

APPENDIX 2: Data of EMI test

Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY	: The Yokohama Rubber Co., Ltd.	REPORT NO	: 27AE0132-HO
EQUIPMENT	: Air pressure transmitter	REGULATION	: Fcc Part15 Subpart C 231(e) / 205 / 209
MODEL	: FW01TR	TEST DISTANCE	: 3m
S/N	: FW01-06100126	DATE	: 08/24/2006
POWER	: DC3.0V	TEMPERATURE	: 23°C
Mode	: Continuous Transmitting	HUMIDITY	: 55%
Axis	: Hor.: X-axis , Ver.: Y-axis	ENGINEER	: Makoto Kosaka

(below 1GHz) **PK DETECT** Result = Reading (T/R: IF BW 120kHz) + Duty Factor

No.	FREQ [MHz]	T/R READING HOR VER [dBuV]		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT HOR VER [dBuV/m]		Limit [dBuV/m]	MARGIN HOR VER [dB]	
1	315.01	65.4	62.1	14.7	27.2	8.6	-16.5	45.0	41.7	67.6	22.6	25.9
2	630.02	28.9	29.0	19.6	28.7	9.5	-16.5	12.8	12.9	47.6	34.8	34.7
3	945.03	27.5	27.2	22.2	27.7	10.5	-16.5	16.0	15.7	47.6	31.6	31.9

(above 1GHz) **PK DETECT** Result = Reading (S/A: RBW: 1MHz , VBW: 1MHz) + Duty Factor

No.	FREQ [MHz]	S/A READING HOR VER [dBuV]		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT HOR VER [dBuV/m]		Limit [dBuV/m]	MARGIN HOR VER [dB]	
4	1260.07	51.6	56.0	23.5	33.4	2.6	-16.5	27.8	32.2	54.0	26.2	21.8
5	1575.09	48.2	49.4	25.3	32.9	2.8	-16.5	26.9	28.1	54.0	27.1	25.9
6	1890.11	43.4	43.6	29.9	32.4	3.0	-16.5	27.4	27.6	54.0	26.6	26.4
7	2205.12	43.4	42.8	30.9	32.4	3.2	-16.5	28.6	28.0	54.0	25.4	26.0
8	2520.14	43.3	43.7	30.5	32.4	3.5	-16.5	28.4	28.8	54.0	25.6	25.2
9	2835.16	42.3	42.3	31.4	32.2	3.6	-16.5	28.6	28.6	54.0	25.4	25.4
10	3149.92	42.9	42.8	31.7	32.1	3.8	-16.5	29.8	29.7	54.0	24.2	24.3

REMARKS

ANTENNA TYPE:30-300MHz Biconical / 300-1000MHz Logperiodic / 1-3.2GHz Horn

CALCULATION RESULT=Reading + ANT Factor - Amp Gain + LOSS (Cable+ ATTEN.)+Duty factor

Duty cycle Factor Measurement : The duty cycle factor = $20 \log (\text{On time [sec.] / 100 [ms]})$: -16.5 dB

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z, and the position that has the maximum noise was determined.

With the position, the noise levels of all the frequencies were measured.

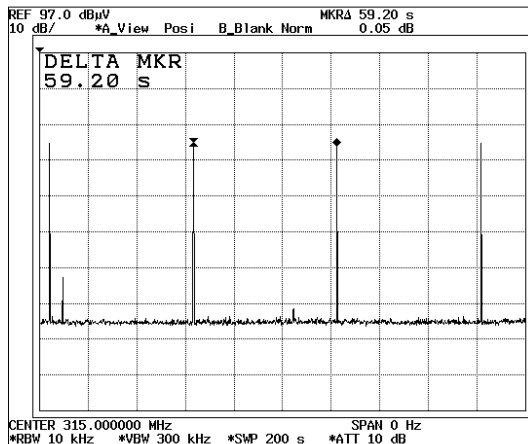
Duty Factor Calculation and Transmitting time and interval

Normal Mode

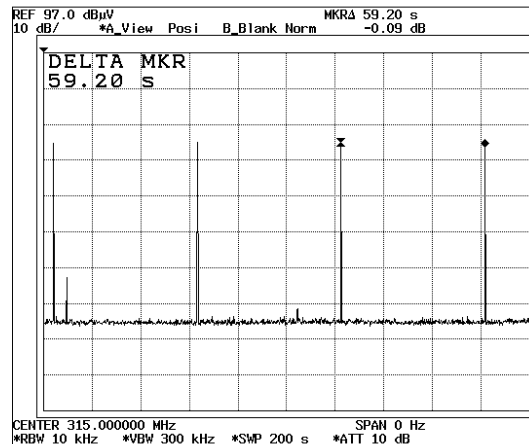
Interval of the transmission : 59.2sec

Duration of the transmission : 36.4ms

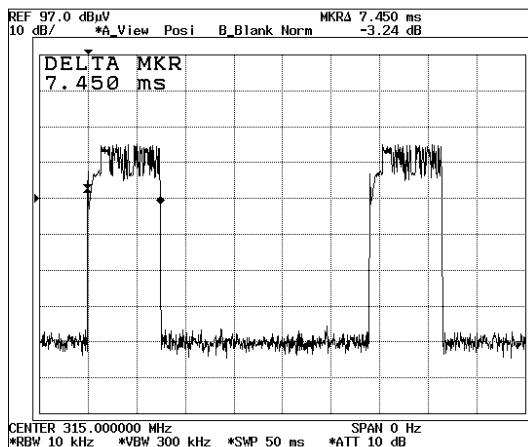
Interval 1



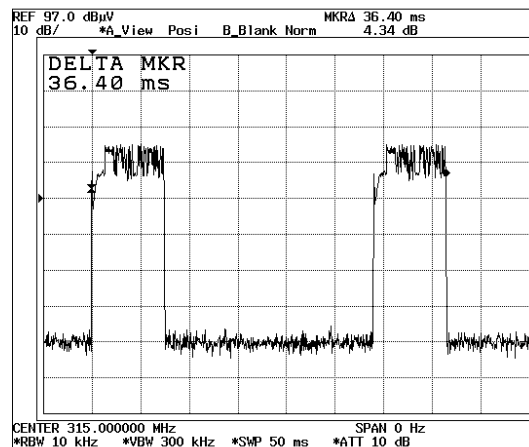
Interval 2



One pulse train 1(duty 1)



One pulse train 2(duty 2)



Duty Factor Calculation

Therefore, Duty Factor is $20\log((7.45 \times 2)\text{ms}/100\text{ms}) = -16.5\text{dB}$

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(14.06.06)

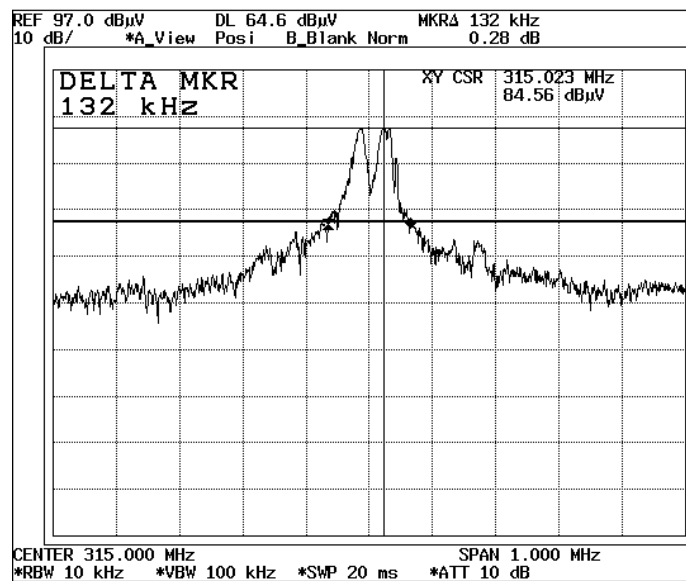
-20dB Bandwidth

UL-Apex
Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: The Yokohama Rubber Co., Ltd.	Regulation	: Fcc Part15 Subpart C 15.231(e)
Equipment	: Air pressure transmitter	Test Distance	: 3m
Model	: FW01TR	Date	: 08/24/2006
S/N	: FW01-06100126	Temperature	: 23 deg.C.
Power	: DC3.0V	Humidity	: 55 %
Mode	: Continuous Transmitting	Engineer	: Makoto Kosaka

Bandwidth Limit : Fundamental Frequency 315 MHz X 0.25% = 787.5 kHz

-20dB Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
132.00	787.50	Pass



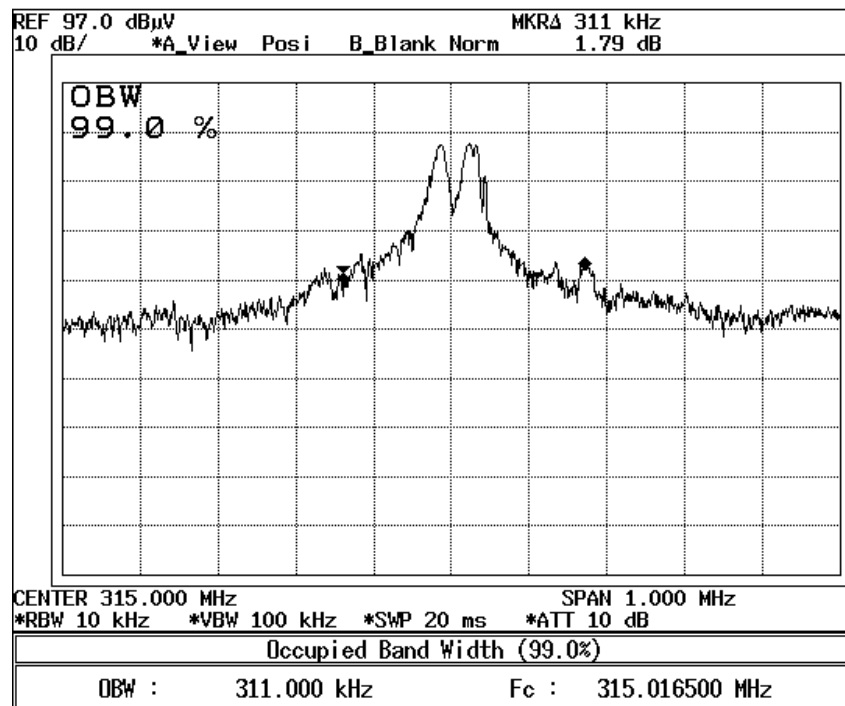
99% Occupied Bandwidth

UL-Apex

Head Office EMC Lab. No.2 Semi Anechoic Chamber

Company	: The Yokohama Rubber Co., Ltd.	Regulation	: RSS-210 A1.1.3
Equipment	: Air pressure transmitter	Test Distance	: 3m
Model	: FW01TR	Date	: 08/24/2006
S/N	: FW01-06100126	Temperature	: 23 deg.C.
Power	: DC3.0V	Humidity	: 55 %
Mode	: Continuous Transmitting	Engineer	: Makoto Kosaka

99% Occupied Bandwidth Result: 311 kHz



UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(14.06.06)

APPENDIX 3:Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/04/10 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2006/02/23 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MCC-16	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MCC-47	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2005/09/07 * 12
MRENT-39	Spectrum Analyzer	Advantest	R3273	RE	2006/07/25 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	RE	2006/03/04 * 12
MLPA-03	Loop Antenna	UL-Apex	-	RE	Pre Check
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE	2004/11/25 * 24
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-

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

Test Item:

RE: Radiated emission

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(14.06.06)