APPENDIX 2: 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-13	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2005/12/06 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MCC-51	Coaxial cable	UL Apex	-	RE	2006/03/11 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MCC-30	coaxial cable	ULApex	-	RE	2006/05/29 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	RE	2006/04/15 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	RE	2006/03/27 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2006/06/02 * 12
TR-07	Test Receiver	Rohde & Schwarz	ESCS30	RE	2005/09/14 * 12

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

Test Item:
RE: Radiated Emission

APPENDIX 3: Data of EMI test

Radiated Emission (FCC 15B Receiving)

DATA OF RADIATED EMISSION TEST

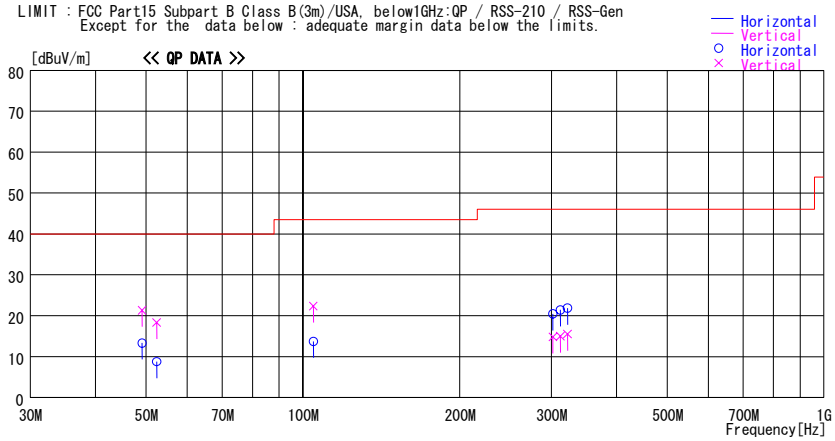
UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/07/11 16:18:12

Applicant : BRIDGESTONE Co.,Ltd.
Kind of EUT : HAND READER
Model No. : H211
Serial No. : 000013

Report No. : 26JE0237-HO
Power : DC 4.8V
Temp./ Humi. : 24 deg.C. / 59 %
Operator : Yasuyuki Fukui

Mode / Remarks : Receiving (Max:X-axis)

LIMIT : FCC Part15 Subpart B Class B(3m)/USA, below1GHz:QP / RSS-210 / RSS-Gen
Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
49.145	27.4	QP	10.8	-24.9	13.3	80	340	Hori.	40.0	26.7	
49.148	35.4	QP	10.8	-24.9	21.3	1	330	Vert.	40.0	18.7	
52.380	23.5	QP	10.0	-24.8	8.7	240	389	Hori.	40.0	31.3	
52.384	33.1	QP	10.0	-24.8	18.3	1	315	Vert.	40.0	21.7	
104.720	34.6	QP	11.6	-23.9	22.3	359	226	Vert.	43.5	21.2	
104.721	26.0	QP	11.6	-23.9	13.7	1	100	Hori.	43.5	29.8	
301.878	28.2	QP	14.5	-22.3	20.4	82	100	Hori.	46.0	25.6	
301.880	22.6	QP	14.5	-22.3	14.8	1	100	Vert.	46.0	31.2	
311.941	28.7	QP	14.9	-22.2	21.4	82	100	Hori.	46.0	24.6	
311.948	22.3	QP	14.9	-22.2	15.0	1	100	Vert.	46.0	31.0	
322.000	28.7	QP	15.3	-22.2	21.8	96	100	Hori.	46.0	24.2	
322.008	22.4	QP	15.3	-22.2	15.5	352	100	Vert.	46.0	30.5	

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)

Radiated Emission (FCC 15B Receiving)

DATA OF RADIATED EMISSION TEST

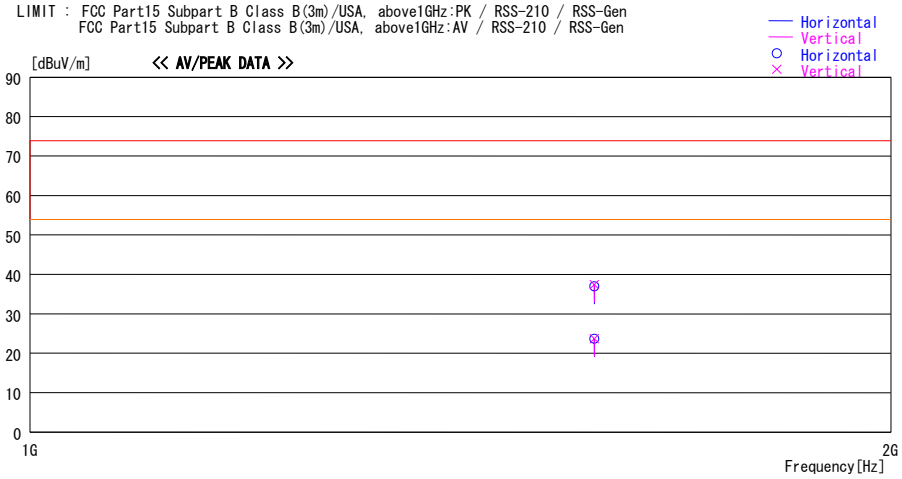
UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/07/11 17:30:22

Applicant : BRIDGESTONE Co.,Ltd.
Kind of EUT : HAND READER
Model No. : H211
Serial No. : 000013

Report No. : 26JE0237-HO
Power : DC 4.8V
Temp./ Humi. : 24 deg.C. / 59 %
Operator : Yasuyuki Fukui

Mode / Remarks : Receiving (Max:X-axis)

LIMIT : FCC Part15 Subpart B Class B(3m)/USA, above1GHz:PK / RSS-210 / RSS-Gen
FCC Part15 Subpart B Class B(3m)/USA, above1GHz:AV / RSS-210 / RSS-Gen



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]	
1575.000	44.0	PK	25.3	-31.9	37.4	0	100	Vert.	73.9	36.5	
1575.000	43.6	PK	25.3	-31.9	37.0	0	100	Hori.	73.9	36.9	
1575.000	30.3	AV	25.3	-31.9	23.7	0	100	Vert.	53.9	30.2	
1575.000	30.3	AV	25.3	-31.9	23.7	0	100	Hori.	53.9	30.2	

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)

Radiated Emission below 30MHz (Fundamental and Sprious Emission)

DATA OF MAGNETIC RADIATED EMISSION TEST

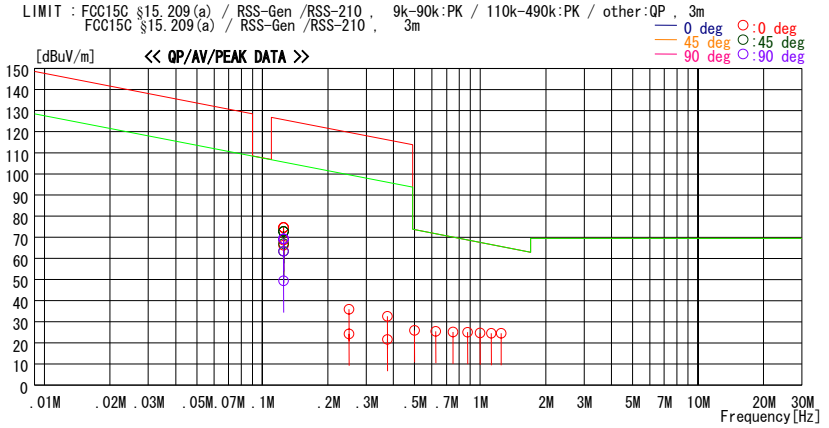
UL Apex Co.,LTD. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/07/11 11:29:14

Applicant : BRIDGESTONE Co.,Ltd.
Kind of EUT : HAND READER
Model No. : H211
Serial No. : 000013

Report No. : 26JE0237-HO
Power : DC 4.8V
Temp./Humi. : 24deg.C / 59%
Operator : Yasuyuki Fukui

Mode / Remarks: Transmitting 125kHz (Max-axis:X)

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 , 3m



Freq [MHz]	Reading [dBuV]	DET	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Antenna	Table [deg]	Comment
0.12500	87.3	PEAK	19.5	0.1	32.2	74.7	125.7	51.0	0deg	1	X-axis
0.12500	85.5	PEAK	19.5	0.1	32.2	72.9	125.7	52.8	45deg	327	X-axis
0.12500	81.8	PEAK	19.5	0.1	32.2	69.2	125.7	56.5	90deg	83	X-axis
0.12500	87.2	PEAK	19.5	0.1	32.2	74.6	125.7	51.1	0deg	268	Y-axis
0.12500	85.4	PEAK	19.5	0.1	32.2	72.8	125.7	52.9	45deg	256	Y-axis
0.12500	81.8	PEAK	19.5	0.1	32.2	69.2	125.7	56.5	90deg	195	Y-axis
0.12500	78.8	PEAK	19.5	0.1	32.2	66.2	125.7	59.5	0deg	1	Z-axis
0.12500	76.0	PEAK	19.5	0.1	32.2	63.4	125.7	62.3	45deg	352	Z-axis
0.12500	62.0	PEAK	19.5	0.1	32.2	49.4	125.7	76.3	90deg	270	Z-axis
0.12500	81.3	AV	19.5	0.1	32.2	68.7	105.7	37.0	0deg	1	X-axis
0.12500	79.6	AV	19.5	0.1	32.2	67.0	105.7	38.7	45deg	327	X-axis
0.12500	76.0	AV	19.5	0.1	32.2	63.4	105.7	42.3	90deg	83	X-axis
0.25000	36.9	AV	19.5	0.1	32.2	24.3	99.6	75.3	0deg	1	
0.25000	48.5	PEAK	19.5	0.1	32.2	35.9	119.6	83.7	0deg	1	
0.37500	34.3	AV	19.5	0.1	32.2	21.7	96.1	74.4	0deg	1	
0.37500	45.2	PEAK	19.5	0.1	32.2	32.6	116.1	83.5	0deg	1	
0.50000	38.6	QP	19.5	0.1	32.2	26.0	73.6	47.6	0deg	1	
0.62500	38.0	QP	19.5	0.2	32.2	25.5	71.7	46.2	0deg	1	
0.75000	37.6	QP	19.5	0.2	32.2	25.1	70.1	45.0	0deg	1	
0.87500	37.5	QP	19.5	0.2	32.2	25.0	68.8	43.8	0deg	1	
1.00000	37.2	QP	19.5	0.2	32.2	24.7	67.6	42.9	0deg	1	
1.12500	37.0	QP	19.5	0.2	32.2	24.5	66.6	42.1	0deg	1	
1.25000	37.0	QP	19.6	0.2	32.2	24.6	65.7	41.1	0deg	1	

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

Page:

Radiated Emission above 30MHz (Sprious Emission)

DATA OF RADIATED EMISSION TEST

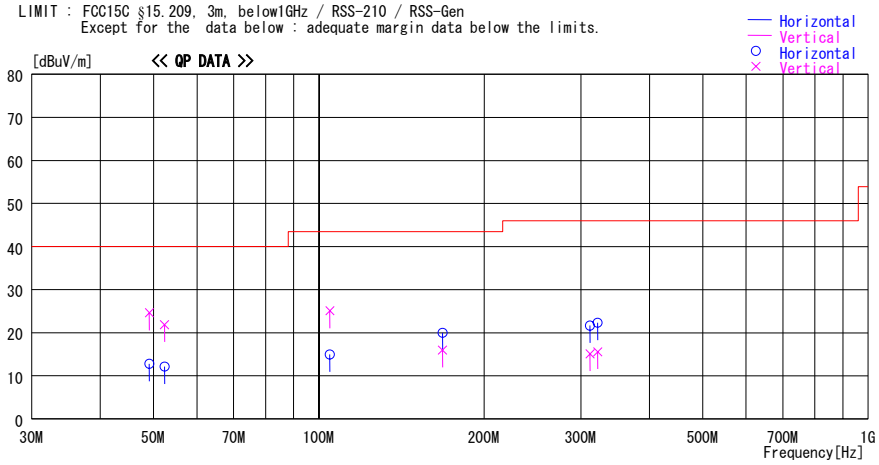
UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/07/11 15:18:50

Applicant : BRIDGESTONE Co.,Ltd.
Kind of EUT : HAND READER
Model No. : H211
Serial No. : 000013

Report No. : 26JE0237-HO
Power : DC 4.8V
Temp. / Humi. : 24 deg.C. / 59 %
Operator : Yasuyuki Fukui

Mode / Remarks : Transmitting 125kHz (Max:X-axis)

LIMIT : FCC15C §15.209, 3m, below1GHz / RSS-210 / RSS-Gen
Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
49.146	38.7	QP	10.8	-24.9	24.6	359	279	Vert.	40.0	15.4	
49.147	26.9	QP	10.8	-24.9	12.8	303	330	Hori.	40.0	27.2	
52.395	36.7	QP	10.0	-24.8	21.9	29	263	Vert.	40.0	18.1	
52.396	26.9	QP	10.0	-24.8	12.1	1	220	Hori.	40.0	27.9	
104.709	37.4	QP	11.6	-23.9	25.1	110	100	Vert.	43.5	18.4	
104.733	27.3	QP	11.6	-23.9	15.0	359	100	Hori.	43.5	28.5	
168.003	27.1	QP	16.1	-23.2	20.0	263	300	Hori.	43.5	23.5	
168.004	23.1	QP	16.1	-23.2	16.0	1	280	Vert.	43.5	27.5	
311.936	22.4	QP	14.9	-22.2	15.1	330	100	Vert.	46.0	30.9	
311.936	29.0	QP	14.9	-22.2	21.7	89	100	Hori.	46.0	24.3	
321.995	29.2	QP	15.3	-22.2	22.3	290	100	Hori.	46.0	23.7	
322.015	22.5	QP	15.3	-22.2	15.6	351	100	Vert.	46.0	30.4	

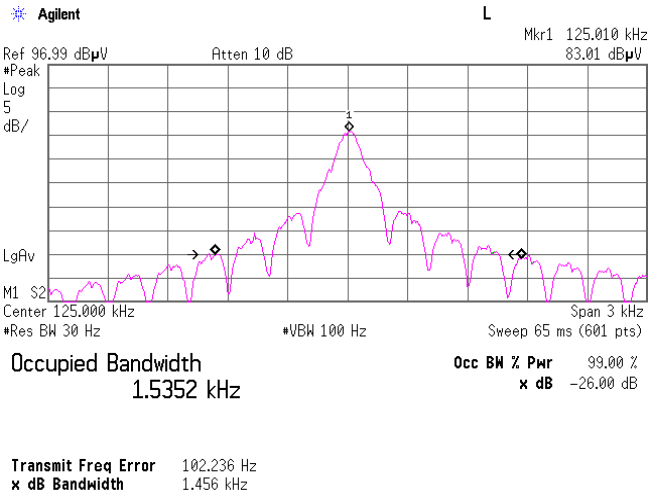
CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

-26dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Semi Anechoic Chamber

COMPANY	:	BRIDGESTONE Co., Ltd.	REPORT NO	:	26JE0237-HO
EQUIPMENT	:	HAND READER	REGULATION	:	Reference data
MODEL	:	H211	TEST DISTANCE	:	3m
S/ N	:	000013	DATE	:	07/11/2006
POWER	:	DC 4.8V	TEMPERATURE	:	24 deg.C
MODE	:	Tx 125kHz	HUMIDITY	:	59 %
	:	Ant-Max	Engineer	:	Yasuyuki Fukui

	FREQ [kHz]	-26dB Bandwidth [kHz]
	125.0	1.456



99% Occupied Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Semi Anechoic Chamber

COMPANY	:	BRIDGESTONE Co.,Ltd.	REPORT NO	:	26JE0237-HO
EQUIPMENT	:	HAND READER	REGULATION	:	RSS-Gen 4.4.1
MODEL	:	H211	TEST DISTANCE	:	3m
S/ N	:	000013	DATE	:	07/11/2006
POWER	:	DC 4.8V	TEMPERATURE	:	24 deg.C
MODE	:	Tx 125kHz	HUMIDITY	:	59 %
	:	Ant-Max	Engineer	:	Yasuyuki Fukui

	FREQ [kHz]	99% Occupid Bandwidth [kHz]
	125.0	1.535