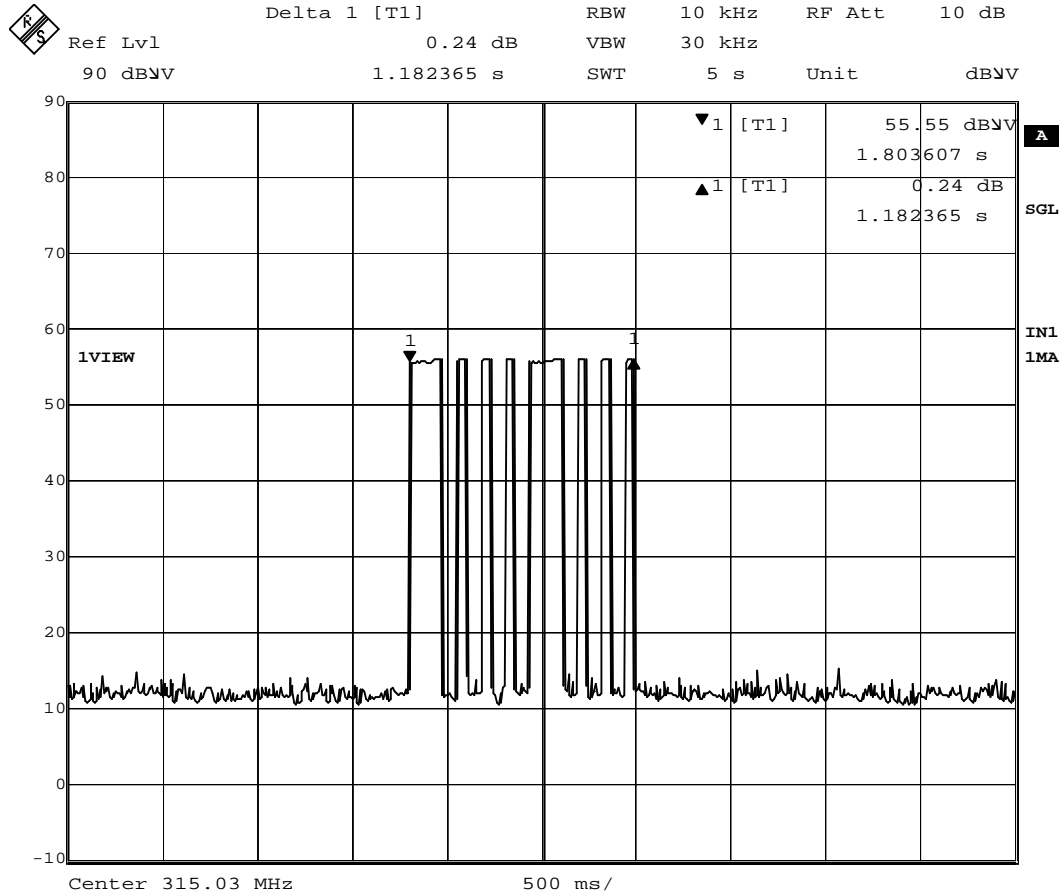


# Automatically deactivate: FCC 15.231(a)(1)

COMPANY : Mitsubishi Cable Industries, LTD.  
EQUIPMENT : Remote Control Unit  
MODEL NUMBER: PZ113-00121  
SERIAL NUMBER: UPR0002  
POWER : DC12V

UL Japan, Inc. Yamakita No.1 Anechoic Chamber  
REPORT NO : 28KE0028-YK-A  
REGULATION : Fcc Part15SubpartC 231(a)(1)  
DATE : 2008/07/23  
TEMP./HUMI : 23°C/67%  
TEST MODE : Transmitting (315MHz)  
ENGINEER : Tatsuya Arai

Time of Transmitting	Limit
[sec]	[sec]
1.182	5.00



Date: 23.JUL.2008 15:29:07

## Date of carrier emissions

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 28KE0028-YK-A

Company : Mitsubishi Cable Industries, LTD.

Equipment : Remote Control Unit

Model : PZ113-00121

Sample No. : UPR0001

Power : DC 12V

Mode : Transmitting (315MHz)

FCC ID :

Regulation : FCC Part15C Section 15.231(b)

Test Distance : 3m

Date : 2008/7/23

Temperature : 23deg.C

Humidity : 67%

ENGINEER : Tatsuya Arai

**Below 1GHz PK DETECT(Test Receiver: BW 120kHz)**

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	RESULT		LIMIT [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
1	315.00	57.7	54.0	14.9	27.3	3.9	6.0	55.2	51.5	75.6	20.4	24.1

# DATA OF RADIATION TEST

UL Japan, Inc.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 28KE0028-YK-A

Applicant : Mitsubishi Cable Industries, LTD.  
Kind of Equipment : Remote Control Unit  
Model No. : PZ113-00121  
Serial No. : UPR0001  
Power : DC12V  
Mode : Transmitting (315MHz)  
Remarks : PK  
Date : 7/23/2008  
Test Distance : 3 m  
Temperature : 23 °C  
Humidity : 67 %  
Regulation : FCC Part15C § 15.209

Engineer : Tatsuya Arai

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	629.89	BB	29.8	33.0	20.2	27.2	5.8	6.0	34.6	37.8	46.0	11.4	8.2
2.	945.00	BB	29.7	29.0	22.7	26.7	7.3	6.1	39.1	38.4	46.0	6.9	7.6

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

■ ANTENNA: KBA-03 (BBA9106) 30-299.99MHz / KLA-03 (USLP9143) 300-1000MHz

■ CABLE: KCC-30/31/32/34 ■ PREAMP: KAF-08 (MH648A) ■ EMI RECEIVER: KTR-01 (ES140)

# DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 28KE0028-YK-A

Company : Mitsubishi Cable Industries, LTD.

Equipment : Remote Control Unit

Model : PZ113-00121

Sample No. : UPR0001

Power : DC12V

Mode : Transmitting (315MHz)

Regulation : FCC Part15C Section 15.205, 209 and 231 (b)

Test Distance : 3m

Date : 2008/7/24

Temperature : 24deg.C

Humidity : 67%

ENGINEER : Tatsuya Arai

## PK DETECT

### Inside Restricted Bands

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1575.00	57.3	56.0	25.8	37.5	4.0	0.0	-	49.6	48.3	74.0	24.4	25.7
2	2205.00	55.9	53.4	28.9	37.2	4.8	0.0	-	52.4	49.9	74.0	21.6	24.1
3	2835.00	52.7	51.1	29.4	37.2	5.4	0.0	-	50.3	48.7	74.0	23.7	25.3

### Outside Restricted Bands

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1260.00	53.1	51.6	24.2	38.2	3.6	0.0	-	42.7	41.2	75.6	32.9	34.4
2	1890.00	62.5	58.6	28.4	37.3	4.4	0.0	-	58.0	54.1	75.6	17.6	21.5
3	2520.00	56.9	51.5	28.4	37.2	5.1	0.0	-	53.2	47.8	75.6	22.4	27.8
4	3150.00	47.7	47.1	30.0	37.2	5.7	0.0	-	46.2	45.6	75.6	29.4	30.0

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT

# DATA OF RADIATION TEST (Above 1GHz)

UL Japan, Inc.

YAMAKITA NO.1 ANECHOIC CHAMBER

Report No. : 28KE0028-YK-A

Company : Mitsubishi Cable Industries, LTD.

Equipment : Remote Control Unit

Model : PZ113-00121

Sample No. : UPR0001

Power : DC12V

Mode : Transmitting (315MHz)

Regulation : FCC Part15C Section 15.205, 209 and 231 (b)

Test Distance : 3m

Date : 2008/7/24

Temperature : 24deg.C

Humidity : 67%

ENGINEER : Tatsuya Arai

## AV calculation value

### Inside Restricted Bands

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1575.00	57.3	56.0	25.8	37.5	4.0	0.0	-6.0	43.6	42.3	54.0	10.4	11.7
2	2205.00	55.9	53.4	28.9	37.2	4.8	0.0	-6.0	46.4	43.9	54.0	7.6	10.1
3	2835.00	52.7	51.1	29.4	37.2	5.4	0.0	-6.0	44.3	42.7	54.0	9.7	11.3

### Outside Restricted Bands

No.	FREQ [MHz]	READING		ANT Factor [dB]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN [dB]	Duty Factor	RESULT		LIMIT [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]						HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1260.00	53.1	51.6	24.2	38.2	3.6	0.0	-6.0	36.7	35.2	55.6	18.9	20.4
2	1890.00	62.5	58.6	28.4	37.3	4.4	0.0	-6.0	52.0	48.1	55.6	3.6	7.5
3	2520.00	56.9	51.5	28.4	37.2	5.1	0.0	-6.0	47.2	41.8	55.6	8.4	13.8
4	3150.00	47.7	47.1	30.0	37.2	5.7	0.0	-6.0	40.2	39.6	55.6	15.4	16.0

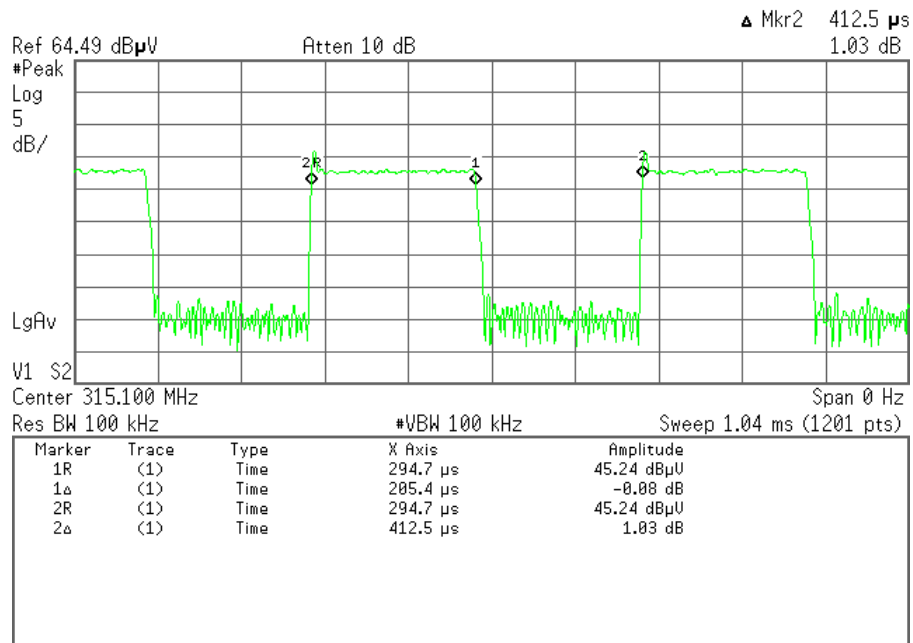
Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + ATT + Duty Factor

Duty Factor calculation:  $20 \cdot \log(205.4[\mu s]/412.5[\mu s]) = -6.06[\text{dB}]$  See Duty Cycle Data

## Duty Cycle

COMPANY	: Mitsubishi Cable Industries, LTD.	REPORT NO	: 28KE0028-YK-A
EQUIPMENT	: Remote Control Unit	DATE	: 2008/7/23
MODEL NUMBER	: PZ113-00121	TEMP./HUMI	: 23deg.C./67%
SERIAL NUMBER	: UPR0002	TEST MODE	: Transmitting
POWER	: DC12V	ENGINEER	: Tatsuya Arai



**Duty:  $20\log_{10}(\text{ON time} / \text{Cicle})$**   
**Duty:  $20\log_{10}(205.4\mu\text{s} / 412.5\mu\text{s}) = -6.06$**

\*) The EUT employs FSK modulation and the used frequency is  $\pm 37.5\text{kHz}$  from the intermediate frequency of 315MHz.  
 This duty cycle wave shows  $+37.5\text{kHz}$  from the intermediate frequency of 315MHz.

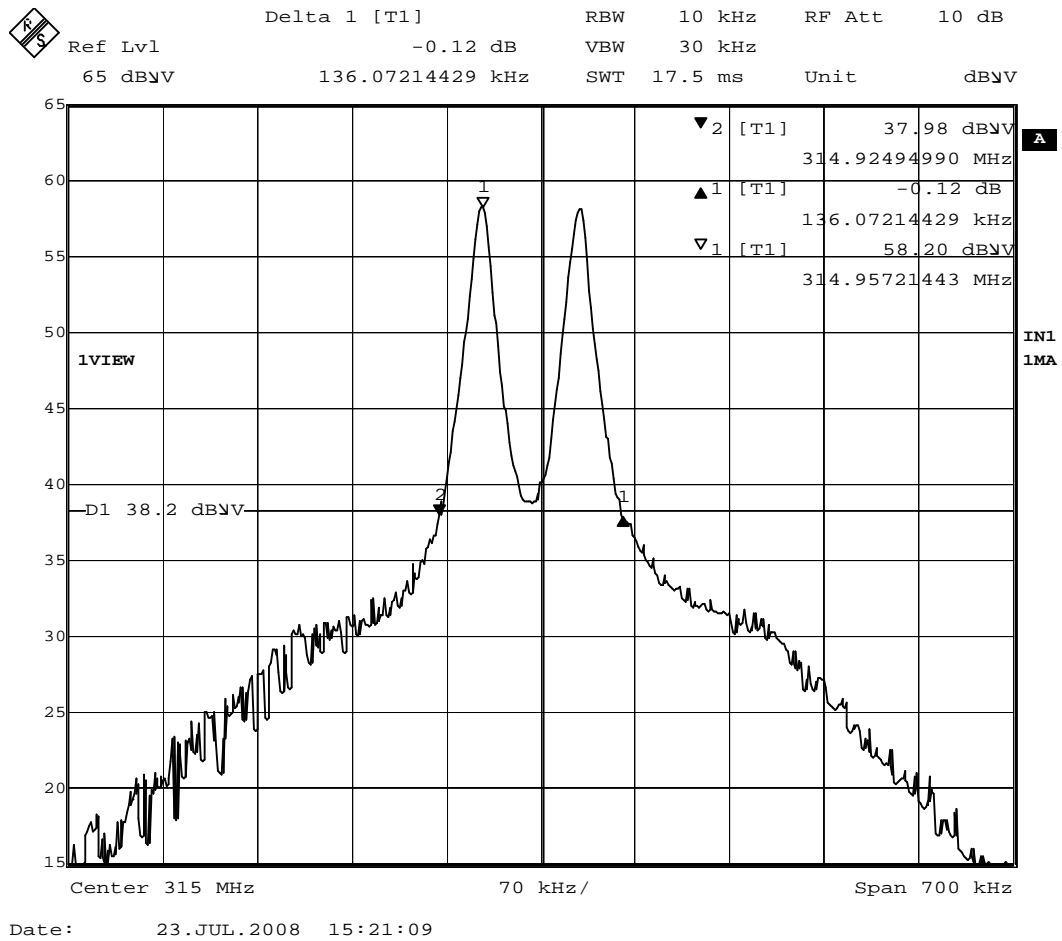
# **-20dB Bandwidth: FCC 15.231(c)**

**COMPANY** : Mitsubishi Cable Industries, LTD.  
**EQUIPMENT** : Remote Control Unit  
**MODEL NUMBER**: PZ113-00121  
**SERIAL NUMBER**: UPR0002  
**POWER** : DC12V

**UL Japan, Inc. Yamakita No.1 Anechoic Chamber**  
**REPORT NO** : 28KE0028-YK-A  
**REGULATION** : Fcc Part15SubpartC 231(c)  
**DATE** : 2008/07/23  
**TEMP./HUMI** : 23°C/67%  
**TEST MODE** : Transmitting (315.00MHz)  
**ENGINEER** : Tatsuya Arai

Bandwidth Limit : fundamental Frequency 315.00MHz X 0.25%= 787.500 kHz

-20dB Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
136.072	787.500	Pass

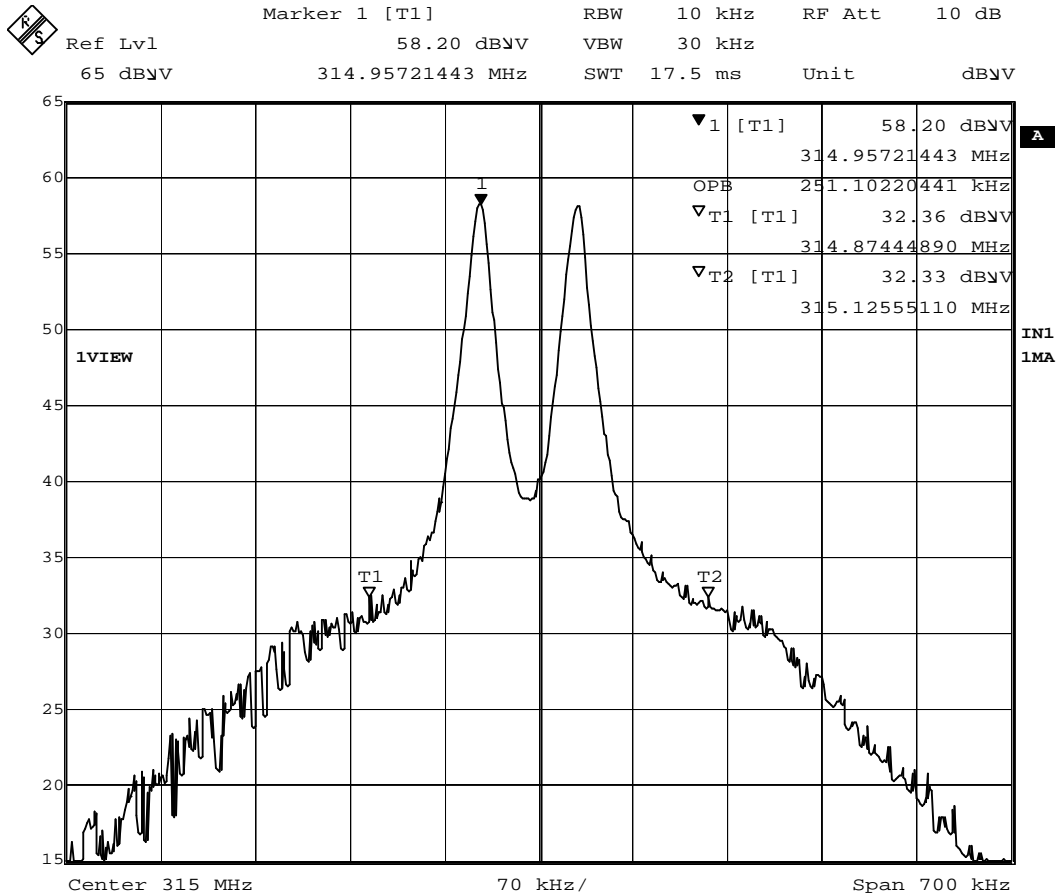


# Occupied Bandwidth(99%)

COMPANY : Mitsubishi Cable Industries, LTD.  
EQUIPMENT : Remote Control Unit  
MODEL NUMBER: PZ113-00121  
SERIAL NUMBER: UPR0002  
POWER : DC12V

UL Japan, Inc. Yamakita No.1 Anechoic Chamber  
REPORT NO : 28KE0028-YK-A  
DATE : 2008/07/23  
TEMP./HUMI : 23°C/67%  
TEST MODE : Transmitting (315.00MHz)  
ENGINEER : Tatsuaya Arai

99% Occupied Bandwidth
[kHz]
251.10kHz



Date: 23.JUL.2008 15:18:15



### APPENDIX 3 Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
YA-RE	Radiated emission(software)	UL Japan	RE(Ver.1.5)	RE	-
KAEC-01	Anechoic Chamber	JSE	Semi 3m	RE	2007/08/26 * 12
KAF-08	Pre Amplifier	Anritsu	MH648A	RE	2008/06/03 * 12
KAT6-01	Attenuator	INMET	18N-6dB	RE	2008/03/17 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/12/27 * 12
KCC-30/31/32 /34/KRM-03	Coaxial Cable/RF Relay Matrix	Fujikura/Suhner/TSJ	5D-2W/S04272B/RFM- E421	RE	2008/05/12 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2007/12/27 * 12
KOS-02	Humidity Indicator	Custom	CTH-190	RE	2008/07/07 * 12
KSA-09	Spectrum Analyzer	Advantest	R3265	RE	2008/07/07 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE, BW, AD	2008/04/18 * 12
KJM-07	Measure	KOMELON	KMC-36	RE	-
KSCA-01	Search coil	TSJ	SC01	BW, AD	Pre Check
KCC-A7	Coaxial Cable	Fujikura	5D-2W	BW, AD	2007/11/01 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	RE	2008/04/11 * 12
KCC-D18/D19	Coaxial cable	Suhner	SCOFLEX104	RE	2008/07/07 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2007/08/14 * 12

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

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

#### Test Item :

RE: Radiated Emission  
AD: Automatically disactivate  
BW: Bandwidth