CLAIMS:

1. An Identification Friend or Foe (IFF) system comprising an IFF interrogator for interrogating complementary IFF transponders which are complementary to the IFF interrogator; the IFF interrogator comprises: an RF transceiver module, a control system, and a laser activation interface module operable in conjunction with an independent external laser transmitter, whereby: (a) the RF transceiver module is configured and operable for transmitting an RF broadcast signal to be received by an IFF transponder being within the interrogation range of said IFF interrogator and for receiving an RF response signal transmitted from the IFF transponder in response thereto; (b) the laser activation interface module is configured and operable for interfacing with the external laser transmitter to determine activation thereof; and (c) the control system is connectable to said RF transceiver module and to said laser activation interface and configured and operable for: i) registering time of transmission of at least one RF broadcast signal by said RF transceiver; ii) registering time of transmission of at least one laser beam transmitted by said external laser transmitter; iii) determining a time pattern associated with time intervals between said at least one RF broadcast signal and said at least one laser beam, beam said time pattern representing an identification code of the IFF interrogator; iv) obtaining information from said RF transceiver indicative of RF signals received thereby; and v) processing said information to identify if said RF signals include an RF response signal from a certain IFF transponder and decode said RF response signal to determine if it encodes the identification code of the IFF interrogator which was represented by the time pattern of the at least one transmitted RF broadcast signal and at least one transmitted laser beam, and thereby determine if said certain IFF transponder was interrogated by said IFF interrogator.

2. The system of claim 1, wherein the control system is configured and operable for carrying out IFF interrogation by: i) arming said IFF transponders for sensing laser illumination by operating said RF transceiver module to transmit said RF broadcast

signal; ii) utilizing said laser activation interface to determine activation of said external laser transmitter; and iii) processing information indicative of RF signals received by said RF transceiver to identify therein an RF response signal transmitted by said IFF transponder, which is complementary to the IFF interrogator, in response to detection of said transmitted laser beam from the external laser transmitter by said IFF transponder.

3. The system of claim 1, wherein said laser activation interface comprises an active interface configured and operable for activating said external laser module upon receipt of operational instructions from said control system to determine activation of the laser.

4. The system of claim 3, wherein said active interface comprises a switch interface assembly configured for coupling with said activation switch of the external laser module and operation of said activation switch in response to said operational instructions.

5. The system of claim 1, wherein said laser activation interface comprises a passive interface configured and operable for detecting activation of the external laser.

6. The system of claim 5, wherein said passive laser activation interface comprises one or more of the following: a mechanical interface configured and operable for mechanically coupling with an activation button of the external laser transmitter to detect activation of the external laser transmitter when said activation button is operated and provide indication of said activation to the control system; and electromagnetic detection means which can be located in the vicinity of said external laser to detect the electromagnetic transmission of the external laser's electronic power supply when the laser beam is transmitted.

7. The system of claim 1, wherein said control system is configured for controlling transmission time of at least one of said RF broadcast signal and said interrogation laser beam and thereby adjust said time pattern of the time intervals between them, which represents the identification code of the IFF interrogator.

8. The system of claim 1, wherein said external laser module provides a laser beam having a cross-section which is substantially smaller than a cross-sectional dimension of

an area that should be covered by the IFF interrogator via illumination at a certain distance range from the external laser module, and intensity of said laser beam is substantially higher than the minimal intensity detection threshold of a transponder system complementary with said IFF interrogator; and wherein the IFF interrogator is associated with a beam scattering directive providing instructions for directing the optical output axis of the external laser module towards light scattering objects/surfaces in the vicinity of said distance range at which said cross sectional dimension that should be covered, so that said area is illuminated by light from said laser beam that is scattered from scattering objects/surfaces.

9. The system of claim 8, wherein at least one of the following: said scattering surfaces includes a ground surface and said beam scattering directive provides instructions for orienting elevation of the optical output axis of the external laser module downwards such that it intersects the ground in the order of several meters near about said distance range; and said a beam scattering directive comprises instructions for sweeping the orientation of the optical axis of the external laser transmitter across a certain angular span such that the area that should be covered by the IFF interrogator is effectively illuminate by light scattered from said laser beam during said swiping.

10. The system of claim 8, wherein said beam scattering directive is at least partially implemented by an operation manual of said IFF interrogator which includes information indicative of said instructions.

11. The system of claim 8, wherein said beam scattering directive is at least partially implemented by a beam direction module of the IFF interrogator which is configured and operable to provide instructions for adjustment of an orientation of said optical output axis.

12. The system of claim 11, wherein said beam direction module includes a direction processor configured and operable for computing an orientation angle to set said optical output axis to direct it towards said scattering objects/surfaces and output data indicative of said instructions for adjusting of the orientation of said optical output axis accordingly.

13. The system of claim 12, wherein said direction processor utilizes data indicative of said certain distance range from the from the external laser module and height position of said external laser module and computes an elevation angle of the orientation to direct said optical output axis to intersect the ground at about said distance range such that the ground scatters said laser beam.

14. The system of claim 13, wherein said beam direction module comprises an imager module for imaging said area at said distance range and wherein said direction processor is connectable to said image and is adapted to process images from said imager to detect and identify one or more scattering objects/surfaces at said distance range, and computes said orientation to direct said optical output axis to at least one of said identified scattering objects/surfaces.

15. The system of claim 11, wherein said beam direction module is connectable to a user interface and is adapted for providing said data indicative of the instructions to adjust the orientation of said optical output axis, for display by said user interface to allow an operator of the system to adjust said optical output axis accordingly.

16. The system of claim 11, wherein said external laser module is associated with a directing system capable of adjusting its optical output axis, and wherein the beam direction module is configured and operable for connecting to said directing system for providing operational directing instructions for operating said directing module in accordance with the desired orientation of said optical output axis, thereby enabling automatic adjustment of the output optical axis of said laser beam towards said scattering objects/surfaces.

~~17. Identification Friend or Foe (IFF) transponder comprising: (a) a photo-detector configured and operable for detecting light illumination in a certain wavelength band when intensity of said illumination exceeds a certain threshold; (b) an RF transceiver module configured and operable for receiving an RF broadcast signal transmitted by an IFF interrogator complementary to said IFF transponder, and for transmitting an RF response signal to be received by said IFF interrogator; and (c) a controller connectable to said RF transceiver module and to said photo-detector, said controller being adapted~~

~~to: i) process signals received by the RF transceiver to identify receipt of at least one RF broadcast signal from said IFF interrogator; ii) process information obtained from said photo detector to identify detection of at least one interrogation laser beam by said photo detector; iii) determine a time pattern associated with the time interval between receipt time of said at least one RF broadcast signal and detection time of said at least one interrogation laser beam; and iv) operate said RF transceiver for transmitting said RF response signal such that the RF response signal encodes data indicative of said time pattern and wherein the time pattern representing an identification code of the interrogator to which said RF response signal is designated.~~

~~18~~17. An Identification Friend or Foe (IFF) method comprising at least one of the following: I. carrying out an IFF interrogation by carrying out the following: (a) transmitting at least one RF broadcast signal suitable for receipt by a complementary IFF transponder; (b) registering a time of transmission of said at least one RF broadcast signal by said RF transceiver; (c) operating a laser activation interface module adapted to interface an external laser transmitter, to determine activation of the external laser transmitter for transmitting at least one interrogation laser beam towards an interrogation region of interest; (d) determining and registering a time of transmission of said at least one interrogation laser beam by the external laser transmitter; (e) determining a time pattern associated with time intervals between transmission times of said at least one RF broadcast signal and said at least one interrogation laser beam, said time pattern representing an identification code of the IFF interrogation; (f) obtaining information about RF signals received by an RF receiver; (g) processing said information to determine whether the RF signals includes an RF response signal from an IFF transponder; and (h) upon detection of an RF response signal from a certain IFF transponder, decoding said RF response signal to determine whether it encodes the identification code of the IFF interrogation which was represented by the time pattern, and thereby determine whether said certain IFF transponder was interrogated by said at least one interrogation laser beam; and II. carrying out an IFF transponding by carrying out the following: a. processing signals received by an RF transceiver to identify receipt of at least one RF broadcast signal from an IFF interrogator, and register time of said receipt; b. processing signals obtained from a photo detector to identify detection of at least one interrogation laser beam by said photo detector, and register time of said detection; and c. determining a time

pattern associated with the time interval between the time of receipt of said at least one RF broadcast signal and the time of detection of said at least one interrogation laser beam; and transmitting an RF response signal encoding data indicative of said time pattern, said time pattern representing an identification code of the interrogation laser beam of an IFF interrogator to which said RF response signal is designated.

~~19~~18. An Identification Friend or Foe (IFF) interrogation method for carrying out IFF interrogation, the method comprising: providing a beam scattering directive including instructions for directing the optical output axis of an external laser transmitter; wherein said external laser transmitter outputs a laser beam with a cross-sectional area that is substantially smaller than a cross-sectional area to be illuminated at a certain distance range during said IFF interrogation, and intensity of said laser beam is substantially higher than the minimal intensity detection threshold of an IFF transponder system intended to respond to said IFF interrogation, wherein said instructions for directing the optical output axis of said external laser transmitter comprise instructions to direct said optical output axis towards light scattering surfaces in the vicinity of said certain distance range such that said cross-sectional area is illuminated by light scattered from said laser beam by said scattering surfaces.

~~20~~19. The method of claim ~~19~~18, wherein at least one of the following: said beam scattering directive is at least partially implemented by an operation manual of said IFF interrogation which includes information indicative of said instructions; said beam scattering directive is at least partially implemented by a beam direction module of an IFF interrogator which is configured and operable to provide one or more of said instructions as operational instructions to directing module of said external laser system to adjust said orientation of the optical output axis; and said beam scattering directive comprises instructions for at least one of the following: i) instructions for detecting a scattering surface in the vicinity of said distance range; ii) instructions for determining the orientation angle to direct said optical output axis towards said scattering surface; iii) instructions for directing the optical output axis to the orientation angle(s) .theta. so as to direct it towards said scattering surface; iv) instructions for activating, or determining activation of the external laser transmitter after said optical output axis is directed towards said scattering surface; and v) instructions for sweeping the orientation of the optical axis

of the external laser transmitter across a certain angular span such that the area that should be covered by the IFF interrogation is effectively illuminated by light scattered from said laser beam during said swiping.