

**Radio Scouting Skills Program (DRAFT v2.0)**

The objective of Radio Scouting program badges levels 1-4 is to give scouts and scouters a basic level of understanding of radio communications, including space communications, such that they can competently operate a station safely and with a little bit of extra study they can have their knowledge skills externally validated by exam, obtaining a Novice Amateur Licence (Once available in Ireland) and or a Marine VHF license. Skills Level 1 & 2 are relatively easy for your average scouter to learn and teach. After level 2 outside support and or external training may be required. For example, the National Short Wave Listeners Club run training courses up to and including sitting tests for the attainment of a Class A or Class B license.

The objective of Radio Scouting program badges levels 5-9 is to give scouts and scouters a high level of competence to operate in any given circumstance and environment and a very good level of understanding of radio communications such that with some extra study they can obtain a Full class A or B Amateur radio license and go on to be a proficient radio operator with a good understanding of technology.

On presenting evidence of attaining a stage the scout can apply for the corresponding badge for the level of competence acquired.



Stage 1

* I can name at least 4 things that I know use radio waves
	+ e.g. Mobile phones, TV, Radio, WiFi, walkie talkie, Satellites, GPS, Bluetooth, Radar
* I know my parents/guardian/ICE contact phone number and can dial it on a mobile phone
* I can name some radio stations I can hear from my home/den/car
* I know the difference between Commercial and Amateur radio
* I know why amateur radio is a licensed hobby
* I know what morse code is
* I know some aspects of Amateur radio language (Phonetic Alphabet and Q codes, callsigns), I know what a callsign is and the prefix of my own country and I can spell my name using the phonetic alphabet
* I can use a walkie talkie



Stage 2

* I know what an electric circuit is and what an electromagnetic field is
* I can build a simple circuit e.g. scribble robot, morse key/light
* I know the main components of an amateur radio radio system
	+ Antenna, receiver, speaker, microphone, transmitter
* I know what short wave listening is and I have tuned in to and can recognise morse code, data and voice signals
* I know what the RST system for signal reporting is
* I know how to look up a callsign of an amateur radio station on qrz.com
* I have listened to and logged 5 QSO’s and have identified the operators country
* I have taken part in a scouting event and talked to another operator on the radio, giving my station callsign



Stage 3

* I understand low frequency, high frequency, HF, VHF & UHF
* I understand low frequencies need larger antennas and high frequencies need smaller antennas
* I understand resonance and the basics of tuning a half-wave dipole antenna
* I understand the concept of signal-to-noise ratio and how directional antennas help
* I understand and can explain the 3 modes of propagation, namely Free-space, Groundwave & Ionospheric prorogation
* I can explain why I can hear distant stations on MW, LW and SW and how these changes from night and day
* I know how space weather, particularly the Sun affects radio wave propagation
* I know what objects in the Solar System emit radio waves and I understand the concept of signal to noise ratio
* I understand how a repeater and DMR works and I have made a QSO via a repeater or DMR
* I understand the main radio controls and how to use them, VFO A/B, AGC, RF gain, AF gain, Band select, Mode select, Tune
* I have a log of 25 shortwave/HF stations that I have heard on the radio (Can include Amateur and Commercial Stations). Log must include time, date, frequency, mode and signal report
* I have used an amateur radio station under supervision & completed and logged 5 QSO’s
* I have received a QSL card from a commercial or Amateur radio station
* I know the meaning and use of Mayday, PanPan and Securite, I can use radio communications effectively in an emergency situation (Emergencies L7) and I know how to contact emergency services using Marine VHF C16



Stage 4

* I can set up a working station, antenna, PSU transceiver, ATU
* I understand SWR and how to use an SWR meter, analyser and Antenna Tuning Unit (ATU)
* I understand how to calculate the length of a dipole antenna for any given frequency
* I have built, tuned, and logged at least 3 QSO’s on a dipole or ¼ wave GP or similar antenna that I have made and tuned myself
* I understand EMF, PEP, EIRP, the relative danger of electromagnetic waves at various powers and how to set up an antenna safely.
* I can name 10 of the main Amateur radio bands (160,80,60,40,30,20,17,15,12,10,2) and how their propagation might be changed by the time of day, day of year & sun cycle.
* I understand and can explain the different antenna types ¼ wave ground plane, Dipole, End Fed Half Wave -EFHW, Random wire, Yagi, Log periodic
* I know ComReg’s role in licensing
* I understand the important of good procedure for communicating via amateur radio
	+ I have read and abide by the DX code of conduct
	+ I know how to call and answer CQ, how to give signal reports and how to ‘break’ into an existing communication.
	+ I know what ‘split’ operation is, how to recognise a station is operating split, and when to use it
	+ I know how to recognise and operate with a DXpedition station, Competition station & standard amateur radio station
* I understand the importance of a clean signal and how to check if my station is over modulating (radio check or SDR)
* I have decoded an SSTV signal
* I understand and can use the P=VI equation
* I understand the difference between inductance, capacitance & resistance.



Stage 5

* I understand how to calculate the resistance of a circuit of parallel or in series resistors
* I understand how to calculate the capacitance of a circuit of parallel or in series capacitors
* I understand how to calculate the inductance of a circuit of parallel or in series inductors
* I understand the concept of a tuned circuit and understand how to calculate the frequency of a tuned circuit
* I can name and explain the characteristics of 3 different types of coax and or transmission line
* I have built a choke and a balun and can explain what they do
* I have completed a simple electronics or Arduino/Rasberry Pi project
* I have studied the HAREC curriculum and have sat the exam and obtained a Novice License OR I have studied the marine VHF license curriculum and have sat the exam and obtained a Marine VHF License



Stage 6

* I have completed at least 2 of the following Amateur Radio/Radio Scouting Special Activities with at least 10 QSO’s : IOTA, POTA, JOTA, SOTA, DxPedition, AREN exercise, Competition
* I have built and tuned a multiband antenna with at least 3 bands (e.g. nested ¼ waves or fan dipole)
* I have built an electronic gadget and can use a soldering Iron to solder components onto a PCB
* I can detect meteors using radio
* I have set up an operated on a scout camp or field day event without the use of mains power electricity
* I have logged at least 200 QSO’s across a minimum of 3 modes (SSB< AM, FM, Digi e.g. FT8, CW.)
* I have logged at least 50 different countries (DXCC entities)



Stage 7

* I have competed in a competition and made >40 verified/scored qso’s
* I have supervised a station at a JOTA-JOTI or similar multi station event
* I have made a contact over an amateur radio satellite
* I have conducted 50 assisted\* CW QSO’s (\* using a keyer and skimmer/decoder)
* I have achieved DXCC on at least 3 bands (LOTW or QRZ.com certified)
* I have obtained a Class B licence



Stage 8

* I have achieved DXCC on at least 5 bands
* I have built a simple morse code oscillator and can send my callsign, 599 and 73
* I have operated in another country
* I can send and receive morse code at 5 wpm or more
* I have obtained a Class A licence



Stage 9

* I have completed 25 QSO’s on 160m and 6m
* I have completed at least 1 DXCC award on CW, Phone & Digital modes (LOTW or QRZ.com certified)
* I can send & receive CW reliably >= 25 wpm (Verified by membership of CWOPS or FOC)
* I have completed at least 5 of the following special activities of : IOTA, POTA, JOTA, SOTA, DxPedition, AREN exercise, Competition (verified by submission of evidence)

