

Automatically deactivate: FCC 15.231(a)(3)

UL Japan, Inc. SHONAN EMC Lab. No.3 Semi-Anechoic Chamber

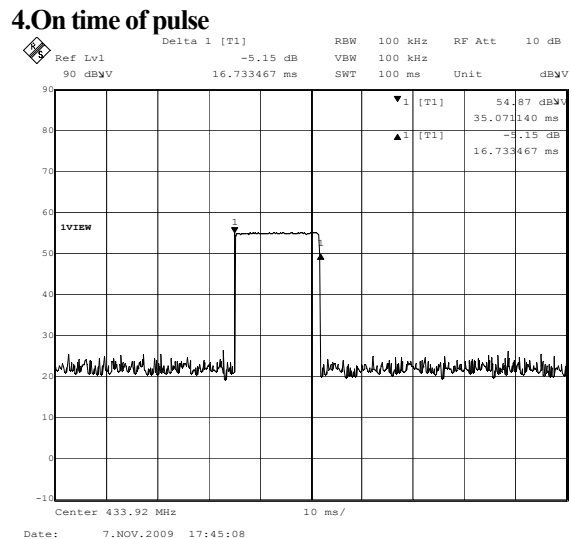
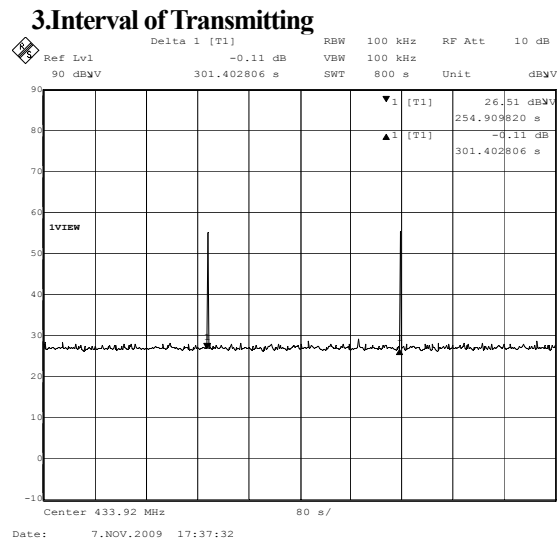
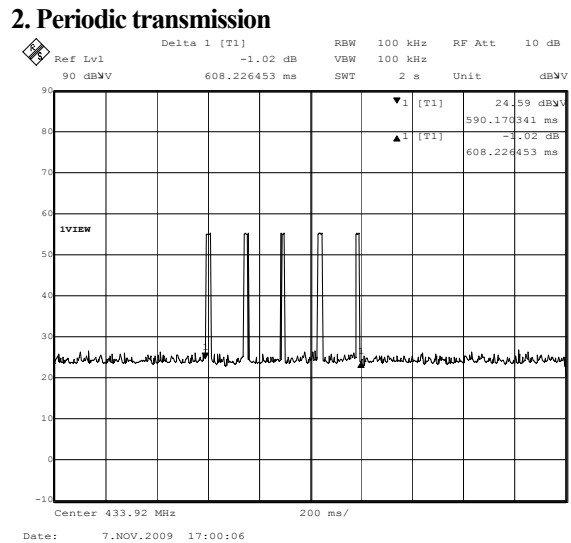
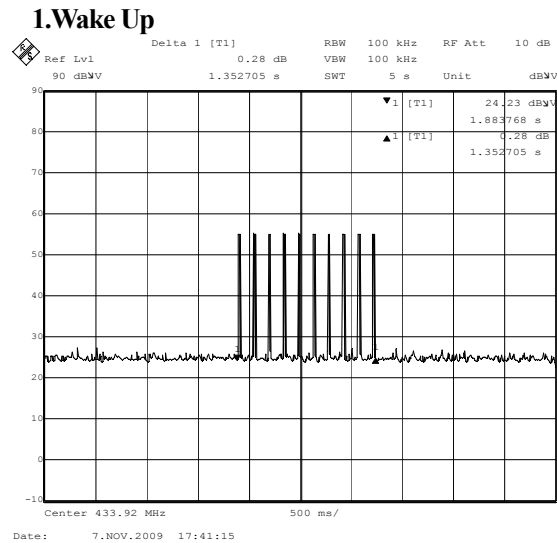
COMPANY	: BRIDGESTONE CORPORATION	REPORT NO	: 30CE0195-SH-03 -A
EQUIPMENT	: TPMS(Tire Pressure Monitoring System)	REGULATION	: Fcc Part15SubpartC 231(a)(3)
MODEL NUMBER	: B672 (SENSOR)	DATE	: 2009/11/07
SERIAL NUMBER	: 000784	TEMP./HUMI	: 26°C/37%
POWER	: DC3V(Battery)	TEST MODE	: Transmitting (433.92MHz)
		ENGINEER	: Tatsuya Arai

Operation in FCC15.231(a)(3) (Limit: total ≤ 2 sec per hour)

Total duration of transmissions at Wake UP: $16.7\text{msec} \times 10 = 167\text{msec}$

Total duration of transmissions per time at Periodic transmission: $16.7\text{msec} \times 5 = 83.5\text{msec}$

Total transmission times per hour: $167\text{msec} + (83.5\text{msec} \times 10) = 1002\text{msec} < 2\text{sec}$



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

UL Japan, Inc.
SHONAN EMC Lab. No.3 Semi-Anechoic Chamber
Report No. : 30CE0195-SH-03-A

Company : BRIDGESTONE CORPORATION	Regulation : FCC Part15C Section 15.231(e), 15.209
Equipment : TPMS(Tire Pressure Monitoring System)	Test Distance : 3m
Model : B672 (SENSOR)	Date : 2009/11/7
Sample No. : 000784	Temperature : 26deg.C
Power : DC 3.0V (Battery)	Humidity : 37%
Mode : Transmitting (433.92MHz)	

ENGINEER : Tatsuya Arai

PK with Duty factor

Frequency [MHz]	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark
	Hor	Ver					Hor	Ver		Hor	Ver	
433.920	70.2	69.9	16.5	8.8	31.9	-15.5	48.1	47.8	72.8	24.7	25.0	Carrier
867.840	39.2	41.4	21.5	10.2	31.2	-15.5	24.2	26.4	52.8	28.6	26.4	Outside
1301.760	66.7	66.0	24.5	4.0	39.6	-15.5	40.1	39.4	53.9	13.8	14.5	Inside
1735.680	69.9	69.7	25.6	3.7	39.7	-15.5	44.0	43.8	53.9	9.9	10.1	Outside
2169.600	55.2	57.2	26.9	4.0	39.9	-15.5	30.7	32.7	53.9	23.2	21.2	Outside
2603.520	59.6	58.6	28.1	4.7	39.9	-15.5	37.0	36.0	53.9	16.9	17.9	Outside
3037.440	52.1	52.5	28.5	5.0	40.2	-15.5	29.9	30.3	53.9	24.0	23.6	Outside
3471.360	48.4	48.6	29.0	5.2	40.4	-15.5	26.7	26.9	53.9	27.2	27.0	Outside
3905.280	46.4	47.3	29.0	5.2	40.4	-15.5	24.7	25.6	53.9	29.2	28.3	Inside
4339.200	48.3	48.2	29.0	5.5	40.4	-15.5	26.9	26.8	53.9	27.0	27.1	Inside

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier) + Duty factor (Refer to Duty factor data sheet)

PK

Frequency [MHz]	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark Inside or Outside of Restricted Bands
	Hor	Ver					Hor	Ver		Hor	Ver	
1301.760	66.7	66.0	24.5	4.0	39.6	-	55.6	54.9	73.9	18.3	19.0	Inside
1735.680	69.9	69.7	25.6	3.7	39.7	-	59.5	59.3	73.9	14.4	14.6	Outside
2169.600	55.2	57.2	26.9	4.0	39.9	-	46.2	48.2	73.9	27.7	25.7	Outside
2603.520	59.6	58.6	28.1	4.7	39.9	-	52.5	51.5	73.9	21.4	22.4	Outside
3037.440	52.1	52.5	28.5	5.0	40.2	-	45.4	45.8	73.9	28.5	28.1	Outside
3471.360	48.4	48.6	29.0	5.2	40.4	-	42.2	42.4	73.9	31.7	31.5	Outside
3905.280	46.4	47.3	29.0	5.5	40.4	-	40.5	41.4	73.9	33.4	32.5	Inside
4339.200	48.3	48.2	29.5	5.5	40.0	-	43.3	43.2	73.9	30.6	30.7	Inside

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier)

REMARKS

ANTENNA TYPE: 30-300MHz Biconical / 300-1000MHz Logperiodic / 1-4.5GHz DRG Horn

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

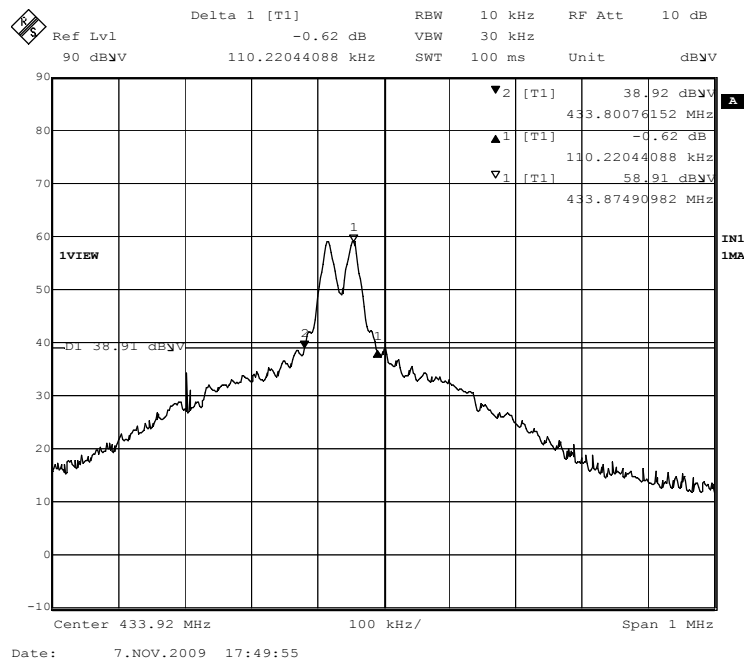
-20dB Bandwidth: FCC 15.231(c)

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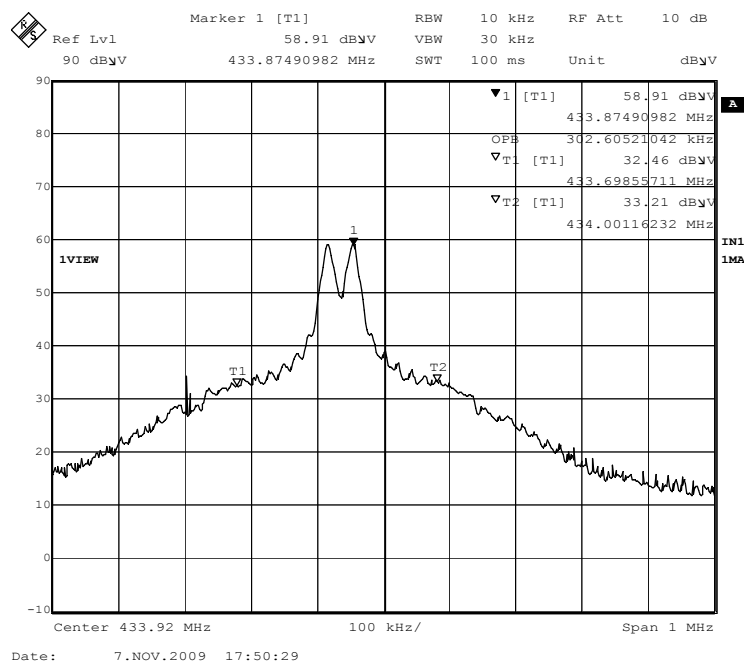
COMPANY	: BRIDGESTONE CORPORATION	REPORT NO	: 30CE0195-SH-03-A
EQUIPMENT	: TPMS(Tire Pressure Monitoring System)	REGULATION	: Fcc Part15SubpartC 231(c)
MODEL NUMBER	: B672 (SENSOR)	DATE	: 2009/11/07
SERIAL NUMBER	: 000784	TEMP./HUMI	: 26°C/37%
POWER	: DC3V(Battery)	TEST MODE	: Transmitting (433.92MHz)
		ENGINEER	: Tatsuya Arai

Bandwidth Limit : fundamental Frequency 433.92 X 0.25%= 1084.80 kHz

-20dB Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
110.22	1084.80	Pass



99% Occupied Bandwidth
[kHz]
302.61kHz



Duty Cycle (Fundamental)

UL Japan, Inc. SHONAN EMC Lab. No.3 Semi-Anechoic Chamber

COMPANY	: BRIDGESTONE CORPORATION	REPORT NO	: 30CE0195-SH-03
EQUIPMENT	: TPMS(Tire Pressure Monitoring System)	REGULATION	: Fcc Part15SubpartC 231(b) / 35(c)
MODEL NUMBER	: B672 (SENSOR)	DATE	: 2009/11/07
SERIAL NUMBER	: 000784	TEMP./HUMI	: 26°C/37%
POWER	: DC3V(Battery)	TEST MODE	: Transmitting (433.92MHz)
		ENGINEER	: Tatsuya Arai

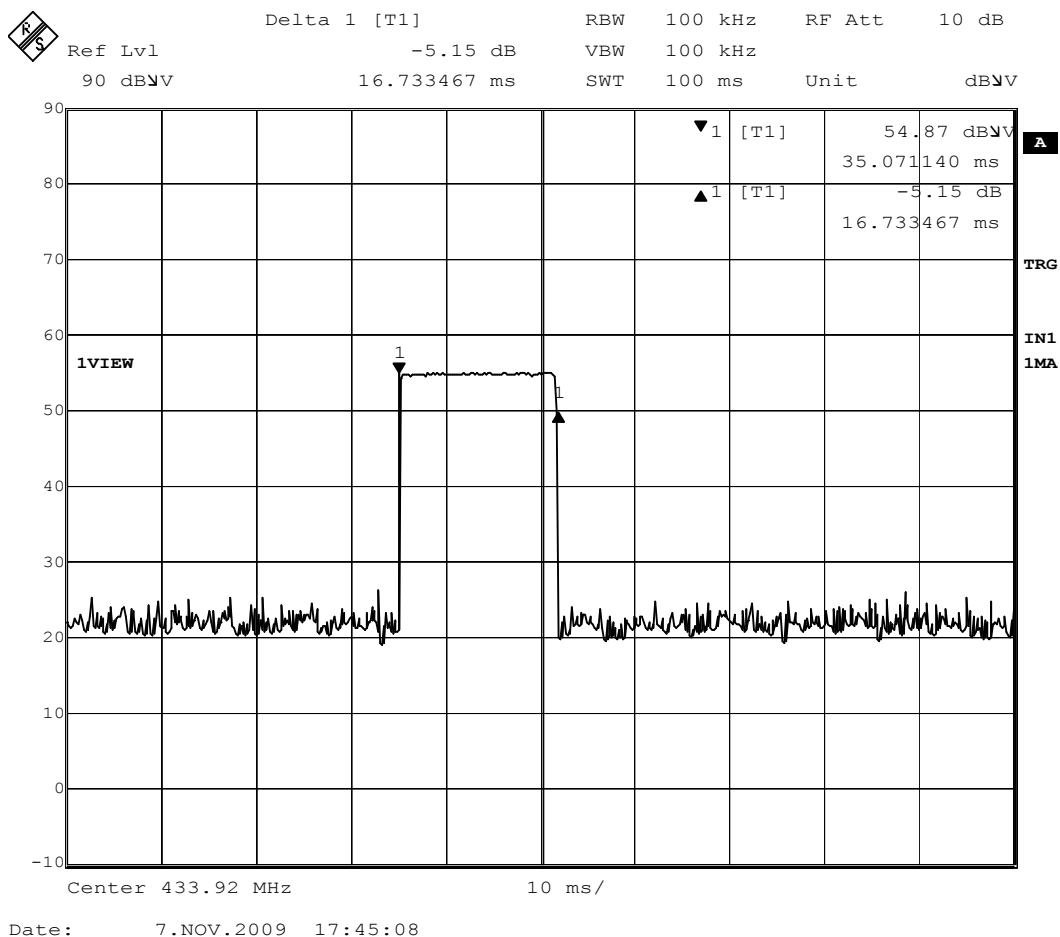
Times	ON time (One pulse) [msec]	ON time (in 100ms) [msec]
1	16.733	16.733

*1) ON time (in 100msec) = Times * On time (One pulse)

*2) The train of pulse was exceeding 100msec, and that sampled 100msec was the worst against the pulse train.

ON time [msec]	Cycle [msec]	Duty (On time / Cycle)	Duty [dB]
16.733	100.00	0.167	-15.5

*3) Duty = 20log (On time / Cycle)



APPENDIX 3 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2009/03/26 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2009/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2009/05/27 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	RE	2009/03/11 * 12
SFL-01	Highpass Filter	MICRO-TRONICS	HPM50115	001	RE	2009/03/25 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2009/08/23 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2009/02/04 * 12
STR-03	Test Receiver	Rohde & Schwarz	ES140	100054/040	RE,AD,BW	2009/04/08 * 12
SJM-03	Measure	KOMELON	KMC-36	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV	1	RE	-
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2009/02/13 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2009/02/13 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2009/03/20 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2009/04/06 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2009/03/20 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2009/03/19 * 12
SSCA-01	Search coil	LANGER	RF-R 400-1	02-0634	AD,BW	Pre Check

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

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

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

APPENDIX 4: Tested Pulse train

1.Normal Mode

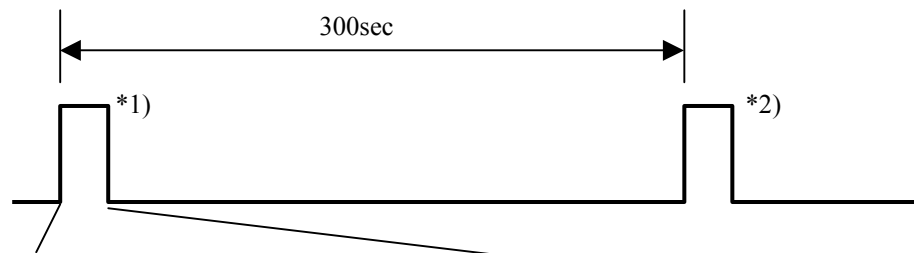
Operation in FCC15.231(a)(3) (Limit: total $\leq 2\text{sec}$ per hour)

Total duration of transmissions at Wake UP: $16.7\text{msec} \times 10 = 167\text{msec}$

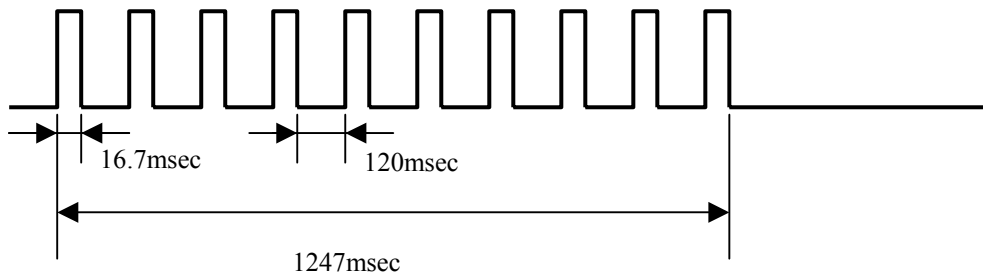
Total duration of transmissions per time at Periodic transmission: $16.7\text{msec} \times 5 = 83.5\text{msec}$

Total transmission times per hour: $167\text{msec} + (83.5\text{msec} \times 10) = 1002\text{msec} < 2\text{sec}$

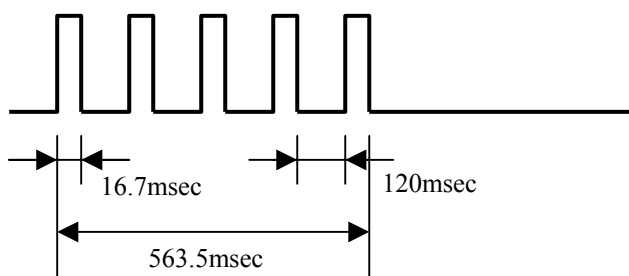
Periodic transmission interval



***1) Wake UP (Only start up)**



***2) Periodic transmission (Except wake UP, 300sec interval)**



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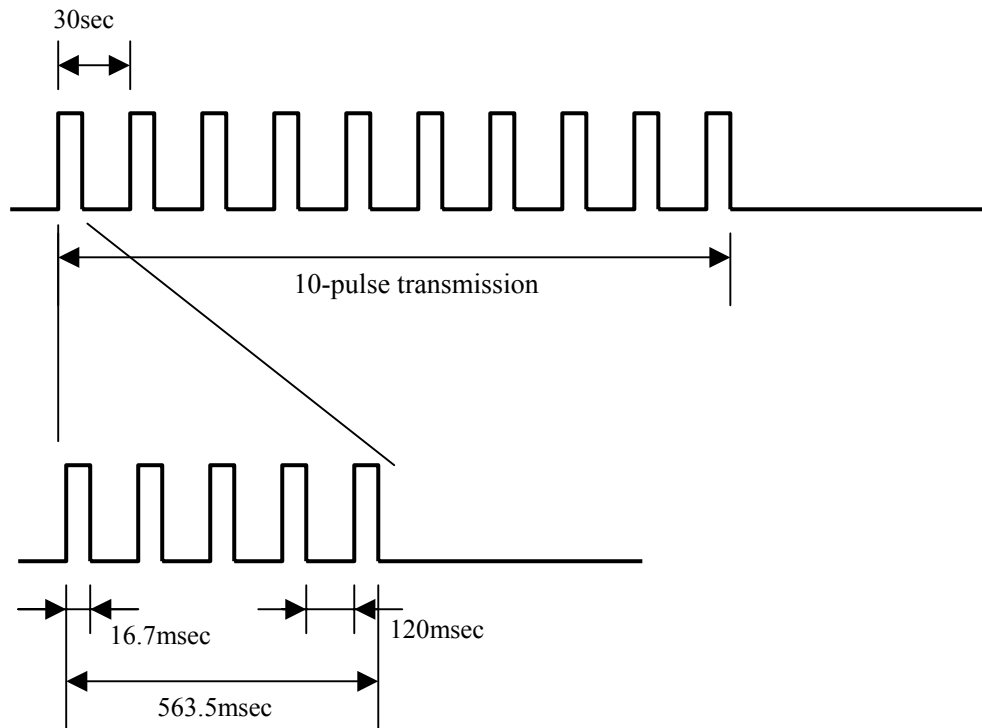
Facsimile: +81 463 50 6401

2.Alarm Mode

Operation in FCC15.231 (e)

Duration of transmission: 563.5msec < 1sec

Silent period between transmissions: $30\text{sec} - 0.5635\text{sec} = 29.4365\text{sec} > 30\text{times the duration of transmission and } 10\text{sec}.$



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