



CRT® ELECTRO UV

Dual band transceiver

144-146 MHz RX/TX 430-440 MHz RX/TX



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SYMBOLS DESCRIPTION

Please carefully read the instructions



Information on recycling, not throwing your material in the trash at the end of life,
Bring it to special area to be recycling



DC using



Keep dry



Shield symbol



CE conformity symbol



Warning



Restrictions



STORAGE , TRANSPORT, USING

Storage : Classe 1 -30/85% (° Humidity)

Transport :- 30/85% (° Humidity)

operating temperature -30 à + 50°

Using cycle TX 10%/RX 90%



This transceiver corresponds to the requirements of European directives RED 2014/53/EU and answers the European standards of telecommunications EN 62 368, EN 50665, EN 62311, EN 55035, EN 55032, EN 301 489-15, EN 301 489-1, EN 303 345-3, EN 303 345-1, EN 301 783.

IMPORTANT : this receiving transmitter works on non free frequencies in the use. The user has to possess a radio license amateur radio (certificate of radio operator HAM) to use it (in emission) and only on the frequencies authorized in radio amateurs 144-146 MHz / 430-440 MHz.

This model is approved for use in these countries : AT-BE-BG-CH-CY-CZ-DK-EE-ES-FI-FR-DE-UK-EL-HR-HU-IE-IS-IT-LI-LU-LT-LV-MT-NL-NO-PL-PT-RO-SK-SI-SE and in CEPT countries and those no CEPT countries that implement the CEPT regulation TR 61/01.



Warned before use

Thank you for choosing this CRT vehicle transceiver CRT always provides high quality products. Though friendly design for user, this transceiver is technically complicated and some features may be new to you. Consider this manual to be a personal tutorial from the designers, allow the manual to guide you through the learning process now, then act as a reference in the coming years.

Precautions



Please observe the following precautions to prevent fire, personal injury, or transceiver damage.



Do not attempt to configure your transceiver while driving, it is dangerous.



This transceiver is designed for a 13.8V DC power supply. Don't use a 24V battery to power on the transceiver.



Do not place the transceiver in excessively dusty, humid or wet areas, nor unstable surfaces.



Do not connect the antenna while transmission, risk of burn or electric shock.



Please keep it away from interferential devices (such as TV, generator etc.) devices (such as TV, generator etc.)



For those fitted with pacemakers are advised to move away from the antenna during transmission, mainly in high power, and especially do not touch it.



Never allow metal objects or son electrical contact with the part or internal electrical connection to the risk of electric shock.



Avoid exposing the transceiver to temperatures below -30 ° C. and above +60 ° C, the temperature of the dashboard inside a vehicle can sometimes exceed 80 ° C, which can damage irreparable damage to your machine in case of prolonged exposure. Not exposed to prolonged direct sunlight or place it near heaters.



-  Do not place anything on top of the apparatus that would interfere with cooling.
-  Check that your battery is sufficiently charged to avoid rapidly exhausting its resources.
-  It is important to turn off your device before starting the vehicle to avoid damage caused by spikes in the ignition.
-  When replacing the fuse, you must use a fuse 10A 250V type F In no case a higher value!, Otherwise a fire hazard.
-  If an abnormal odor or smoke is detected coming from the transceiver, turn OFF the power immediately.
Contact an CRT service station or your dealer.
-  Do not transmit with high output power for extended periods; the transceiver may overheat.
-  Keep out from children.

Attention :

- Before using your transceiver please connect an antenna on the connector PL on back side then check the SWR before emitting. A too important SWR can entail the destruction of the transistors of power which are not flatware by the guarantee



1. FUNCTIONS & FEATURES

CRT ELECTRO has an elegant and sturdy shape. The ergonomic front panel combined with an intuitive menu, ensures easy access and management of the advanced functions available to the user . This amateur mobile transceiver is especially conceived for drivers and it pursues philosophy of innovation and practicality. The “key functions” are:

- ◆ 500 programmable memory channels, identified by editing name;
- ◆ VOX function
- ◆ Noise Reduction
- ◆ 1.44 Inch TFT display
- ◆ Careful selection of higher ranked materials, adoption of the most modern technological solutions, as well as the most efficient cooling cycle that ensures stability and long life of the amplifier architecture;
- ◆ Amateur mode and professional mode for different operation requirement;
- ◆ CTCSS, DCS, DTMF, 2Tone, 5Tone setting for each single channel;
- ◆ 11 groups fixed scrambler code plus self define scrambler code;
- ◆ LCD brightness control;
- ◆ Main unit and microphone key lock function;
- ◆ Comander function;
- ◆ Tone Pulse frequency;

Version notice:

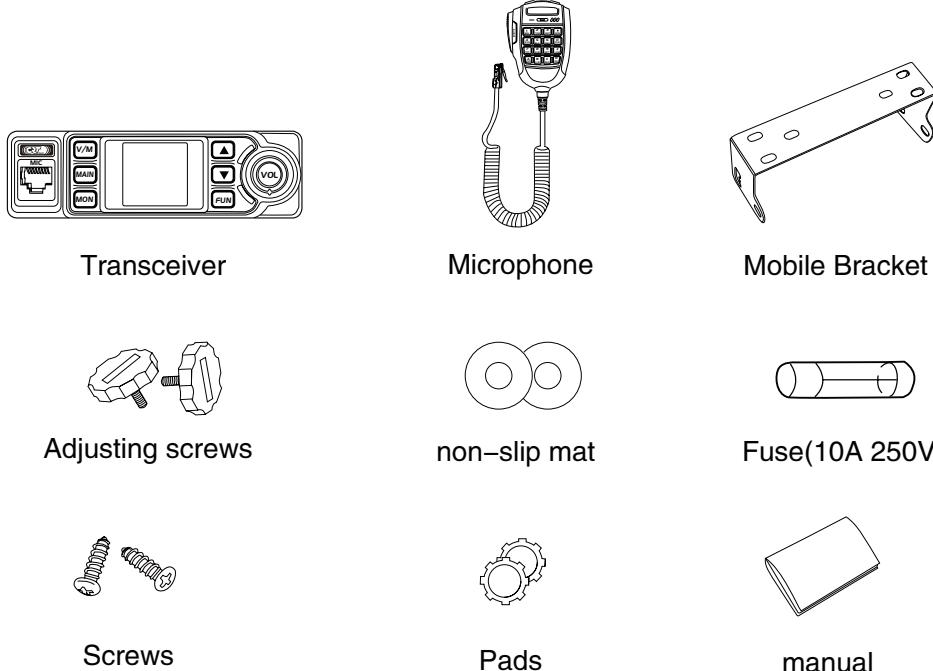
Europe version : Frequency ranges cover 144-146Mhz ,430-440Mhz
(According to the “R ED 2014/53/EU” directive).

USA version : Complies with Part 95E and Part 15B FCC rules.
Frequency information as following chart.

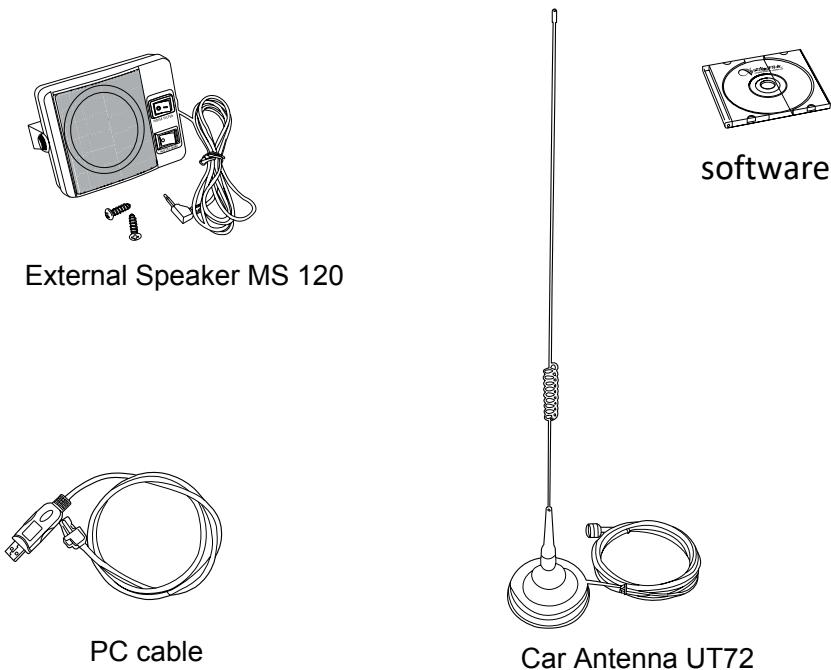


2. ACCESSORIES

2.1 Standard Accessories



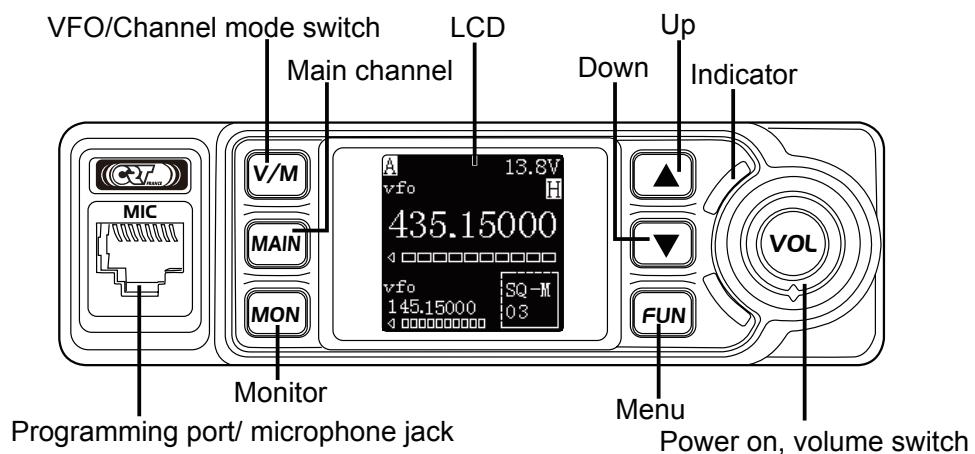
2.2 Optional Accessories



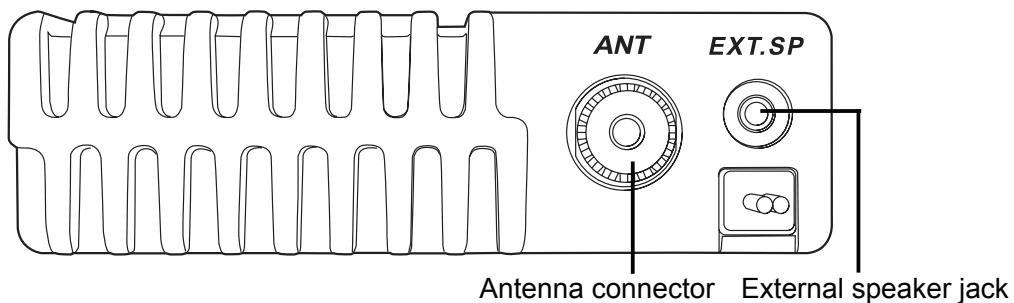


3. GETTING ACQUAINTED

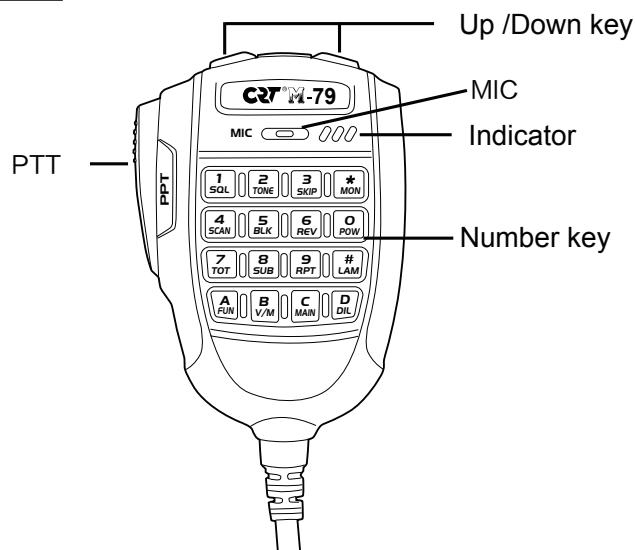
3.1 Front panel



3.2 Rear panel



3.3 Microphone





4. BASIC OPERATIONS

4.1 Switching the Power On/Off

1. Turn the Volume knob clockwise to turn on the radio, the radio LCD will display programmed text and emit a beep sound.
2. Power Off: Turn volume knob anti-clockwise until you hear "click" to turn off the radio

4.2 Adjusting the Volume

Turn volume knob clockwise to increase the "audio level" and anti-clockwise to reduce it.

4.3 Switch between Main Channel and Sub Channel

In standby status, press the microphone C_{MAIN} key or front panel MAIN key to switch between main channel and sub channel. The top left corner of LCD will display current main channel.

4.4 Adjust Channel

1. Press microphone B_{VM} key or front panel V/M key to switch the radio to channel mode, press microphone [UP] / [DN] key or front panel \blacktriangle / \blacktriangledown key to select a channel upward or downward.
2. In channel mode, input three numbers by number key for its direct selection (eg:001 for channel 1).

4.5 Adjusting Frequency (Europe version only)

1. By number key: In VFO mode, you can input wanted frequency by the microphone number key. For example if want 145.125Mhz, just press key 1, 4, 5, 1, 2, 5, if want 145Mhz, just press 1, 4, 5. The input is invalid if the frequency is over range.
2. By step size: In VFO mode, press microphone [UP] / [DN] or front panel \blacktriangle / \blacktriangledown key can change frequency by step size.
Step size can be programmed by software from 2.5K to 50K.

4.5 Store channel

In standby status, press the microphone A_{FUN} key, the top left corner will display "Func", then press [UP] KEY, the LCD bottom left corner will display Save to XXX, now press [UP] / [DN] key to select a channel number, hold *_{MON} key to store the new frequency and return to standby.

⚠» XXX reflects for the channel number, if LCD displays "Null" under "Save TO XXX", means that the current channel is empty.

4.6 Channel Delete

1. In channel mode, press microphone A_{FUN} key, then press [DN] key, the LCD displays "Delete XXX" and frequency, press [UP] / [DN] key to select the channel to be deleted, then hold [# LAM] key for deleting the current channel.

⚠» "XXX" reflects for the channel number, the LCD displays "Null" after the channel is deleted.



4. SHORTCUT OPERATION

4.7 Receiving

Select a receiving channel or frequency for receiving call, if the RX signal is week, hold front panel [MON] key or microphone [*_{MON}] key to monitor weak signals.

⚠ » *When the RX icon and field strength flashes, but can not hear the calling, it means current channel receive a matching carrier but unmatching signaling. Refer to CTCSS/DCS CODE or Optional Signaling setup in Page 6).*

4.8 Transmitting

Hold [PTT] and speak into microphone. the radio start transmit, the screen shows red TX and field strength. Hold the microphone approximately 2.5-5.0cm from your lips and speak into the microphone at your normal voice level: it will help to transfer best audio signal.

4.9 Squelch Off

In standby, press microphone [*_{MON}] key or front panel [MON] key to turn off squelch, the radio will monitor weak signal.

4.10 Emergency Alarm

In standby, hold [MAIN] key, release it until the LCD displays ALARM, the alarm function turns on. Program emergency alarm rule shall be programmed by PC software.

4.11 Keypad Lockout

In standby, hold [FUN] key or [_{FUN}A] key , the radio emit Du sound, the LCD displays LOCK. Now release the key, the keypad is locked. To turn off key lock, hold [FUN] key or [_{FUN}A] key until a “Du Du” tone signal is heard, the LOCK icon disappears, now you may release the key.

4.12 Transmit Tone Pulse Frequency

Hold PTT and [DN] key will transmit selected Pre-programmed tone pulse frequency.

4.13 VFO Scan and Channel Scan

1. VFO scan: In VFO mode, press microphone [_{FUN}A] key or [_{SCAN}4] key to start VFO scan. If the radio has program PL1, PH1, ,PL2, PH2, PH2 frequency(in the bottom of channel list), VFO scan will between PL1-PL2 and PL2-PH2.
2. Channel Scan: In channel mode press microphone [_{FUN}A] key and then press [_{SCAN}4] key to start channel scan. Channel scan setting shall be programmed by PC software.

4.15 VOX On/Off control

In standby, hold [V/M] key until LCD displays VOX icon, repeater this step or repower on radio to turn off VOX function.

⚠ Note: Before turn on VOX, please set VOX level in 26th menu.



4. SHORTCUT OPERATION

Press microphone **A_{FUN}** key and then press number key to fast enter following functions, then press [UP] / [DN] key to select the value. presss [PTT] key or **D_{DIL}** key for storing.

Function list

No.	Function name	Combination Key
1	Squelch level setting	A_{FUN} + 1_{SQSL}
2	Optional signaling setting	A_{FUN} + 2_{TONE}
3	Scan Skip	A_{FUN} + 3_{SKIP}
4	Scan	A_{FUN} + 4_{SCAN}
5	Busy channel lockout	A_{FUN} + 5_{BLK}
6	Frequency reverse	A_{FUN} + 6_{REV}
7	Time out timer	A_{FUN} + 7_{TOT}
8	Sub channel on/off switch	A_{FUN} + 8_{SUB}
9	Offset direction	A_{FUN} + 9_{RPT}
10	Function Menu	A_{FUN} + *_{MON}
11	Power setting.	A_{FUN} + 0_{POW}
12	LCD brightless	A_{FUN} + #_{LAM}
13	DTMF Code check	A_{FUN} + D_{DIL}

A » In DTMF check mode

When check DTMF code, press PTT will send current DTMF code.

To revise DTMF code, press **A_{FUN}** key and then press **0_{POW}** key to enter edit mode. input DTMF code by number keys , then press PTT to transmit the code and store.



5. FUNCTION SETTING

5.1 By Front Panel Key

1. Press **[_{FUN}]** key to enter main menu.
2. Press **[_{V/M}]** key or **[_{MAIN}]** key to choose function.
3. Press **[_▲ / _▼]** key to choose value.
4. Press **[_{FUN}]** key or **[_{MON}]** key to store and exit.

⚠ » When setting DCS code, **[_{MON}]** key is for switch between positive and inverse code.

5.2 By Microphone Key

1. Press **[_A _{_{FUN}}]** key and then press **[_{*} _{_{MON}}]** key to enter menu.
2. Press **[_B _{_{V/M}}]** key or **[_C _{_{MAIN}}]** key to choose function.
3. Press [**UP**] / [**DN**] key to choose value.
4. Press **[_D _{_{DIL}}]** key to store and exit

⚠ » When setting DCS code, **[₁ _{_{SQ}}]** key is for switch between Positive and inverse code.
[₃ _{_{SKIP}}] key is for choose special DCS.

Function list

No.	Function name	Setting value
1	TX CTC/DCS	67Hz~254.1Hz、000N~777I
2	RX CTC/DCS	67Hz~254.1Hz、000N~777I
3	TX/RX CTC/DCS	67Hz~254.1Hz、000N~777I
4	Optional signaling	OFF、DTMF、2Tone、5Tone
5	Squelch mode	SQ、CT/DCS、Tone、C&T、C/T
6	Step size	2.5K~50K
7	Band width	WIDE (25K) 、 NARROW (12.5K)
8	Reverse	ON、OFF
9	Talk around	ON、OFF
10	Offset frequency	0~70MHz
11	Busy channel Lock	OFF、REPEATER、BUSY
12	Channel name	0~z



5. FUNCTION SETTING

No.	Function name	Value
13	TX OFF	ON、OFF
14	Scrambler	1~11、edit、OFF
15	Compander	ON、OFF
16	NC(Noise reduction)	ON、OFF
17	5Tone	1~100, Press PTT to transmit
18	2Tone	1~32, Press PTT to transmit
19	Sub channel display	FREQ、VOLT、OFF
20	Key beep	ON、OFF
21	Time out timer	1~30Min、OFF
22	DMTF transmit time	50ms~500ms
23	Squelch level	OFF、1~9
24	Scan pause time	5ST、10ST、15ST、2SP
25	LCD brightness	1~5
26	VOX level	OFF, 1~9
27	VOX delay	0.5~5 Second
28	Tone burst frequency	1750Hz、2100Hz、1000Hz、1450Hz
29	Channel display	FREQ、CH、NAME
30	Reset	FACTORY? INITIALIZE?

5.3 Reset Factory Default

If your radio seems to be malfunctioning because of wrong operation or setup, this function will resume all setup and channels to factory default.

1. Press front panel **MAIN** key to enter main MENU list.
2. Press **V/M** or **MAIN** key to choose 27th function, the LCD display reset options.
3. Press **▲** / **▼** key to choose “FACTORY? ” .
4. Hold **FUN** key, until the radio re-power on.

After reset, all channel and function setting will resume default value.

▲ » If choose “INITIALIZE? ” , only function setting value will resume to default setting.



6. SPECIFICATIONS

GENERAL		
Frequency Range	Europe version: TX/RX: 144–146MHz , 430–440MHz USA version: TX1:462.5625-462.7125MHz (5W) TX2: 462.550-467.725MHz RX: 136–174MHz , 400–480MHz	
Channel Spacing	Europe version: 25K (Wide Band) 12.5K (Narrow band) USA version: 12.5K	
Channel Number	500 channels	
Operating Voltage	DC 13.8V±15%	
Squelch	Carrier/ CTCSS/DCS/5Tone/2Tone/DTMF	
Frequency Stability	±2.5ppm	
Operating Temperature	−20°C ~ +60°C	
Dimensions(mm)	124x101x36m	
Weight	0.45kg (main unit)	
RECEIVER		
	Wide band	Narrow band
Sensitivity (12dB Sinad)	≤ 0.25μV	≤ 0.35μV
Adjacent Channel Selectivity	≥ 70dB	≥ 60dB
Audio Response	+1~−3dB(0.3~3KHz)	+1~−3dB(0.3~2.55KHz)
Hum & Noise	≥ 45dB	≥ 40dB
Audio distortion	<3%	
Audio power output	>2W@10%	
TRANSMITTER		
	Wide band	Narrow band
Power - EU version	UHF>18W	VHF>20W
Power - USA version	—	462.5625-462.7125MHz (5W) 462.550-467.725MHz (18W)
Modulation	16KΦF3E	11KΦF3E
Adjacent Channel Power	≥ 70dB	≥ 60dB
Hum & Noise	≥ 40dB	≥ 36dB
Spurious Emission	≥ 60dB	≥ 60dB
Audio Response	+1~−3dB(0.3~3KHz)	+1~−3dB(0.3~2.55KHz)
Audio Distortion	≤ 5%	



52 groups CTCSS Tone Frequency(Hz)

No.	Freq.(Hz)	No.	Freq.(Hz)	No.	Freq. (Hz)	No.	Freq. (Hz)	No.	Freq. (Hz)
1	62.5	12	94.8	23	136.5	34	177.3	45	218.1
2	67.0	13	97.4	24	141.3	35	179.9	46	225.7
3	69.3	14	100.0	25	146.2	36	183.5	47	229.1
4	71.9	15	103.5	26	151.4	37	196.2	48	233.6
5	74.4	16	107.2	27	156.7	38	189.9	49	241.8
6	77.0	17	110.9	28	159.8	39	192.8	50	250.3
7	79.7	18	114.8	29	162.2	40	196.6	51	254.1
8	82.5	19	118.8	30	165.5	41	199.5	52	Self-define
9	85.4	20	123.0	31	167.9	42	203.5		
10	88.5	21	127.3	32	171.3	43	206.5		
11	91.5	22	131.8	33	173.8	44	210.7		



1024 groups DCS Code

Code No.	DSC (Octal)																
1.	000	2.	001	3.	002	4.	003	5.	004	6.	005	7.	006	8.	007		
9.	010	10.	011	11.	012	12.	013	13.	014	14.	015	15.	016	16.	017		
17.	020	18.	021	19.	022	20.	023	21.	024	22.	025	23.	026	24.	027		
25.	030	26.	031	27.	032	28.	033	29.	034	30.	035	31.	036	32.	037		
33.	040	34.	041	35.	042	36.	043	37.	044	38.	045	39.	046	40.	047		
41.	050	42.	051	43.	052	44.	053	45.	054	46.	055	47.	056	48.	057		
49.	060	50.	061	51.	062	52.	063	53.	064	54.	065	55.	066	56.	067		
57.	070	58.	071	59.	072	60.	073	61.	074	62.	075	63.	076	64.	077		
65.	100	66.	101	67.	102	68.	103	69.	104	70.	105	71.	106	72.	107		
73.	110	74.	111	75.	112	76.	113	77.	114	78.	115	79.	116	80.	117		
81.	120	82.	121	83.	122	84.	123	85.	124	86.	125	87.	126	88.	127		
89.	130	90.	131	91.	132	92.	133	93.	134	94.	135	95.	136	96.	137		
97.	140	98.	141	99.	142	100.	143	101.	144	102.	145	103.	146	104.	147		
105.	150	106.	151	107.	152	108.	153	109.	154	110.	155	111.	156	112.	157		
113.	160	114.	161	115.	162	116.	163	117.	164	118.	165	119.	166	120.	167		
121.	170	122.	171	123.	172	124.	173	125.	174	126.	175	127.	176	128.	177		
129.	200	130.	201	131.	202	132.	203	133.	204	134.	205	135.	206	136.	207		
137.	210	138.	211	139.	212	140.	213	141.	214	142.	215	143.	216	144.	217		
145.	220	146.	221	147.	222	148.	223	149.	224	150.	225	151.	226	152.	227		
153.	230	154.	231	155.	232	156.	233	157.	234	158.	235	159.	236	160.	237		
161.	240	162.	241	163.	242	164.	243	165.	244	166.	245	167.	246	168.	247		
169.	250	170.	251	171.	252	172.	253	173.	254	174.	255	175.	256	176.	257		
177.	260	178.	261	179.	262	180.	263	181.	264	182.	265	183.	266	184.	267		
185.	270	186.	271	187.	272	188.	273	189.	274	190.	275	191.	276	192.	277		
193.	300	194.	301	195.	302	196.	303	197.	304	198.	305	199.	306	200.	307		
201.	310	202.	311	203.	312	204.	313	205.	314	206.	315	207.	316	208.	317		
209.	320	210.	321	211.	322	212.	323	213.	324	214.	325	215.	326	216.	327		
217.	330	218.	331	219.	332	220.	333	221.	334	222.	335	223.	336	224.	337		
225.	340	226.	341	227.	342	228.	343	229.	344	230.	345	231.	346	232.	347		
233.	350	234.	351	235.	352	236.	353	237.	354	238.	355	239.	356	240.	357		
241.	360	242.	361	243.	362	244.	363	245.	364	246.	365	247.	366	248.	367		
249.	370	250.	371	251.	372	252.	373	253.	374	254.	375	255.	376	256.	377		
257.	400	258.	401	259.	402	260.	403	261.	404	262.	405	263.	406	264.	407		
265.	410	266.	411	267.	412	268.	413	269.	414	270.	415	271.	416	272.	417		
273.	420	274.	421	275.	422	276.	423	277.	424	278.	425	279.	426	280.	427		
281.	430	282.	431	283.	432	284.	433	285.	434	286.	435	287.	436	288.	437		
289.	440	290.	441	291.	442	292.	443	293.	444	294.	445	295.	446	296.	447		
297.	450	298.	451	299.	452	300.	453	301.	454	302.	455	303.	456	304.	457		
305.	460	306.	461	307.	462	308.	463	309.	464	310.	465	311.	466	312.	467		



313.	470	314.	471	315.	472	316.	473	317.	474	318.	475	319.	476	320.	477
321.	500	322.	501	323.	502	324.	503	325.	504	326.	505	327.	506	328.	507
329.	510	330.	511	331.	512	332.	513	333.	514	334.	515	335.	516	336.	517
337.	520	338.	521	339.	522	340.	523	341.	524	342.	525	343.	526	344.	527
345.	530	346.	531	347.	532	348.	533	349.	534	350.	535	351.	536	352.	537
353.	540	354.	541	355.	542	356.	543	357.	544	358.	545	359.	546	360.	547
361.	550	362.	551	363.	552	364.	553	365.	554	366.	555	367.	556	368.	557
369.	560	370.	561	371.	562	372.	563	373.	564	374.	565	375.	566	376.	567
377.	570	378.	571	379.	572	380.	573	381.	574	382.	575	383.	576	384.	577
385.	600	386.	601	387.	602	388.	603	389.	604	390.	605	391.	606	392.	607
393.	610	394.	611	395.	612	396.	613	397.	614	398.	615	399.	616	400.	617
401.	620	402.	621	403.	622	404.	623	405.	624	406.	625	407.	626	408.	627
409.	630	410.	631	411.	632	412.	633	413.	634	414.	635	415.	636	416.	637
417.	640	418.	641	419.	642	420.	643	421.	644	422.	645	423.	646	424.	647
425.	650	426.	651	427.	652	428.	653	429.	654	430.	655	431.	656	432.	657
433.	660	434.	661	435.	662	436.	663	437.	664	438.	665	439.	666	440.	667
441.	670	442.	671	443.	672	444.	673	445.	674	446.	675	447.	676	448.	677
449.	700	450.	701	451.	702	452.	703	453.	704	454.	705	455.	706	456.	707
457.	710	458.	711	459.	712	460.	713	461.	714	462.	715	463.	716	464.	717
465.	720	466.	721	467.	722	468.	723	469.	724	470.	725	471.	726	472.	727
473.	730	474.	731	475.	732	476.	733	477.	734	478.	735	479.	736	480.	737
481.	740	482.	741	483.	742	484.	743	485.	744	486.	745	487.	746	488.	747
489.	750	490.	751	491.	752	492.	753	493.	754	494.	755	495.	756	496.	757
497.	760	498.	761	499.	762	500.	763	501.	764	502.	765	503.	766	504.	767
505.	770	506.	771	507.	772	508.	773	509.	774	510.	775	511.	776	512.	777



DECLARATION OF CONFORMITY N° 200238



We hereby declare under our responsibility that the product :

**Brand : CRT
Model ELECTRO UV Ham Radio Mobile radio
144-146 MHz/430-440 MHz**

Satisfies all the technical regulations applicable to the product within the scope of
Directive : RED 2014/53/EU and following norms

EN 62368-1 :2014+A11 :2017

EN 50665 :2017

EN 62311 :2020

EN 55035 :2017

EN 55032 :2015

ETSI EN 301 489-15 V2.2.1 (2019-04)

ETSI EN 301 489-1 V2.2.3 (2019-11)

Draft ETSI EN 303 345-3 V1.1.0 (2019-11)

ETSI EN 303 345-1 V1.1.1. (2019-06)

ETSI EN 301 783 V2.1.1 (2016-01)

C.R.T. FRANCE INTERNATIONAL S.A.S.

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Capital de 1000 000 euros

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M. CELESTRANO F.

PRESIDENT

LE 06/11/2020



RoHS
compliant



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