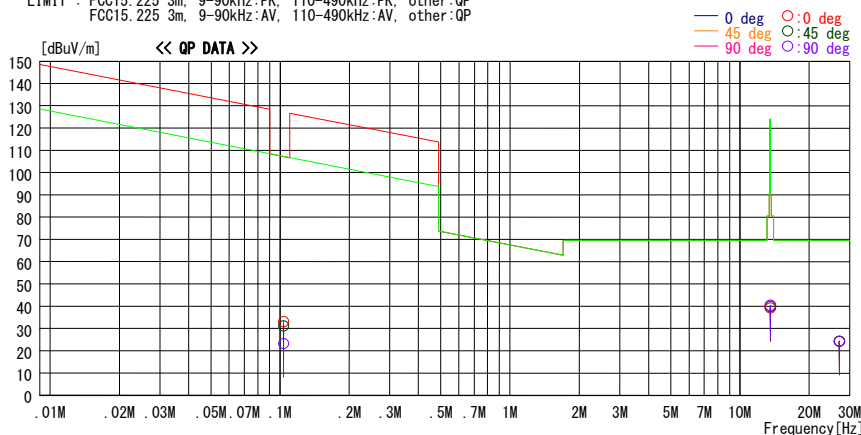
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, High Power_ANT1, EUT-axis (Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10360	42.0	QP	19.7	0.1	38.4	23.4	107.2	83.8	90deg	171	
0.10359	49.9	QP	19.7	0.1	38.4	31.3	107.2	75.9	45deg	171	
0.10363	51.8	QP	19.7	0.1	38.4	33.2	107.2	74.0	0deg	186	
13.56000	56.6	QP	20.2	0.7	38.2	39.3	123.9	84.6	0deg	208	
13.56000	57.2	QP	20.2	0.7	38.2	39.9	123.9	84.0	45deg	289	
13.56000	57.7	QP	20.2	0.7	38.2	40.4	123.9	83.5	90deg	330	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	0deg	171	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	45deg	171	
27.12000	40.8	QP	20.6	1.1	38.2	24.3	69.5	45.2	90deg	171	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

UL Japan, Inc.

Head Office EMC Lab.

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Radiated emission (Spurious emission : below 30MHz)
RF-Tag read test mode, High Power
Loop Antenna: 135deg.

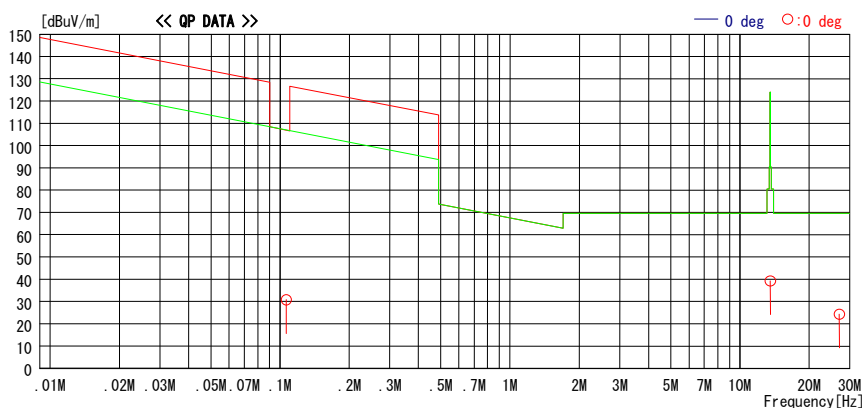
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/28

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./ Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, High Power_ANT1, EUT-axis (Antenna:Z, Unit:X)

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.10624	49.4	QP	19.7	0.1	38.4	30.8	107.0	76.2	135 deg	187	
13.56000	56.6	QP	20.2	0.7	38.2	39.3	123.9	84.6	135 deg	187	
27.12000	40.7	QP	20.6	1.1	38.2	24.2	69.5	45.3	135 deg	187	

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT[dBuV] = READING[dBuV] + ANT FACTOR[dB] + LOSS[dB] (CABLE + ATTEN. - AMP.)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : above 30MHz)
Modulated wave transmission mode, High Power

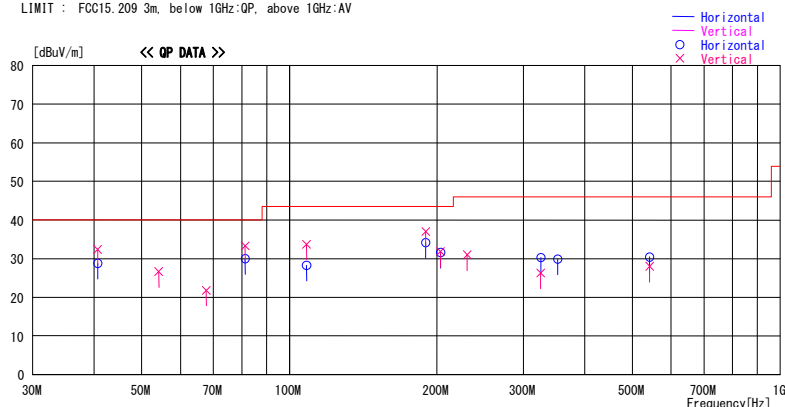
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : Modulated wave transmission mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
40.675	43.9	QP	13.3	-24.8	32.4	88	100	Vert.	40.0	7.6	
40.678	40.3	QP	13.3	-24.8	28.8	160	320	Hori.	40.0	11.2	
54.249	42.0	QP	9.1	-24.5	26.6	102	100	Vert.	40.0	13.4	
67.802	39.2	QP	6.9	-24.3	21.8	89	100	Vert.	40.0	18.2	
81.357	50.8	QP	6.6	-24.1	33.3	76	120	Vert.	40.0	6.7	
81.368	47.5	QP	6.6	-24.1	30.0	169	206	Hori.	40.0	10.0	
108.476	41.0	QP	11.1	-23.8	28.3	351	310	Hori.	43.5	15.2	
108.479	46.4	QP	11.1	-23.8	33.7	93	100	Vert.	43.5	9.8	
189.836	40.9	QP	16.3	-23.1	34.1	26	212	Hori.	43.5	9.4	
189.837	43.8	QP	16.3	-23.1	37.0	275	110	Vert.	43.5	6.5	
203.382	38.6	QP	16.2	-23.0	31.8	288	100	Vert.	43.5	11.7	
203.393	38.4	QP	16.2	-23.0	31.6	248	262	Hori.	43.5	11.9	
230.516	37.2	QP	16.4	-22.6	31.0	10	115	Vert.	46.0	15.0	
325.437	32.8	QP	15.3	-21.8	26.3	198	100	Vert.	46.0	19.7	
325.488	36.8	QP	15.3	-21.8	30.3	87	100	Hori.	46.0	15.7	
352.555	35.4	QP	16.1	-21.6	29.9	65	100	Hori.	46.0	16.1	
542.204	32.2	QP	18.6	-20.4	30.4	111	100	Hori.	46.0	15.6	
542.393	29.8	QP	18.6	-20.4	28.0	137	100	Vert.	46.0	18.0	

CHART: WITH FACTOR ANT TYPE: ~30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz-: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : above 30MHz)
RF-Tag read test mode, Low Power

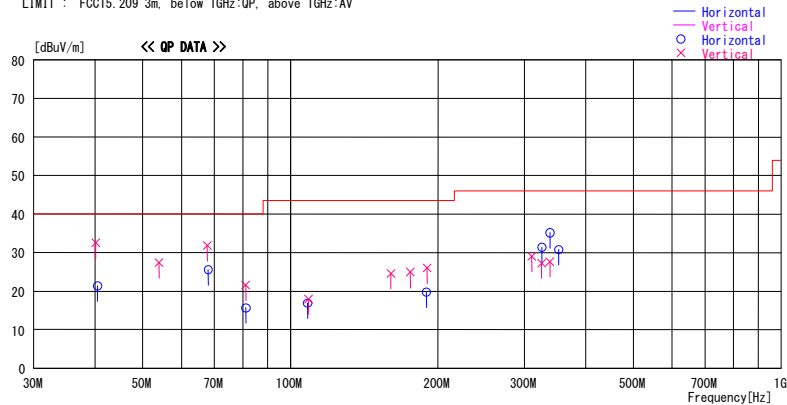
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, Low Power_ANT1, EUT-axis (Antenna:Z, Unit:X)

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna		Loss & Gain		Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain									
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]				[dBuV/m]	[dB]	
40.115	43.8	QP	13.5	-24.8	32.5	88	100	Vert.			40.0	7.5	
40.479	32.8	QP	13.4	-24.8	21.4	160	320	Hori.			40.0	18.6	
54.011	42.8	QP	9.1	-24.5	27.4	102	100	Vert.			40.0	12.6	
67.803	49.2	QP	6.9	-24.3	31.8	89	100	Vert.			40.0	8.2	
68.018	43.1	QP	6.8	-24.3	25.6	26	212	Hori.			40.0	14.4	
81.156	33.2	QP	6.6	-24.1	15.7	169	206	Hori.			40.0	24.3	
81.159	39.1	QP	6.6	-24.1	21.6	76	120	Vert.			40.0	18.4	
108.414	29.6	QP	11.1	-23.8	16.9	351	310	Hori.			43.5	26.6	
108.976	30.6	QP	11.2	-23.8	18.0	93	100	Vert.			43.5	25.5	
160.404	32.4	QP	15.4	-23.2	24.6	288	100	Vert.			43.5	18.9	
175.710	31.8	QP	16.2	-23.1	24.9	10	115	Vert.			43.5	18.6	
190.140	32.8	QP	16.3	-23.1	26.0	275	110	Vert.			43.5	17.5	
189.366	26.6	QP	16.3	-23.1	19.8	248	262	Hori.			43.5	23.7	
310.547	36.1	QP	14.9	-21.9	29.1	137	100	Vert.			46.0	16.9	
325.427	33.8	QP	15.3	-21.8	27.3	198	100	Vert.			46.0	18.7	
325.480	37.9	QP	15.3	-21.8	31.4	87	100	Hori.			46.0	14.6	
338.047	33.7	QP	15.7	-21.7	27.7	137	100	Vert.			46.0	18.3	
338.442	41.2	QP	15.7	-21.7	35.2	111	100	Hori.			46.0	10.8	
352.546	36.3	QP	16.1	-21.6	30.8	65	100	Hori.			46.0	15.2	

CHART WITH FACTOR ANT TYPE: ~30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz-: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated emission (Spurious emission : above 30MHz)
RF-Tag read test mode, High Power

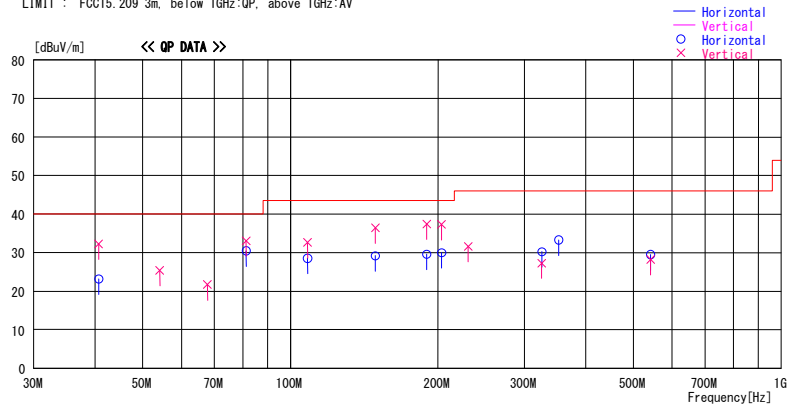
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2008/10/29

Company : YAMAHA FINE TECHNOLOGIES CO., LTD. Report No. : 33AE0207-HO-02
Kind of EUT : RFID-Unit(4ch type) Power : DC5V
Model No. : RF001-4 Temp./Humi. : 25 deg.C. / 44 %
Serial No. : 1071 Engineer : Motoya Imura

Mode / Remarks : RF-Tag read test mode, High Power_ANT1, EUT-axis(Antenna:Z, Unit:X)

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna		Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
40.680	43.9	QP	13.3	-24.9	32.3	120	100	Vert.	40.0	7.7	
40.675	34.8	QP	13.3	-24.9	23.2	276	238	Hori.	40.0	16.8	
54.262	40.9	QP	9.1	-24.6	25.4	130	100	Vert.	40.0	14.6	
67.809	39.2	QP	6.9	-24.4	21.7	80	100	Vert.	40.0	18.3	
81.358	50.7	QP	6.6	-24.2	33.1	83	113	Vert.	40.0	6.9	
81.359	48.1	QP	6.6	-24.2	30.5	120	245	Hori.	40.0	9.5	
108.474	41.3	QP	11.1	-23.9	28.5	20	342	Hori.	43.5	15.0	
108.477	45.4	QP	11.1	-23.9	32.6	113	100	Vert.	43.5	10.9	
149.160	37.8	QP	14.9	-23.5	29.2	6	400	Hori.	43.5	14.3	
149.158	45.0	QP	14.9	-23.5	36.4	96	100	Vert.	43.5	7.1	
189.831	44.3	QP	16.3	-23.2	37.4	322	100	Vert.	43.5	6.1	
189.835	36.5	QP	16.3	-23.2	29.6	345	220	Hori.	43.5	13.9	
203.392	36.9	QP	16.2	-23.1	30.0	266	280	Hori.	43.5	13.5	
203.397	44.2	QP	16.2	-23.1	37.3	276	103	Vert.	43.5	6.2	
230.522	37.9	QP	16.4	-22.7	31.6	340	100	Vert.	46.0	14.4	
325.427	33.9	QP	15.3	-21.9	27.3	202	100	Vert.	46.0	18.7	
325.560	36.8	QP	15.3	-21.9	30.2	92	310	Hori.	46.0	15.8	
352.561	38.9	QP	16.1	-21.7	33.3	98	130	Hori.	46.0	12.7	
542.398	31.4	QP	18.6	-20.5	29.5	120	100	Hori.	46.0	16.5	
542.404	30.1	QP	18.6	-20.5	28.2	151	100	Vert.	46.0	17.8	

CHART:WITH FACTOR ANT TYPE: ~30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

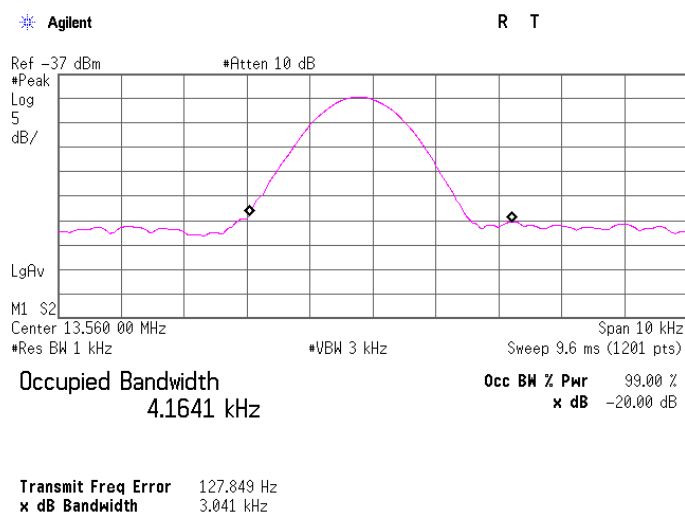
20dB Bandwidth

Modulated wave transmission mode, Low Power

UL Japan, Inc.
Head Office EMC Lab. No.4 Semi anechoic chamber

COMPANY	: YAMAHA FINE TECHNOLOGIES CO., LTD.	REGULATION	: FCC 15.225
EQUIPMENT	: RFID-Unit(4ch type)	TEST DISTANCE	: -
MODEL	: RF001-4	DATE	: 10/27/2008
S/ N	: 1071	TEMPERATURE	: 25 deg.C.
POWER	: DC5V	HUMIDITY	: 44 %
MODE	: Modulated wave transmission mode, Low Power	ENGINEER	: Motoya Imura

FREQ [MHz]	20dB Bandwidth [kHz]
13.56	3.04



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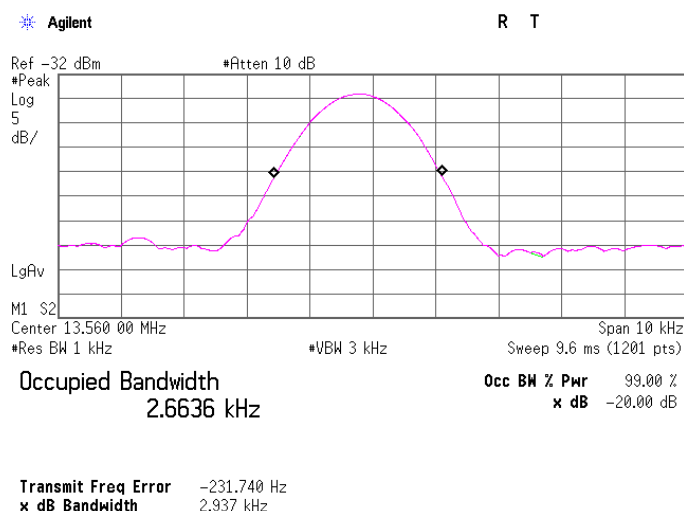
20dB Bandwidth

Modulated wave transmission mode, High Power

UL Japan, Inc.
Head Office EMC Lab. No.4 Semi anechoic chamber

COMPANY	: YAMAHA FINE TECHNOLOGIES CO., LTD.	REGULATION	: FCC 15.225
EQUIPMENT	: RFID-Unit(4ch type)	TEST DISTANCE	: -
MODEL	: RF001-4	DATE	: 10/27/2008
S/ N	: 1071	TEMPERATURE	: 25 deg.C.
POWER	: DC5V	HUMIDITY	: 44 %
MODE	: Modulated wave transmission mode, High Power	ENGINEER	: Motoya Imura

FREQ [MHz]	20dB Bandwidth [kHz]
13.56	2.94



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20dB Bandwidth

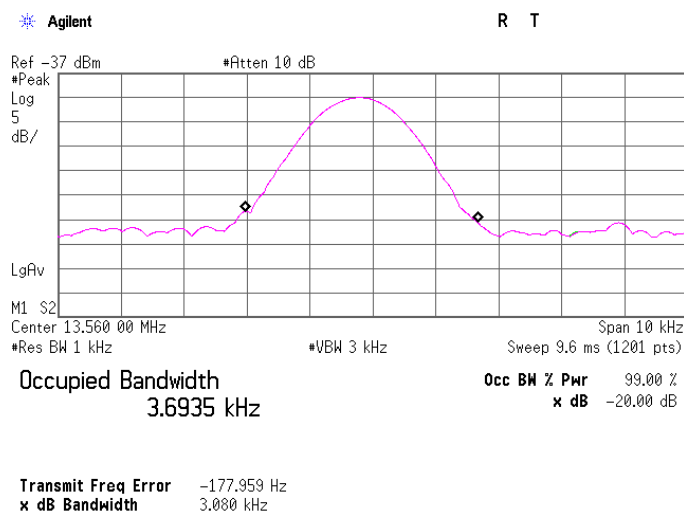
RF-Tag read test mode, Low Power

UL Japan, Inc.
Head Office EMC Lab. No.4 Semi anechoic chamber

COMPANY : YAMAHA FINE TECHNOLOGIES CO., LTD.
EQUIPMENT : RFID-Unit(4ch type)
MODEL : RF001-4
S/ N : 1071
POWER : DC5V
MODE : RF-Tag read test mode, Low Power

REGULATION : FCC 15.225
TEST DISTANCE : -
DATE : 10/27/2008
TEMPERATURE : 25 deg.C.
HUMIDITY : 44 %
ENGINEER : Motoya Imura

FREQ [MHz]	20dB Bandwidth [kHz]
13.56	3.08



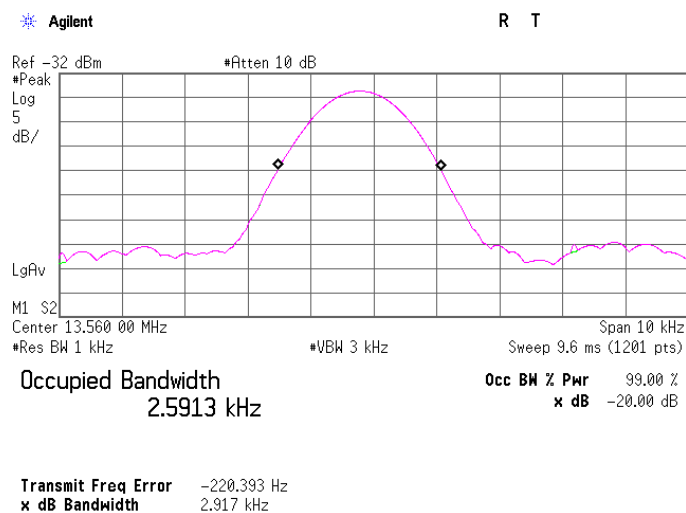
20dB Bandwidth
RF-Tag read test mode, High Power

UL Japan, Inc.
Head Office EMC Lab. No.4 Semi anechoic chamber

COMPANY : YAMAHA FINE TECHNOLOGIES CO., LTD.
EQUIPMENT : RFID-Unit(4ch type)
MODEL : RF001-4
S/ N : 1071
POWER : DC5V
MODE : RF-Tag read test mode, High Power

REGULATION : FCC 15.225
TEST DISTANCE : -
DATE : 10/27/2008
TEMPERATURE : 25 deg.C.
HUMIDITY : 44 %
ENGINEER : Motoya Imura

FREQ [MHz]	20dB Bandwidth [kHz]
13.56	2.92



Frequency Tolerance

Company YAMAHA FINE TECHNOLOGIES CO., LTD.
Equipment RFID-Unit(4ch type)
Model RF001-4
S/N 1071
Power DC 5.0V
Mode Continuous Transmitting (No Modulation)

UL Japan, Inc.
Head Office EMC Lab. No.6 measurement Room
Regulation FCC15.225 (e)
Test Distance -
Date 10/28/2008
Temperature 23 deg.C.
Humidity 42 %
Engineer Takumi Shimada

Test Condition	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit (+/- 0.01%) [ppm]	Margin [ppm]
T nom 20deg.C Vmax DC5.75V (115%)	Power on	13.55979880	-0.00020120	-14.84	100.00	85.16
	on 2min.	13.55980119	-0.00019881	-14.66	100.00	85.34
	on 5min.	13.55980312	-0.00019688	-14.52	100.00	85.48
	on 10min.	13.55980374	-0.00019626	-14.47	100.00	85.53
T nom 20deg.C Vnom DC5.0V (100%)	Power on	13.55980069	-0.00019931	-14.70	100.00	85.30
	on 2min.	13.55980236	-0.00019764	-14.58	100.00	85.42
	on 5min.	13.55980364	-0.00019636	-14.48	100.00	85.52
	on 10min.	13.55980404	-0.00019596	-14.45	100.00	85.55
T nom 20deg.C Vmin DC4.25V (85%)	Power on	13.55980374	-0.00019626	-14.47	100.00	85.53
	on 2min.	13.55980378	-0.00019622	-14.47	100.00	85.53
	on 5min.	13.55980379	-0.00019621	-14.47	100.00	85.53
	on 10min.	13.55980368	-0.00019632	-14.48	100.00	85.52
T max 50deg.C. Vnom DC5.0V (100%)	Power on	13.55983210	-0.00016790	-12.38	100.00	87.62
	on 2min.	13.55983712	-0.00016288	-12.01	100.00	87.99
	on 5min.	13.55984131	-0.00015869	-11.70	100.00	88.30
	on 10min.	13.55984216	-0.00015784	-11.64	100.00	88.36
40deg.C. Vnom DC5.0V (100%)	Power on	13.55981661	-0.00018339	-13.52	100.00	86.48
	on 2min.	13.55981984	-0.00018016	-13.29	100.00	86.71
	on 5min.	13.55982208	-0.00017792	-13.12	100.00	86.88
	on 10min.	13.55982285	-0.00017715	-13.06	100.00	86.94
30deg.C. Vnom DC5.0V (100%)	Power on	13.55980470	-0.00019530	-14.40	100.00	85.60
	on 2min.	13.55980585	-0.00019415	-14.32	100.00	85.68
	on 5min.	13.55980679	-0.00019321	-14.25	100.00	85.75
	on 10min.	13.55980898	-0.00019102	-14.09	100.00	85.91
20deg.C. Vnom DC5.0V (100%)	Power on	13.55980069	-0.00019931	-14.70	100.00	85.30
	on 2min.	13.55980236	-0.00019764	-14.58	100.00	85.42
	on 5min.	13.55980364	-0.00019636	-14.48	100.00	85.52
	on 10min.	13.55980404	-0.00019596	-14.45	100.00	85.55
10deg.C. Vnom DC5.0V (100%)	Power on	13.55979670	-0.00020330	-14.99	100.00	85.01
	on 2min.	13.55980198	-0.00019802	-14.60	100.00	85.40
	on 5min.	13.55980224	-0.00019776	-14.58	100.00	85.42
	on 10min.	13.55979876	-0.00020124	-14.84	100.00	85.16
0deg.C. Vnom DC5.0V (100%)	Power on	13.55976839	-0.00023161	-17.08	100.00	82.92
	on 2min.	13.55977984	-0.00022016	-16.24	100.00	83.76
	on 5min.	13.55978427	-0.00021573	-15.91	100.00	84.09
	on 10min.	13.55978641	-0.00021359	-15.75	100.00	84.25
-10deg.C. Vnom DC5.0V (100%)	Power on	13.55972145	-0.00027855	-20.54	100.00	79.46
	on 2min.	13.55973580	-0.00026420	-19.48	100.00	80.52
	on 5min.	13.55974362	-0.00025638	-18.91	100.00	81.09
	on 10min.	13.55974899	-0.00025101	-18.51	100.00	81.49
Tmin -20deg.C Vnom DC5.0V (100%)	Power on	13.55965793	-0.00034207	-25.23	100.00	74.77
	on 2min.	13.55967752	-0.00032248	-23.78	100.00	76.22
	on 5min.	13.55968663	-0.00031337	-23.11	100.00	76.89
	on 10min.	13.55968566	-0.00031434	-23.18	100.00	76.82

Limit : 13.56 MHz +/-0.01 % (+/- 100ppm) = +/- 0.001356 MHz

APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	CE	2008/03/27 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	CE	2008/01/10 * 12
MJM-07	Measure	PROMART	SEN1955	CE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	CE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	CE	2008/06/25 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	CE	2008/10/03 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2008/02/20 * 12
MTA-07	Terminator	MCL	BTRM-50	CE	2008/02/04 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	-	CE	2008/07/03 * 12
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2007/12/12 * 12
MCC-31	Coaxial cable	UL Japan	-	RE	2008/06/20 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	RE	2008/03/06 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2008/08/18 * 12
MCH-04	Temperature and Humidity Chamber	Espec	PL-2KP	FT	2008/08/27 * 12
MUC-01	Universal Counter	Agilent	53132A	FT	2008/06/09 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-180	FT	2008/01/10 * 12
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2008/03/25 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	RE	2008/01/10 * 12
MJM-06	Measure	PROMART	SEN1955	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MSA-09	Spectrum Analyzer	Advantest	R3273	RE	2007/12/21 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	RE	2008/06/12 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2008/01/12 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2008/01/12 * 12
MCC-51	Coaxial cable	UL Japan	-	RE	2008/07/18 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2008/03/10 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	RE	2008/03/06 * 12

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

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item: CE: Conducted Emission
RE: Radiated Emission
FT: Frequency Tolerance

End of Report

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