LOW POWER Tx 15.231 for CERTIFICATION Code: DSC (Tx)

APPLICANT: **CONTROLLED SPEED ENGINEERING LTD.**
Job #: **621UC5**

Customer's Name: CONTROLLED SPEED ENGINEERING LTD.
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Equipment Description: RF REMOTE CONTROL
FCC Id: SZBCSE305
Model #: CSE305
Company # & UPN: -CSE305

Rule Section : 15.231 Scope: A1

Composite device? _____Modular Approval? _____

RSS 210 6.1 *Center frequency of the lowest channel to the highest channel.*

Confidential request per Section 0.459 _____
NA FOR CANADA

Class II permissive change statement? _____ *Do the changes require a new application?.*

REQUIRED EXHIBIT	FILENAME TO USE
731 form filled out (You can download form from our web site)	(model)731Form ___**OK**___
FCC ID label sample	(model)LabelSmpl ___**X**___
FCC ID label location information	(model)LabelLoc ___**X**___
External Photos, preferably in pdf format as one file, page 1 & 2 etc.	(model)ExtPho ___**X**___
Internal Photos, preferably in pdf format, as above	(model)IntPho ___**X**___
Test set-up photos	(model)Tsup ___**X**___
Operational Description	(model)OpDes ___**X**___
Block diagrams	(model)BlkDia ___**X**___
Schematics	(model)Schem ___**OK**___
Test Report in MS-Word, ASCII or PDF format	(model)TestRpt ___**X**___
Users Manual, preferably in MS Word or PDF format	(model)UserMan ___**X**___
Parts List, if applicable	(model)PartsLst _____
IC- Cover Letter	(model)CoverLetter _____
IC- Annex I	(model)Annex I _____
IC- Annex II	(model)Annex II _____
Acknowledgement of IC Listing Requirements	_____

Canadian Maintenance Facility Name Contact Name Address Phone number Email	

SCOPE OF WORK

Description of Test	Standard	Comments	NEEDED
Radiated Emission	ANSI C63.4-2000	1 Place for up to 1MHz 2 Places up to 10MHz 3 places of over 10MHz	X
Power Line Conducted	ANSI C63.4-2000 or RSS 212-5.0	IC only requires down to 450kHz.	X
Occupied Bandwidth	ANSI C63.4-2000-0.25% RSS 210 6.1.1(c)	In addition to the 0.25% BW we need the 20dB BW for the emission designator	X
Duty Cycle Pulses			X

Requirements: Periodic operation **except** as specified in Section 15.231(e).

Transmission of a control signal only.
Toys are not permitted.
Continuous transmission such as voice and, video not permitted.
Data transmissions are permitted, as long as it is sent with a control signal.
Recognition codes for sensor identification allowed.
5 second transmission limitation.

Manual transmission must deactivate 5 seconds after release.
Automatic transmissions must cease 5 seconds after activation.

5 second transmission limitation exceptions.
Transmissions at regular predetermined intervals are not permitted.
Polling or supervision transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.

*** Transmissions with a non-predetermined(random) delay time every few seconds are not allowed.

Transmissions during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

Fundamental and spurious limits are listed in the table of Section 15.231(b). Average limit or alternatively Quasi peak.

Spurious limit is 20 dB below the fundamental limit.
Frequency tolerance requirement for devices in 40.66-40.70 MHz.

Continuous transmissions during non safety of life conditions are not permitted.
e.g. Asset protection is not considered a Safety of life Condition

Toggle switches that lock the button in the on position and causes transmission greater than 5 seconds is prohibited. Common in Crane controllers.

Data transmission prohibited. Transmission of temperature, pressure and elapsed time are considered data and are not allowed.

Section 2.1033: _____ A copy of the installation and operating instruction to be furnished the user. *User information? Should be read for consistency.*

(6)A description of the Tx'd signal, ie: Control, FM, or Etc. _____

Duty Cycle: Was duty cycle cal. Correctly. See FCC Procedure __ok____

FCC 15.19: label requirements: *Example shown below.*
need

(Country of Origin)
FCC ID: _____

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

*NOTE: If the device is too small for the 2 part warning to fit, then it must be placed in the user's manual.

Section 15.21 INFORMATION TO USER: THE USER'S MANUAL OR INSTRUCTION MANUAL FOR AN INTENTIONAL OR UNINTENTIONAL RADIATOR SHALL CAUTION THE USER THAT CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

A SAMPLE STATEMENT IS BELOW:

ok

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

IC- LABELLING: RSP100 & CB-03 take precedent over the equipment standard.

RSP 100: 4. Labelling of Certified Radio Equipment: Certified radio equipment must be labelled with a unique certification/registration number, which consists of the Company Number

(CN), assigned by the Bureau, followed by the Unique Product Number (UPN), assigned by the TAC or Certificate holder.

The certification/registration number shall appear as follows:
"IC: XXXXXX-YYYYYYYY"
Where:
• "XXXXXX-YYYYYYYY" is the certification/registration number;
• "XXXXXX" is the Company Number (CN), made of at most 6 alphanumeric characters (A-Z, 0-9), assigned by Industry Canada;
• "YYYYYYYY" is the Unique Product Number (UPN), made of at most 8 alphanumeric characters
• The letters "IC" have no other meaning or purpose than to identify the Industry Canada certification number/registration number.
Permitted alphanumerical characters used in the CN and UPN are limited to capital letters (A-Z) and digits (0-9). Other characters, such as #, / or -, shall not be used. An example of the new format for a company having a CN of "21" and wishing to use a UPN of "A3 " would thus be: ***IC: 21-A***3. Label is okay: _____
Label Location: _____

IC- User Manual: User manual shall contain the following or equivalent statement in a conspicuous position:
"Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device." _____

The above statement may be placed on the device instead of in the manual. ___**x**___

Section 15.27: special accessories (modifications approved by applicant) __**NEED**____

Section 15.33: Frequency range of radiated measurements. __**ok**____
15.33(a)(1) says you must measure to the 10th harmonic.

Tuning Range	Test Points
1.0MHz	1
1.0-10.0MHz	2
>10.0MHz	3

Section 15.35: Measurement detector function and bandwidths. *Detector should be in Peak mode.*

Section 15.203: Antenna requirement. ___**ok**___ *Must be permanently attached.*

Section 15.205: Restricted band requirements. *See chart below.* ___**ok**___

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

Section 15.207: line conducted test. ___**na**___ 150kHz to 30MHz
ANSI C63.4 2000 Section 10.1.3 & 10.1.12 states that test setup photos or drawings are required.
Not Applicable if battery operated.

Section 15.231: Radiated spurious emissions: Fund. __**ok**____

Fundamental Frequency MHz	Field Strength of Fundamental in Microvolts/meter Measured at 3m	Field Strength of Spurious & harmonics in microvolts/meter Measured at 3m
40.66-40.70	2,250	225
70-130	1250	125
130-174	1250 to 3750	125 to 375
174-260	3750	375
260-470	3750(71.5dBuVm) to 12,500(81.94dBuV/m)	375 to 1,250
Above 470	12,500	1,250

Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:
1) for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F)-6136.3636;
2) for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F)-7083.3333.

Additionally , harmonics & spurs must be below fundamental, 15.209(c)
Section 15.215 : additional provisions ___**ok**___

15.35(b)The maximum permitted unwanted emission level is 20 dB below the maximum permitted **FUNDAMENTAL LEVEL.**
15.35(b)
NOTE: PEAK EMISSIONS CANNOT BE MORE THAN 20dB over average emissions.
Section 15.215: additional provisions __**ok**____

Check specific rule requirements in the Section of the rules applied for.

a) Toys are not permitted, no continuous voice or data ___**ok**___

b) fundamental limit 15.231(b) ____**ok**__

c) Periodic transmission IS NOT PERMITTED, one(1) transmission of 1 second per hour MAXIMUM.

b) spurious limits __**ok**____

c) bandedge compliance: *15.231(c) and 15.209 limits* _**ok**_____
Emission Designator is required for IC, see TRC 43 FOR COMPLETE DEFINATION. For most Pulsed emissions it would be ***150kP1D*** for 150kHz BW for a pulsed signal. _____

d) Operational restrictions or provisions __**x**____

e) Other specific requirements (s) ____**x**__

General Test requirements noted.
Section 15.35: Peak measurements when Average limits are specified is acceptable if meet limits. _**ok**____

Bandwidth test, if appropriate, to ensure bandedge compliance. ___**ok**___

Tested in three orthogonal planes when applicable. __**x**____
See ANSI C63.4-1992 paragraph 13.1.4.1
EUT antenna position adjusted to maximize emissions. ___**x**___

Input signals adjusted to maximize emissions. _x_____
Section 15.31: Test procedure accepted by the FCC? Identify C63.4 : _**ok**_____