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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### **APPENDIX 2: Data of EMI test**

#### **Conducted emission**

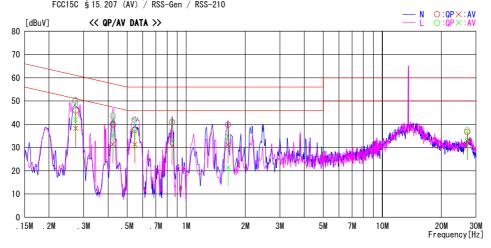
(ME-MR21-A-SG, Modulation mode)

### DATA OF CONDUCTED EMISSION TEST UL Apex Co., Ltd. Head Office EMC Lal

Lab. No.1 Semi Anechoic Chamber Date: 2006/11/17 02:22:23

Maxell Seiki, Ltd. RFID Reader/Writer Module ME-MR21-A-SG #01 27BE0239-H0 AC120V / 60Hz 23deg.C / 34% Takumi Shimada Applicant Kind of EUT Model No. Serial No. Report No. Power Temp°C/Humi% Operator

Mode / Remarks : Modulation Mode (Antenna Attached) 



F	Reading	Level	Corr.	Resi	ults	Lir	nit	Mar	gin	
Frequency	QP	AV	Factor	QP	AV	QP	AV	QP	AV	Phase
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0. 27322	45. 7	38. 0	0. 2	45. 9	38. 2	61.0	51.0	15. 1	12.8	N
0. 42287	39. 7	31. 2	0. 2	39. 9	31.4	57. 4	47.4	17. 5	16.0	N
0. 54737	37. 3	31.0	0. 3	37. 6	31. 3	56.0	46.0	18. 4	14. 7	N
0.84662	40.5	30. 4	0. 3	40. 8		56.0	46.0	15. 2	15.3	N
1.63209	39. 5	30.8	0. 4	39. 9	31. 2	56.0	46.0	16. 1	14. 8	N
27. 12044		30. 2		36. 7		60.0	50.0	23. 3		N
0. 27292	50.0	41. 7	0. 2	50. 2	41. 9	61.0	51.0	10.8	9. 1	L
0. 42426	43. 4	35. 0	0. 2	43. 6	35. 2	57. 4	47.4	13. 8	12. 2	L
0. 54581	41.7	36. 7	0. 3	42. 0	37. 0	56.0	46.0	14. 0	9.0	L
0.84711	40. 7	32. 4	0. 3	41. 0	32. 7	56.0	46.0	15. 0	13. 3	L
1.63795	34. 1	21. 1	0. 4	34. 5	21.5	56.0	46.0	21. 5	24. 5	L
27. 12038	34.8	31.0	2. 5	37. 3	33. 5	60.0	50.0	22. 7	16.5	L

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#### **Conducted emission**

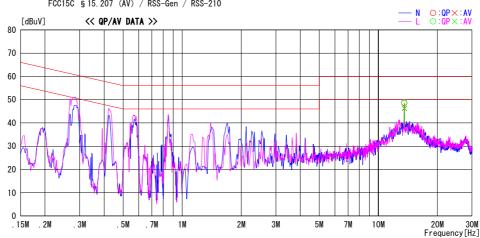
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 1 Semi Anechoic Chamber Date: 2006/11/17 02:13:36

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MR21-A-SG : #01 : 27BE0239-H0 : AC120V / 60Hz : 23deg.C / 34% : Takumi Shimada Applicant Kind of EUT Model No. Serial No. Report No. Power Temp°C/Humi% Operator

Mode / Remarks : Modulation Mode (Putting a dummy load instead of the antenna)

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen / RSS-210 FCC15C § 15.207 (AV) / RSS-Gen / RSS-210



Frequency	Reading	g Level	Corr.	Resi	ults	Lin	nit	Mar	gin	
Frequency	QP	AV	Factor	QP	AV	QP	AV	QP	AV	Phase
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
13. 56014	46. 7	44. 3	1. 9	48. 6	46. 2	60.0	50.0	11. 4	3.8	N
13. 55950	46.8	44. 5	1. 9	48. 7	46. 4	60.0	50.0	11. 3	3.6	L
l										

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F(LISN LOSS+CABLE LOSS) Except for the above table: adequate margin data below the limits.

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### **Conducted emission**

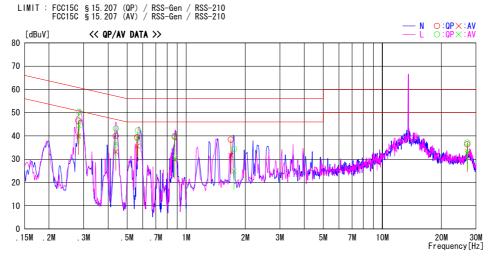
(ME-MA21-A-SNT, Modulation mode)

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber Date: 2006/11/17 02:46:08

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT : #01 Applicant Kind of EUT Model No. Serial No. Report No. Power Temp°C/Humi% Operator : 27BE0239-H0 : AC120V / 60Hz : 23deg.C / 34% : Takumi Shimada

 ${\bf Mode}\ /\ {\bf Remarks}\ :\ {\bf Modulation}\ {\bf Mode}\ ({\bf Antenna}\ {\bf Attached})$ 



	gin	Mar	nit	Lin	ults	Resi	Corr.	g Level	Reading	Frequency
Phase	AV	QP	AV	QP	AV	QP	Factor	AV	QP	Frequency
	[dB]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[MHz]
N	10.8	14. 2	50.8	60.8	40. 0	46. 6	0. 2	39. 8	46. 4	0. 28212
N	13. 9	17. 2	47. 1	57. 1	33. 2	39. 9	0. 2	33. 0	39. 7	0. 43763
N	10.4	16. 6	46.0	56.0	35. 6	39. 5	0. 3	35. 3	39. 2	0. 56298
N	16.3	16. 4	46.0	56.0	29. 7	39. 7	0. 3		39.4	0.87513
N	14. 4	17. 6	46.0	56.0	31.6	38. 4	0. 5	31. 1	37. 9	1. 68913
N	17. 4	23. 6	50.0	60.0	32. 6	36. 4	2. 5	30. 1	33. 9	27. 12020
L	6.3	10. 4		60. 7					50. 2	0. 28452
L	10.4	13. 9	47. 1	57. 1	36. 7	43. 2	0. 2	36. 5	43.0	0. 43805
L	7. 2	13. 6	46.0	56.0	38. 8	42. 4	0. 3	38. 5	42. 1	0.56706
L	15.3	16. 0	46.0	56.0	30. 7	40. 0	0. 3	30. 4	39. 7	0.87630
L	21.1	21.6	46.0	56.0	24. 9	34. 4	0. 5	24. 4	33. 9	1. 75147
L	16.6	22. 9	50.0	60.0	33. 4	37. 1	2. 5	30. 9	34. 6	27. 12038

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F(LISN LOSS+CABLE LOSS) Except for the above table: adequate margin data below the limits.

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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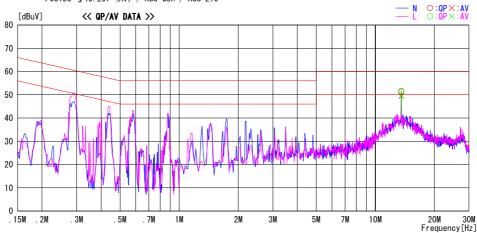
**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

### DATA OF CONDUCTED EMISSION TEST UL Apex Co., Ltd. Head Office EMC Lab. No. 1 Semi Anechoic Chamber Date: 2006/11/17 03:06:18 **Conducted emission**

Applicant Kind of EUT Model No. Serial No. : Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT : #01 Report No. Power Temp°C/Humi% Operator : 27BE0239-H0 : AC120V / 60Hz : 23deg. C / 34% : Takumi Shimada

Mode / Remarks : Modulation Mode (Putting a dummy load instead of the antenna)

LIMIT : FCC15C § 15. 207 (QP) / RSS-Gen / RSS-210 FCC15C § 15. 207 (AV) / RSS-Gen / RSS-210



_	Reading	Level	Corr.	Resi	ults	Lin	nit	Mar	gin	
Frequency	QP	AV	Factor	QP	AV	QP	AV	QP	AV	Phase
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
13. 56058	49. 4	47. 7	1. 9	51. 3	49. 6	60.0	50.0	8. 7	0.4	N
13. 55974	49.7	47. 4	1. 9	51.6	49. 3	60.0	50.0	8. 4	0.7	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C. F(LISN LOSS+CABLE LOSS) Except for the above table: adequate margin data below the limits.

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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Issued date : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Fundamental emission and Spectrum Mask and Spurious emission below 30MHz)

(ME-MR21-A-SG, Modulation mode)

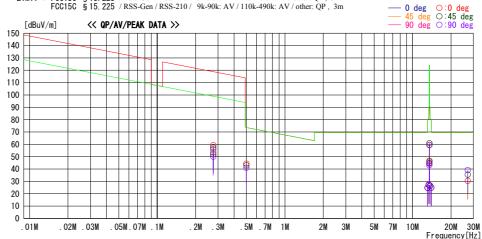
# DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 12:17:54

Maxell Seiki, Ltd. RFID Reader/Writer Module ME-MR21-A-SG Report No.

27BE0239-H0 DC 5V (from I/F Power unit) 24deg.C / 63% Kenichi Adachi Company Kind of EUT Model No. Serial No. Power Temp./Humi. Operator

 $\label{eq:mode_mode_communication} \mbox{Mode / Remarks : Modulation mode (Communication),} \quad \mbox{EUT max-axis}(\mbox{Z-axis}),$ 

LIMIT : FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: PK / 110k-490k: PK / other: QP , 3m FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: AV / 110k-490k: AV / other: QP , 3m



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. 27444	71. 7	PEAK	19. 5	0.1	32. 0	59. 3	118.8	59. 5	0deg	360	
0. 27444	65. 9	AV	19. 5	0.1	32.0	53. 5	98.8	45. 3	0deg	360	
0. 27444	69.8	PEAK	19. 5	0.1	32.0	57. 4	118.8	61.4	45deg	129	
0. 27444	64. 2	AV	19. 5	0.1	32.0	51.8	98.8	47. 0	45deg	129	
0. 27444	68. 3	PEAK	19. 5	0.1	32.0	55. 9	118.8	62. 9	90deg	78	
0. 27444	62. 4	AV	19. 5	0.1	32.0	50.0	98.8	48. 8	90deg	78	
0.50023	56. 7	QP	19.5	0. 2	32.0	44. 4	73.6	29. 2	0deg	9	
0.50023		QP	19.5	0. 2	32.0	42. 9	73.6	30. 7	45deg	360	
0.50023	53. 3	QP	19. 5	0. 2	32.0	41.0	73.6	32. 6	90deg	99	
13. 11000		QP	20. 4	0.8	32.0	24. 8	69. 5	44. 7	0deg	168	
13. 11000	35. 6	QP	20. 4	0.8	32.0	24. 8	69. 5	44. 7	45deg	173	
13. 11000	35. 6	QP	20. 4	0.8	32.0	24. 8	69. 5	44. 7	90deg	82	
13.41000	37. 8	QP	20. 4	0.8	32.0	27. 0	80. 5	53. 5	0deg	168	
13. 41000		QP	20. 4	0.8	32.0	27. 1	80. 5	53. 4	45deg	173	
13. 41000	38. 3	QP	20. 4	0.8	32.0	27. 5	80. 5	53. 0	90deg	82	
13. 55300	55.0	QP	20. 5	0.8	32.0	44. 3	90. 5	46. 2	0deg	168	
13. 55300		QP	20. 5	0.8	32.0	44. 7	90. 5	45. 8	45deg	173	
13. 55300		QP	20. 5	0.8	32.0	43.0	90. 5	47. 5	90deg	82	
13. 56000	70. 3	QP	20. 5	0.8	32.0	59.6	124. 0	64. 4	0deg	168	Carrier
13. 56000		QP	20. 5	0.8	32. 0	60. 9	124. 0	63. 1	45deg		Carrier(MAX)
13. 56000	70.0	QP	20. 5	0.8	32.0	59.3	124. 0	64. 7	90deg	82	Carrier
13. 56700	56. 6	QP	20. 5	0.8	32.0	45. 9	90. 5	44. 6	0deg	168	
13. 56700		QP	20. 5	0.8	32. 0	46. 7	90. 5	43. 8	45deg	173	
13. 56700	55. 6	QP	20. 5	0.8	32. 0	44. 9	90. 5	45. 6	90deg	82	
13.71000		QP	20. 5	0.8	32.0	26. 5	80. 5	54. 0	0deg	168	
13.71000	37. 3	QP	20. 5	0.8	32.0	26. 6	80. 5	53. 9	45deg	173	
13.71000	36. 9	QP	20. 5	0.8	32.0	26. 2	80. 5	54. 3	90deg	82	

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Fundamental emission and Spectrum Mask and Spurious emission below 30MHz)

(ME-MR21-A-SG, Modulation mode)

## DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 12:17:54

Company Kind of EUT Model No. Serial No. : Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MR21-A-SG : #01 Report No.

: 27BE0239-H0 : DC 5V (from 1/F Power unit) : 24deg.C / 63% : Kenichi Adachi Power Temp./Humi. Operator

 $\label{eq:mode_mode_formula} \mbox{Mode / Remarks : Modulation mode (Communication), } \mbox{ EUT max-axis(Z-axis),}$ LIMIT : FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: PK / 110k-490k: PK / other: QP , 3m FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: AV / 110k-490k: AV / other: QP , 3m

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]	
14. 01000	35. 7	QP	20. 5	0.8	32. 0	25. 0	69. 5		0deg	168	
14. 01000	35. 6		20. 5	0.8	32. 0	24. 9	69. 5		45deg	173	
14. 01000	35. 7		20. 5	0.8	32. 0	25. 0	69. 5		90deg	82	
27. 12001	40. 0		21.3	1. 2	32. 0	30. 5	69. 5		0deg	141	
										141	
27. 12002	45. 0		21.3	1. 2	32. 0	35. 5	69. 5	34.0	45deg	360	
27. 12003	48. 6	QP	21. 3	1. 2	32. 0	39. 1	69. 5	30. 4	90deg	84	
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Issued date : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Fundamental emission and Spectrum Mask and Spurious emission below 30MHz)

(ME-MA21-A-SNT, Modulation mode)

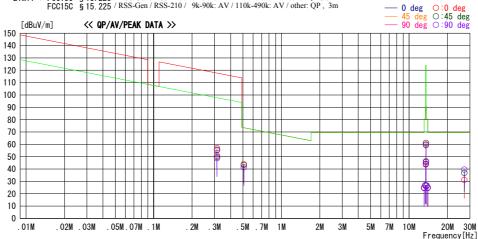
### DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 16:13:33

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT Company Kind of EUT Model No. Report No.

27BE0239-H0 DC 5V (from I/F Power unit) 24deg.C / 63% Kenichi Adachi Power Temp./Humi. Operator

Mode / Remarks : Modulation mode (Communication), EUT max-axis(Z-axis),

 $\begin{array}{l} \textbf{LIMIT} \ : \ FCC15C \ \ \S \ 15, \ 225 \ / \ RSS-Gen \ / \ RSS-210 \ / \ 9k-90k: \ PK \ / \ 110k-490k: \ PK \ / \ other: \ OP \ , \ 3m \\ FCC15C \ \ \S \ 15, \ 225 \ / \ RSS-Gen \ / \ RSS-210 \ / \ 9k-90k: \ AV \ / \ 110k-490k: \ AV \ / \ other: \ QP \ , \ 3m \\ \end{array}$ 



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. 31354	69.3	PEAK	19.5	0.1	32. 0	56. 9	117. 7	60.8	0deg	167	
0. 31354	63. 2	AV	19.5	0.1	32.0	50.8	97.7	46. 9	0deg	167	
0. 31354	68. 0	PEAK	19.5	0.1	32.0	55. 6	117. 7	62. 1	45deg	157	
0. 31354	62. 1	AV	19.5	0.1	32.0	49.7	97.7	48. 0	45deg	157	
0. 31354	67. 6	PEAK	19.5	0.1	32.0	55. 2	117. 7	62. 5	90deg	87	
0. 31354	61.2	AV	19.5	0.1	32.0	48. 8	97.7	48. 9	90deg	87	
0. 50788	56. 2	QP	19.5	0. 2	32.0	43. 9	73. 5	29. 6	0deg	360	
0. 50788	55. 6	QP	19.5	0. 2	32.0	43. 3	73. 5	30. 2	45deg	95	
0. 50788		QP	19.5	0. 2	32. 0	41.4	73. 5	32. 1	90deg	172	
13. 11000	35. 5	QP	20. 4	0.8	32.0	24. 7	69. 5	44. 8	0deg	185	
13. 11000	35. 6	QP	20. 4	0.8	32.0	24. 8	69.5	44. 7	45deg	152	
13. 11000		QP	20. 4	0.8	32. 0	24. 8	69. 5	44. 7	90deg	114	
13. 41000	37. 5	QP	20. 4	0.8	32.0	26. 7	80. 5	53.8	0deg	185	
13. 41000	37. 7	QP	20. 4	0.8	32.0	26. 9	80. 5	53.6	45deg	152	
13. 41000	37. 6	QP	20. 4	0.8	32.0	26. 8	80. 5	53. 7	90deg	114	
13. 55300	54. 3	QP	20. 5	0.8	32.0	43. 6	90. 5	46. 9	0deg	185	
13. 55300	55. 0	QP	20. 5	0.8	32.0	44. 3	90. 5	46. 2	45deg	152	
13. 55300	54. 8	QP	20. 5	0.8	32.0	44. 1	90. 5	46. 4	90deg	114	
13. 56000	70. 6	QP	20. 5	0.8	32.0	59. 9	124. 0	64. 1	0deg	185	Carrier,
13. 56000	71.8	QP	20. 5	0.8	32.0	61.1	124. 0	62. 9	45deg	152	Carrier, max-axis
13. 56000	70.0	QP	20. 5	0.8	32.0	59. 3	124.0	64. 7	90deg	114	Carrier,
13. 56700	56.4	QP	20. 5	0.8	32.0	45. 7	90.5	44. 8	0deg	185	
13. 56700	56. 9	QP	20. 5	0.8	32.0	46. 2	90. 5	44. 3	45deg	152	
13. 56700	56.6	QP	20. 5	0.8	32.0	45. 9	90. 5	44. 6	90deg	114	
13. 71000	37. 0	QP	20. 5	0.8	32.0	26. 3	80.5	54. 2	0deg	185	
13. 71000	37. 4	QP	20. 5	0.8	32.0	26. 7	80.5	53.8	45deg	152	
13. 71000	37. 2	QP	20. 5	0.8	32.0	26. 5	80.5	54.0	90deg	114	

CHART : WITH FACTOR ANT TYPE : LOOP CALCULATION : READING + ANT FACTOR + LOSS( CABLE + ATTEN. -AMP.)

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Fundamental emission and Spectrum Mask and Spurious emission below 30MHz)

(ME-MA21-A-SNT, Modulation mode)

### DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 16:13:33

Company Kind of EUT Model No. Serial No. : Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT : #01 Report No.

: 27BE0239-H0 : DC 5V (from 1/F Power unit) : 24deg.C / 63% : Kenichi Adachi Power Temp./Humi. Operator

 $\label{eq:mode_mode_formula} \mbox{Mode / Remarks : Modulation mode (Communication), } \mbox{ EUT max-axis(Z-axis),}$ LIMIT : FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: PK / 110k-490k: PK / other: QP , 3m FCC15C § 15. 225 / RSS-Gen / RSS-210 / 9k-90k: AV / 110k-490k: AV / other: QP , 3m

Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]	1	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
14. 01000	35. 4	QP	20. 5	0.8	32. 0	24. 7	69. 5		0deg	185	
14. 01000	35. 6	QP	20. 5	0.8	32.0	24. 9	69. 5		45deg	152	
14. 01000	35. 5	QP	20.5	0.8		24. 8	69. 5	44. 7	90deg	114	
27. 12000	40.8		21.3			31.3	69. 5		0deg	148	
27. 12000	46. 3		21.3			36.8	69. 5		45deg	360	
27. 12000	49.0		21.3	1. 2	32.0	39. 5	69. 5		90deg	82	
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MF060b(14.06.06)

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Issued date : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission below 30MHz)

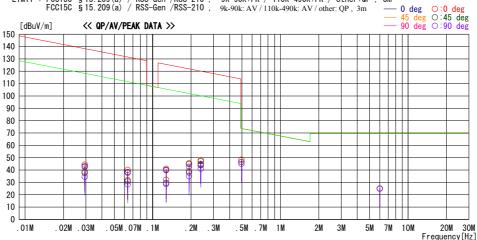
(ME-MR21-A-SG, Standby)

## DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 14:11:31

Report No.

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MR21-A-SG 27BE0239-H0 DC 5V (from I/F Power unit) 24deg.C / 63% Kenichi Adachi Company Kind of EUT Model No. Power Temp./Humi. Operator

 $\label{eq:mode_formula} \mbox{Mode / Remarks : Standby , } \mbox{ EUT max-axis(Z-axis),}$ 



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
0. 02942	56. 7	PEAK	19.7	0. 1	32. 1	44. 4	138. 2	93. 8	0deg	360
0. 02942	50. 9	AV	19.7	0.1	32. 1	38. 6	118. 2	79. 6	0deg	360
0. 02942	55. 4	PEAK	19.7	0.1	32. 1	43. 1	138. 2	95. 1	45deg	145
0. 02942	50.0	AV	19.7	0. 1	32. 1	37.7	118. 2	80. 5	45deg	145
0. 02942	54. 8	PEAK	19.7	0.1	32. 1	42. 5	138. 2	95. 7	90deg	93
0. 02942		AV	19.7	0. 1	32. 1	34. 6	118. 2	83. 6	90deg	93
0.06375		PEAK	19.6	0. 1	32. 1	40. 1	131.5	91.4	0deg	210
0.06375	44. 2	AV	19.6	0. 1	32. 1	31.8	111.5	79. 7	0deg	210
0.06375	50. 7	PEAK	19.6	0. 1	32. 1	38. 3	131.5	93. 2	45deg	339
0.06375	43. 2	AV	19.6	0. 1	32. 1	30.8	111.5	80. 7	45deg	339
0.06375	50. 1	PEAK	19.6	0. 1	32. 1	37.7	131.5	93. 8	90deg	308
0.06375	40.8	AV	19.6	0. 1	32. 1	28. 4	111.5	83. 1	90deg	308
0. 12723	53. 5	PEAK	19.5	0.1	32. 1	41.0	125. 5	84. 5	0deg	352
0. 12723	44. 7	AV	19.5	0. 1	32. 1	32. 2	105. 5	73. 3	0deg	352
0. 12723	52. 6	PEAK	19.5	0. 1	32. 1	40. 1	125. 5	85. 4	45deg	213
0. 12723	42. 0	AV	19.5	0. 1	32. 1	29. 5	105. 5	76. 0	45deg	213
0. 12723	52. 2	PEAK	19.5	0.1	32. 1	39. 7	125. 5	85. 8	90deg	299
0. 12723	41.1	AV	19.5	0. 1	32. 1	28. 6	105. 5	76. 9	90deg	299
0. 19238	57. 8	PEAK	19.5	0. 1	32. 0	45. 4	121. 9	76. 5		233
0. 19238	51.4	AV	19.5	0. 1	32. 0	39.0	101. 9	62. 9	0deg	233
0. 19238	57. 2	PEAK	19.5	0. 1	32. 0	44. 8	121. 9	77. 1	45deg	214
0. 19238	50.3	AV	19.5	0. 1	32. 0	37. 9	101. 9	64. 0	45deg	214
0. 19238	55.0	PEAK	19.5	0. 1	32. 0	42. 6	121. 9	79. 3	90deg	297
0. 19238	47. 3	AV	19.5	0. 1	32. 0	34. 9	101. 9	67. 0	90deg	297
0. 23782	60.3	PEAK	19.5	0. 1	32. 0	47. 9	120. 1	72. 2	0deg	360
0. 23782		ΑV	19.5	0. 1	32. 0	44. 4	100. 1	55. 7	0deg	360
0. 23782	59.6	PEAK	19.5	0.1	32. 0	47. 2	120. 1	72. 9	45deg	341

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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Issued date : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission below 30MHz)

(ME-MR21-A-SG, Standby)

## DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 14:11:31

Company Kind of EUT Model No. Serial No. : Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MR21-A-SG : #01 Report No.

: 27BE0239-H0 : DC 5V (from 1/F Power unit) : 24deg.C / 63% : Kenichi Adachi

Power Temp./Humi. Operator

 $\label{eq:mode_mode_def} \mbox{Mode / Remarks : Standby , } \mbox{ EUT max-axis(Z-axis),}$ 

Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
0. 23782	56. 2	AV	19.5	0.1	32. 0	43. 8	100. 1	56. 3	45deg	341
0. 23782	57. 4	PEAK	19.5	0. 1	32. 0	45. 0	120. 1	75. 1	90deg	298
0. 23782	53. 5	AV	19.5	0. 1	32. 0	41. 1	100. 1	59. 0	90deg	298
0. 49600	60. 7	QP	19.5	0. 1	32. 0	48. 3	73. 7	25. 4	0deg	7
0. 49600	59. 0	QP	19.5	0. 1	32. 0	46. 6	73. 7	27. 1	45deg	360
0. 49600	57. 4	QP	19.5	0. 1	32. 0	45. 0	73. 7	28. 7	90deg	90
6. 00000	36. 5	QP	20.0	0. 5	32. 0	25. 0	69. 5	44. 5	0deg	360
6. 00000	36. 5	QP	20.0	0.5	32. 0	25. 0	69. 5	44. 5	45deg	360
6. 00000	36. 5	QP	20.0	0. 5	32. 0	25. 0	69. 5	44. 5	90deg	360
6.00000	30. 0	QP.	20.0	0. 5	32.0	20.0	09. 0	44. 3	godeg	300

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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Issued date : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission below 30MHz)

(ME-MA21-A-SNT, Standby)

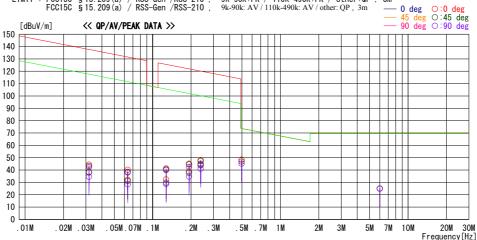
### DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 18:15:29

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT Company Kind of EUT Model No. Report No.

27BE0239-H0 DC 5V (from I/F Power unit) 24deg.C / 63% Kenichi Adachi Power Temp./Humi. Operator

 $\label{eq:mode_mode_for_mode} \mbox{Mode / Remarks} \; : \; \mbox{Standby} \; , \quad \mbox{EUT max-axis}(\mbox{Z-axis})$ 

LIMIT : FCC15C § 15. 209 (a) / RSS-Gen /RSS-210 , 9k-90k:PK / 110k-490k:PK / other:QP , 3m FCC15C § 15. 209 (a) / RSS-Gen /RSS-210 , 9k-90k: AV / 110k-490k: AV / other:QP , 3m —



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
0. 03166	56.8	PEAK	19.6	0.1	32. 1	44. 4	137. 6	93. 2	0deg	360
0. 03166	50.7	AV	19.6	0.1	32. 1	38. 3	117. 6	79. 3	0deg	360
0. 03166	55. 7	PEAK	19.6	0. 1	32. 1	43.3	137. 6	94. 3	45deg	134
0. 03166	50.3	AV	19.6	0. 1	32. 1	37. 9	117. 6	79. 7	45deg	134
0. 03166	54. 6	PEAK	19.6	0. 1	32. 1	42. 2	137. 6	95. 4	90deg	86
0. 03166	47. 0	AV	19.6	0. 1	32. 1	34. 6	117. 6	83. 0	90deg	86
0.06375	52. 6	PEAK	19.6	0.1	32. 1	40. 2	131.5	91.3	0deg	213
0.06375	44. 5	AV	19.6	0.1	32. 1	32. 1	111.5	79. 4	0deg	213
0.06375	50. 9	PEAK	19.6	0. 1	32. 1	38. 5	131. 5	93. 0	45deg	336
0.06375	43. 6	AV	19.6	0. 1	32. 1	31. 2	111.5	80. 3	45deg	336
0.06375		PEAK	19.6	0.1	32. 1	37. 9	131.5	93. 6	90deg	306
0.06375	40. 9	AV	19.6	0. 1	32. 1	28. 5	111.5	83. 0	90deg	306
0. 12723	53. 7	PEAK	19.5	0. 1	32. 1	41. 2	125. 5	84. 3	0deg	351
0. 12723	44. 9	AV	19.5	0. 1	32. 1	32. 4	105. 5	73. 1	0deg	351
0. 12723	52. 9	PEAK	19.5	0. 1	32. 1	40. 4	125. 5	85. 1	45deg	212
0. 12723	42. 3	AV	19.5	0. 1	32. 1	29.8	105. 5	75. 7	45deg	212
0. 12723	52. 4	PEAK	19.5	0. 1	32. 1	39. 9	125. 5	85. 6	90deg	300
0. 12723	41.2	AV	19.5	0. 1	32. 1	28. 7	105. 5	76. 8		300
0. 19234	57. 6	PEAK	19.5	0. 1	32. 0	45. 2	121. 9	76. 7	0deg	234
0. 19234	51. 2	AV	19.5	0. 1	32. 0	38. 8	101. 9	63. 1	0deg	234
0. 19234	57. 0	PEAK	19.5	0. 1	32. 0	44. 6	121. 9	77. 3	45deg	210
0. 19234	50. 1	AV	19.5	0. 1	32. 0	37. 7	101. 9	64. 2	45deg	210
0. 19234	54. 9	PEAK	19.5	0. 1	32. 0	42. 5	121. 9	79. 4	90deg	295
0. 19234	47. 1	ΑV	19.5	0. 1	32. 0	34. 7	101. 9	67. 2	90deg	295
0. 23776	60. 5	PEAK	19.5	0. 1	32. 0	48. 1	120. 1	72. 0	0deg	360
0. 23776	56. 9	AV	19.5	0. 1	32. 0	44. 5	100. 1	55. 6	0deg	360
0. 23776	59. 8	PEAK	19.5	0. 1	32. 0	47. 4	120. 1	72. 7	45deg	342

#### UL Apex Co., Ltd. **Head Office EMC Lab.**

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission below 30MHz)

(ME-MA21-A-SNT, Standby)

## DATA OF MAGNETIC RADIATED EMISSION TEST UL Apex Co., LTD. Head Office EMC Lab. No. 4 Semi Anechoic Chamber Date: 2006/10/24 18:15:29

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT : #01 Company Kind of EUT Model No. Serial No. Report No.

: 27BE0239-H0 : DC 5V (from 1/F Power unit) : 24deg.C / 63% : Kenichi Adachi

Power Temp./Humi. Operator

 $\label{eq:mode_mode_mode} \mbox{Mode / Remarks : Standby , } \mbox{ EUT max-axis}(\mbox{Z-axis})$ 

LIMIT : FCC15C § 15. 209(a) / RSS-Gen /RSS-210 , 9k-90k:PK / 110k-490k:PK / other:QP , 3m FCC15C § 15. 209(a) / RSS-Gen /RSS-210 , 9k-90k: AV / 110k-490k: AV / other:QP , 3m

	Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
Г	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
	0. 23776	56. 1	AV	19.5	0.1	32. 0	43. 7		56. 4	45deg	342
	0. 23776	57. 6	PEAK	19.5	0. 1	32. 0	45. 2		74. 9	90deg	287
	0. 23776	53. 5	AV	19.5	0. 1	32. 0	41. 1	100. 1	59. 0	90deg	287
	0. 49660	60. 9	QP	19.5	0. 1	32. 0	48. 5	73. 7	25. 2	0deg	6
	0. 49660	59. 2	QP	19.5	0. 1	32. 0	46. 8		26. 9	45deg	360
	0. 49660	57. 6	QP	19.5	0. 1	32. 0	45. 2	73. 7	28. 5	90deg	94
	6. 00000	36. 5	QP	20.0	0.5	32. 0	25. 0		44. 5	0deg	360
	6. 00000 6. 00000	36. 5 36. 5	QP QP	20. 0 20. 0	0. 5 0. 5	32. 0 32. 0	25. 0 25. 0		44. 5 44. 5	45deg 90deg	360 360
	0.00000	30. 3	QP.	20.0	0. 5	32.0	20.0	09. 0	44. 3	90deg	300
_											

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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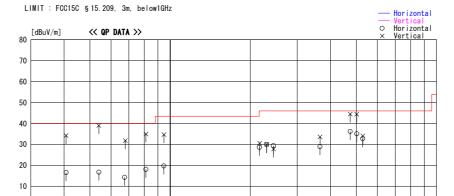
#### Radiated emission (Spurious emission: above 30MHz)

(ME-MR21-A-SG, Modulation mode)

# DATA OF RADIATED EMISSION TEST UL Apex Co., Ltd. Head Office EMC Lab. No. 3 Semi Anechoic Chamber Date: 2006/10/28 17:15:00

: Maxell Seiki : RFID Reader/Writer Module : ME-MR21-A-SG : #01 27BE0239-H0 DC 5.0V 25deg.C. / 50% Takumi Shimada Company Kind of EUT Model No. Serial No. Report No. Power Temp./Humi. Operator

 ${\tt Mode / Remarks : Modulation Mode Max-axis (Hor:Y, Ver:Y)}$ 



200M

300M

500M

700M 1G Frequency[Hz]

Frequency	Reading		Antenna	Loss&	Laurel	A1-	1100000		1.1-14	Manada	
	Roduing	DET	Factor	Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
40. 700	27. 2	QP	14.1	-24.7	16. 6	80	300	Hori.	40.0	23.4	
40. 700	44. 8	QP	14.1	-24.7	34. 2	219	100	Vert.	40.0	5.8	
54. 030		QP	9.9	-24.4	16. 7	291	300	Hori.	40.0	23.3	
54. 030	53. 5	QP	9.9	-24.4	39.0	198	100	Vert.	40.0	1.0	
67. 500	30.8	QP	7.7	-24. 2	14. 3	0	300	Hori.	40.0	25.7	
67. 900	48. 3	QP	7.7	-24. 2	31.8	0	100	Vert.	40.0	8. 2	
81. 070	34. 5	QP	7.5	-23.9	18. 1	0	300	Hori.	40.0	21.9	
81. 150	51.4	QP	7. 5	-23.9	35.0	186	100	Vert.	40.0	5.0	
94. 700	33. 4	QP	10.1	-23.8	19. 7	50	300	Hori.	43.5	23.8	
94. 770	48. 4	QP	10.1	-23.8	34. 7	64	100	Vert.	43.5	8.8	
216. 220	33.8	QP	17.3	-22.5	28.6	0	300	Hori.	46.0	17.4	
216. 780	35. 8	QP	17.3	-22.5	30.6	0	100	Vert.	46.0	15.4	
230. 200	34.8	QP	17.6	-22.4	30.0	0	300	Hori.	46.0	16.0	
230. 400	34.8	QP	17.6	-22.4	30.0	0	100	Vert.	46.0	16.0	
244. 250	33.9	QP	17.8	-22.3	29.4	359	300	Hori.	46.0	16.6	
244. 340	32. 3	QP	17.8	-22.3	27.8	273	100	Vert.	46.0	18.2	
365. 210	32.8	QP	17.6	-21.5	28.9	359	100	Hori.	46.0	17.1	
365. 300	37. 5	QP	17. 6	-21.5	33.6	0	100	Vert.	46.0	12.4	
474. 224	37. 6	QP	19.4	-20.8	36. 2	98	100	Hori.	46.0	9.8	
474. 330	45.8	QP	19.5	-20.8	44.5	182	100	Vert.	46.0	1.5	
501. 533	35. 9	QP	19.9	-20.7	35. 1	0	100	Hori.	46.0	10.9	
501.554	45. 2	QP	19.9	-20.7	44. 4	180	100	Vert.	46.0	1.6	
528. 330		QP	20.1	-20.5	32.7	100	100	Hori.	46.0	13.3	
528. 740	34. 5	QP	20. 1	-20.5	34.1	180	100	Vert.	46.0	11.9	

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)

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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0 30M

50M

70M

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission above 30MHz)

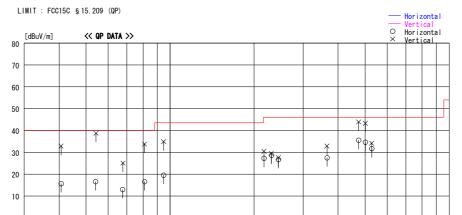
(ME-MA21-A-SNT, Modulation mode)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 3 Semi Anechoic Chamber
Date: 2006/10/28 11:41:13

: Maxell Seiki, Ltd. : RFID Reader/Writer Module : ME-MA21-A-SNT : #01 Report No. Power Temp./Humi. Operator 27BE0239-H0 DC 5.0V 25deg.C. / 50% Takumi Shimada Company Kind of EUT Model No. Serial No.

 ${\tt Mode / Remarks : Modulation Mode Max-axis (Hor:Y, Ver:Y)}$ 



200M

300M

500M

700M 1G Frequency[Hz]

F	D		Antenna	Loss&	Laurel	Annie	11. :		11-14	Margin
Frequency	Reading	DET	Factor	Gain	Level	Angle	Height	Polar.	Limit	
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
40.675	26.3	QP	14. 1	-24. 7	15.7	77	300	Hori.	40.0	24.
40.675	43.4	QP	14. 1	-24. 7	32.8	0	100	Vert.	40.0	7.
54.030	31.1	QP	9.9	-24. 4	16.6	87	300	Hori.	40.0	23.
54.234	53. 2	QP	9.9	-24. 4	38.7	0	100	Vert.	40.0	1.
67.530	29.4	QP	7.7	-24. 2	12.9	359	300	Hori.	40.0	27.
67.790	41.5	QP	7.7	-24. 2	25.0	0	100	Vert.	40.0	15.
81.030	33.0	QP	7. 5	-23. 9	16.6	359	300	Hori.	40.0	23.
81.030	50.1	QP	7. 5	-23. 9	33.7	237	100	Vert.	40.0	6.
94.800	33. 2	QP	10.1	-23. 8	19.5	359	300	Hori.	43.5	24.
94.800	48.5	QP	10.1	-23.8	34.8	237	100	Vert.	43.5	8.
216. 953	32.5	QP	17. 3	-22. 5	27.3	359	300	Hori.	46.0	18
217. 111	35. 6	QP	17. 3	-22. 5	30.4	355	100	Vert.	46.0	15
230. 611	33.4	QP	17. 6	-22. 4	28.6	147	300	Hori.	46.0	17.
230. 611	34. 2	QP	17. 6	-22. 4	29.4	0	100	Vert.	46.0	16.
244. 381	31.2	QP	17. 8	-22. 3	26.7	359	300	Hori.	46.0	19.
244. 381	32.1	QP	17. 8	-22. 3	27.6	350	100	Vert.	46.0	18.
365. 101	31.4	QP	17. 6	-21.5	27.5	359	100	Hori.	46.0	18.
365. 101	36.7	QP	17. 6	-21.5	32.8	359	100	Vert.	46.0	13.
474. 303	36.8	QP	19.5	-20.8	35.5	277	100	Hori.	46.0	10
474. 303	45. 2	QP	19.5	-20.8	43.9	277	100	Vert.	46.0	2.
501. 604	35.4	QP	19.9	-20. 7	34.6	279	100	Hori.	46.0	11.
501. 604	44. 1	QP	19.9	-20. 7	43.3	279	100	Vert.	46.0	2.
528. 204	32.1	QP	20. 1	-20. 5	31.7	359	100	Hori.	46.0	14.
528. 204	34.5	QP	20. 1	-20. 5	34.1	359	100	Vert.	46.0	11.

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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30M

50M

70M

100M

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**Issued date** : November 21, 2006 Revised date : December 5, 2006 FCC ID : UOEME-M21

#### Radiated emission(Spurious emission above 30MHz)

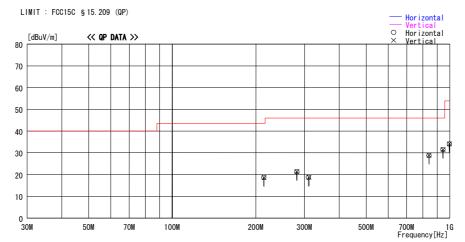
(ME-MR21-A-SG, Standby)

#### DATA OF RADIATED EMISSION TEST

Head Uttice EMC Lab. No.3 Semi Anechoic Chamber Date: 2006/10/28 17:36:05

Maxell Seiki, Ltd. RFID Reader/Writer Module ME-MR21-A-SG #01 27BE0239-H0 DC 5.0V 25deg.C. / 50% Takumi Shimada Company Kind of EUT Model No. Serial No. Report No. Power Temp./Humi. Operator

Mode / Remarks : Standby Mode Max-axis (Hor:Y, Ver:Y)



Frequency	Reading		Antenna	Loss&	Level	Angle	Height		Limit	Margin
		DET	Factor	Gain				Polar.		_
[MHz]	[dBuV]	00	[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
213. 601		QP	17. 3	-22.5	18. 7	44	300	Hori.	43.5	
214. 141	23. 8	QP	17. 3	-22. 5	18. 6	1	100	Vert.	43.5	24. 9
281. 100		QP	19.4	-22. 1	21.3	25	300	Hori.	46.0	
281. 370	24. 1	QP	19.4	-22. 1	21.4	0	100	Vert.	46.0	
309. 100	23. 8	QP	16.8	-21.9	18. 7	95	100	Hori.	46.0	
311. 200	23. 7	QP	16.9	-21.9	18. 7	15	100	Vert.	46.0	27.3
841.809	24. 0	QP	23. 3	-18.5	28. 8	359	100	Hori.	46.0	17.2
842. 510	24. 1	QP	23. 3	-18.5	28. 9	119	100	Vert.	46.0	17. 1
944. 711	23. 9	QP	25. 2	-17. 6	31.5	245	100	Hori.	46.0	14.5
946. 111	23. 9	QP	25. 2	-17. 6	31.5	0	100	Vert.	46.0	14.5
997. 212	24. 1	QP	27. 3	-17.3	34. 1	359	100	Hori.	53.9	19.8
998, 612	24. 1	QP	27. 3	-17.3	34. 1	0	100	Vert.	53.9	19.8
				Ì						

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)

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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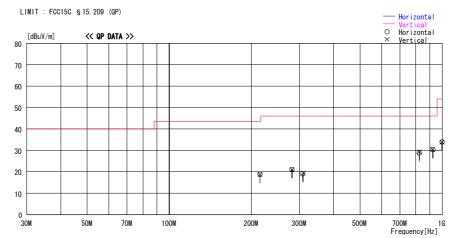
#### Radiated emission(Spurious emission above 30MHz)

(ME-MA21-A-SNT, Standby)

DATA OF RADIATED EMISSION TEST
UL Apex Co., Ltd. Head Office EMC Lab. No. 3 Semi Anechoic Chamber
Date: 2006/10/28 13:18:51

Maxell Seiki, Ltd. RFID Reader/Writer Module ME-MA21-A-SNT #01 27BE0239-H0 DC 5.0V 25deg.C. / 50% Takumi Shimada Company Kind of EUT Model No. Serial No. Report No. Power Temp./Humi. Operator

 ${\tt Mode / Remarks : Standby Mode Max-axis (Hor:Y, Ver:Y)}$ 



Frequency	Dooding		Antenna	Loss&	Level	Anglo	Unimb+		Limit	Margin
Frequency	Reading	DET	Factor	Gain	Level	Angle	Height	Polar.	Limit	margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
214. 951	24.0	QP	17. 3	-22. 5	18.8	14	300	Hori.	43.5	24.7
214. 951	23.9	QP	17. 3	-22. 5	18.7	258	100	Vert.	43.5	24.8
281. 370	23.8	QP	19.4	-22. 1	21.1	359	300	Hori.	46.0	24. 9
282. 180	23.7	QP	19.4	-22. 1	21.0	359	100	Vert.	46.0	25.0
307. 700	24. 2	QP	16.8	-21. 9	19.1	59	100	Hori.	46.0	26. 9
309. 800	24.5	QP	16.8	-21. 9	19.4	18	100	Vert.	46.0	26.6
822. 909	24.3	QP	23. 3	-18. 7	28. 9	67	100	Hori.	46.0	17. 1
825. 009	24.6	QP	23. 3	-18.6	29.3	353	100	Vert.	46.0	16.7
923. 711	23.9	QP	24. 3	-17. 8	30.4	319	100	Vert.	46.0	15.6
925. 811	23.7	QP	24. 4	-17. 8	30.3	89	100	Hori.	46.0	15.7
997. 912	23.9	QP	27.3	-17. 3	33.9	0	100	Hori.	53.9	20.0
999. 312	23.7	QP	27. 4	-17. 3	33.8	351	100	Vert.	53.9	20.1
	ļ									

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)

UL Apex Co., Ltd. **Head Office EMC Lab.** 

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#### -20dB Bandwidth

(ME-MR21-A-SG)

UL-Apex Co.,Ltd.

Head Office EMC Lab. No4 Semi Anechoic Chamber

Company : Maxell Seiki, Ltd. Regulation : FCC 15.215

Equipment: RFID Reader / Writer Module Test Distance: 3m

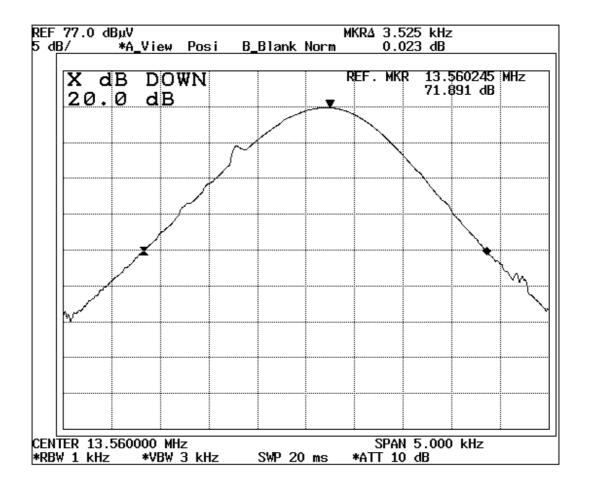
 Model
 :
 ME-MR21-A-SG
 Date
 :
 10/24/2006

 S/N
 :
 #01
 Temperature
 :
 24 deg.C.

 Power
 :
 DC 5V (from I/F Power unit )
 Humidity
 :
 63 %

Mode : Modulation mode Engineer : Kenichi Adachi

Freq.[MHz]	20dB Bandwidth [kHz]
13.56	3 525



### UL Apex Co., Ltd. Head Office EMC Lab.

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#### -20dB Bandwidth

(ME-MA21-A-SNT)

UL-Apex Co.,Ltd.

Head Office EMC Lab. No4 Semi Anechoic Chamber

Maxell Seiki, Ltd. Regulation : FCC 15.215 RFID Reader / Writer Module Test Distance : 3m

Equipment : RFID Reader / Writer Module

Company:

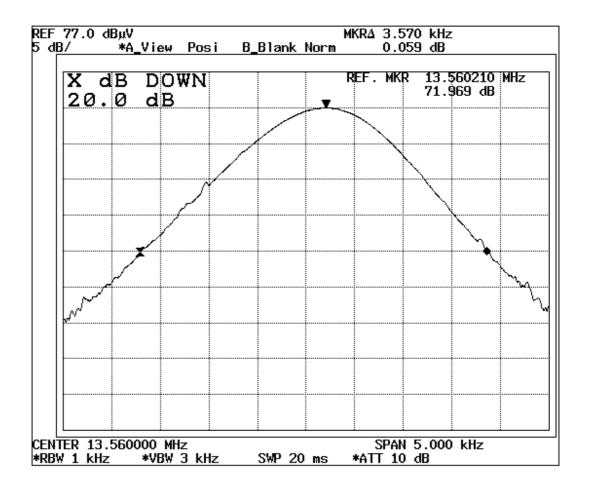
 Model
 :
 ME-MA21-A-SNT
 Date
 :
 10/24/2006

 S/N
 :
 #01
 Temperature
 :
 24 deg.C.

 Power
 :
 DC 5V (from I/F Power unit )
 Humidity
 :
 63 %

Mode : Modulation mode Engineer : Kenichi Adachi

Freq.[MHz]	20dB Bandwidth [kHz]
13 56	3 570



### UL Apex Co., Ltd. Head Office EMC Lab.

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Test report No. : 27BE0239-HO-A-1
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Revised date : December 5, 2006
FCC ID : UOEME-M21

#### 99% Occupied Bandwidth

(ME-MR21-A-SG)

UL-Apex Co.,Ltd.

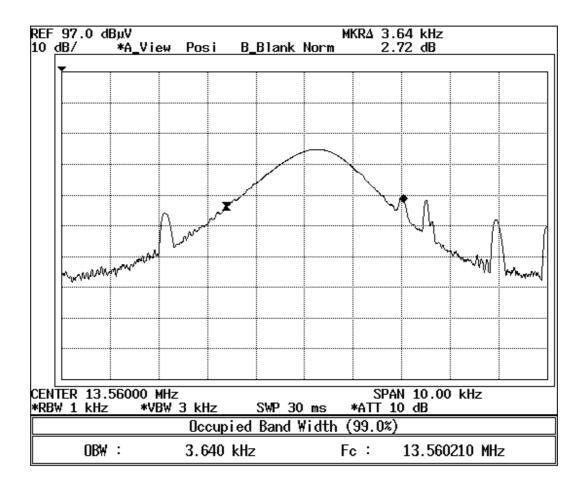
Head Office EMC Lab. No4 Semi Anechoic Chamber

Company : Maxell Seiki, Ltd. Regulation : RSS-Gen 4.4.1

Equipment: RFID Reader / Writer Module Test Distance : 3m ME-MR21-A-SG 10/24/2006 Model Date S/N #01 Temperature: 24 deg.C. DC 5V (from I/F Power unit) Power Humidity 63 %

Mode : Modulation mode Engineer : Kenichi Adachi

Freq.[MHz]	99% Occupied Bandwidth [kHz]
13.56	3.640



### UL Apex Co., Ltd. Head Office EMC Lab.

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#### 99% Occupied Bandwidth

(ME-MA21-A-SNT)

UL-Apex Co.,Ltd.

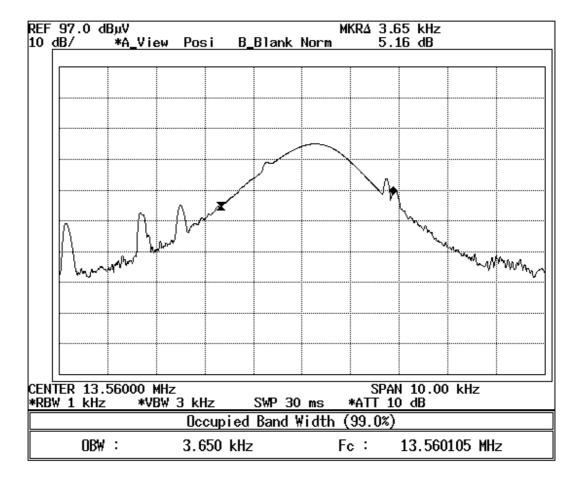
Head Office EMC Lab. No4 Semi Anechoic Chamber

Company : Maxell Seiki, Ltd. Regulation : RSS-Gen 4.4.1

Equipment: RFID Reader / Writer Module Test Distance : 3m ME-MA21-A-SNT 10/24/2006 Model Date S/N #01 Temperature: 24 deg.C. DC 5V (from I/F Power unit) Power Humidity 63 %

Mode : Modulation mode Engineer : Kenichi Adachi

Freq.[MHz]	99% Occupied Bandwidth [kHz]
13 56	3 650



### UL Apex Co., Ltd. Head Office EMC Lab.

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#### **Frequency Tolerance**

UL Apex Co., Ltd.

Head Office EMC Lab. No.7 Measurement Room

COMPANY: Maxell Seiki, Ltd. REPORT NO: 27BE0239-HO

EQUIPMENT : RFID Reader/Writer Module REGULATION : FCC15.225 (e)/RSS-210A2.6

MODEL : ME-MR21-A-SG TEST DISTANCE : -

 S/ N
 : #01
 DATE
 : 10/17/2006

 POWER
 : DC 5.0V (Power Supply)
 TEMPERATURE
 : 26 deg.C.

 MODE
 : Tx 13.56MHz
 HUMIDITY
 : 60 %

: Non modulation ENGINEER : Takumi Shimada

Test	Test	Measured	Freq	Result	Limit	Margin
Condition	Timing	freq	error		(+/- 0.01%)	
		[MHz]	[MHz]	[ppm]	[+/- ppm]	[ppm]
T nom 20deg.C	Power on	13.56005600	0.00005600	4.13	100.00	95.87
Vmax DC 5.75V	on 2min.	13.56005000	0.00005000	3.69	100.00	96.31
(115%)	on 5min.	13.56005000	0.00005000	3.69	100.00	96.31
	on 10min.	13.56004900	0.00004900	3.61	100.00	96.39
T nom 20deg.C	Power on	13.56005000	0.00005000	3.69	100.00	96.31
Vnom DC 5.00V	on 2min.	13.56004900	0.00004900	3.61	100.00	96.39
(100%)	on 5min.	13.56004900	0.00004900	3.61	100.00	96.39
	on 10min.	13.56004900	0.00004900	3.61	100.00	96.39
T nom 20deg.C	Power on	13.56005300	0.00005300	3.91	100.00	96.09
Vmin DC 4.25V	on 2min.	13.56005100	0.00005100	3.76	100.00	96.24
(85%)	on 5min.	13.56005000	0.00005000	3.69	100.00	96.31
	on 10min.	13.56004900	0.00004900	3.61	100.00	96.39
T:50°C	Power on	13.56002000	0.00002000	1.47	100.00	98.53
Vnom DC 5.00V	on 2min.	13.56002200	0.00002200	1.62	100.00	98.38
(100%)	on 5min.	13.56002300	0.00002300	1.70	100.00	98.30
	on 10min.	13.56002100	0.00002100	1.55	100.00	98.45
T:40°C	Power on	13.56002900	0.00002900	2.14	100.00	97.86
Vnom DC 5.00V	on 2min.	13.56002400	0.00002400	1.77	100.00	98.23
(100%)	on 5min.	13.56002400	0.00002400	1.77	100.00	98.23
(IC only)	on 10min.	13.56002400	0.00002400	1.77	100.00	98.23
T:30°C	Power on	13.56004000	0.00004000	2.95	100.00	97.05
Vnom DC 5.00V	on 2min.	13.56004100	0.00004100	3.02	100.00	96.98
(100%)	on 5min.	13.56004000	0.00004000	2.95	100.00	97.05
	on 10min.	13.56004000	0.00004000	2.95	100.00	97.05

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

+/- 0.001356 MHz

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#### **Frequency Tolerance**

UL Apex Co., Ltd.

Head Office EMC Lab. No.7 Measurement Room

COMPANY: Maxell Seiki, Ltd. REPORT NO: 27BE0239-HO

EQUIPMENT : RFID Reader/Writer Module REGULATION : FCC15.225 (e)/RSS-210A2.6

MODEL : ME-MR21-A-SG TEST DISTANCE : -

 S/ N
 : #01
 DATE
 : 10/17/2006

 POWER
 : DC5.0V (Power Supply)
 TEMPERATURE
 : 26 deg.C.

 MODE
 : Tx 13.56MHz
 HUMIDITY
 : 60 %

: Non Modulation ENGINEER : Takumi Shimada

Test	Test	Measured	Freq	Result	Limit	Margin
Condition	Timing	freq	error		(+/- 0.01%)	
		[MHz]	[MHz]	[ppm]	[+/- ppm]	[ppm]
T: 10deg.C	Power on	13.56005900	0.00005900	4.35	100.00	95.65
Vnom DC 5.00V	on 2min.	13.56006200	0.00006200	4.57	100.00	95.43
(100%)	on 5min.	13.56006300	0.00006300	4.65	100.00	95.35
	on 10min.	13.56006200	0.00006200	4.57	100.00	95.43
T:0deg.C	Power on	13.56004500	0.00004500	3.32	100.00	96.68
Vnom DC 5.00V	on 2min.	13.56005600	0.00005600	4.13	100.00	95.87
(100%)	on 5min.	13.56006000	0.00006000	4.42	100.00	95.58
	on 10min.	13.56006000	0.00006000	4.42	100.00	95.58
T:-10deg.C	Power on	13.56001900	0.00001900	1.40	100.00	98.60
Vnom DC 5.00V	on 2min.	13.56003900	0.00003900	2.88	100.00	97.12
(100%)	on 5min.	13.56003900	0.00003900	2.88	100.00	97.12
	on 10min.	13.56004200	0.00004200	3.10	100.00	96.90
T:-20deg.C	Power on	13.55998200	-0.00001800	-1.33	100.00	98.67
Vnom DC 5.00V	on 2min.	13.56000100	0.00000100	0.07	100.00	99.93
(100%)	on 5min.	13.56000500	0.00000500	0.37	100.00	99.63
	on 10min.	13.56001000	0.00001000	0.74	100.00	99.26
T:-30deg.C	Power on	13.55992200	-0.00007800	-5.75	100.00	94.25
Vnom DC 5.00V	on 2min.	13.55992400	-0.00007600	-5.60	100.00	94.40
(100%)	on 5min.	13.55992600	-0.00007400	-5.46	100.00	94.54
*(IC only)	on 10min.	13.55992600	-0.00007400	-5.46	100.00	94.54

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

+/- 0.001356 MHz

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<sup>\*</sup> For IC application (RSS-Gen 4.5 requirement)

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#### **APPENDIX 3: Test instruments**

**EMI** test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/03 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2006/06/02 * 12
MCC-51	Coaxial cable	UL Apex	-	RE	2006/03/11 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
TR-07	Test Receiver	Rohde & Schwarz	ESCS30	RE	2006/09/12 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE / ME / CE	
MDPS-04	DC Power Supply	KENWOOD TMI	PW18-1.3AT	ME	Pre Check
MCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	ME	2005/12/19 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	RE / ME	2006/05/20 * 12
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	ME	2006/03/06 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	ME	2006/02/02 * 12
MCC-50	Coaxial cable	UL Apex	-	ME	2006/03/09 * 12
MPA-14	Pre Amplifier	SONOA INSTRUMENT	310	ME	2006/03/25 * 12
MCC-31	coaxial cable	ULApex	-	ME	2006/05/29 * 12
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	ME	2005/12/06 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	ME	2006/01/19 * 24
MJM-07	Measure	PROMART	SEN1955	ME	-
MJM-06	Measure	PROMART	SEN1955	RE	-
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	CE	2006/11/01 * 12
MJM-01	Measure	KDS	ES19-55	CE	-
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2006/06/01 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	CE(AE)	2006/06/01 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	CE	2004/11/25 * 24
MBM-06	Barometer	SATO	Aneroid	CE	2006/06/19 * 60
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/ TSJ	-	CE	2005/12/18 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	CE	2006/10/14 * 12
MTA-06	Terminator	MCL	BTRM-50	CE	2006/02/06 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### Test Item:

CE: Conducted emission, ME: Radiated emission (below 30MHz)

RE: Radiated emission (Above 30MHz)

FT: Frequency Tolerance

#### UL Apex Co., Ltd. Head Office EMC Lab.

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MF060b(14.06.06)