

Electromagnetic Spectrum Engineering Services (EMSES)

OUR TEAM

Nova Systems Electromagnetic Spectrum Engineering Services (EMSES) provides services in Electromagnetic Spectrum (EMS) engineering and regulatory domains. Nova EMSES engineers are experienced in the latest EMS management and engineering tools, EMS dependent equipment, military and civilian waveforms and antenna configurations, enabling detailed EMS and Radio Frequency (RF) engineering and regulatory analysis for spectrum risk reduction in new capability acquisitions, EMS operations support, capability development, EMS policy and doctrine development, system design and test and evaluation.

Key expertise of Nova Systems EMSES include;

- High fidelity Modelling and Simulation (M&S) based EMS and RF engineering analysis of EMS dependent systems, platforms and operational environments;
- EMS Operations (EMSO) support;
- Spectrum risk reduction for EMS dependent capabilities throughout the capability life cycle;
- Digital Engineering and M&S services for Test and Evaluation (T&E) of radar, Electronic Warfare (EW) and communications capabilities;
- EMS training support
- EMSO and Regulatory Spectrum Management product development and integration;
- Subject Matter Expertise (SME) support for EMSO and Regulatory Spectrum Management capability acquisitions
- SME support for spectrum policy, doctrine and framework development, and
- Regulatory consultation for securing spectrum access.

Nova EMSES has current representation and extensive experience in the International Telecommunications Union (ITU) and Asia Pacific Telecommunity (APT) since 2004 and have held various roles including agenda item coordinators and head of delegation roles carrying out Australian representation of National and Defence interests to ensure continued spectrum assurance into the future for current and future capabilities.

CAPABILITIES

- managing all steps of the equipment certification process through engagement with the Defence Spectrum Office and Australian Communications and Media Authority (ACMA)
- EMS survivability assessment for EMS dependent capabilities
- EMS engineering support to military EMS mission planning including EMS battlespace scenario modelling, Course of Action (CoA) analysis, and frequency nomination
- capability development support for specialised EMSO and regulatory spectrum management capability acquisitions
- EMS policy, doctrine, and framework development
- digital engineering and M&S based analysis in support of T&E activities for radar, EW and communications capabilities
- EMS training delivery
- representation at International Telecommunications Union and local regulatory processes to promote client interests
- complex RF engineering modelling and analysis
 - multi-domain communications network modelling
 - radar and missile defence network modelling
 - EW battlespace assessment
- inter and intra system interference assessment
- investigation of interference mitigation techniques
- system performance analysis in a complex spectrum environment
- conduct of spectrum and RF related technical consultancy studies and report preparation
- EW capability specific system modelling for risk mitigation, legal due diligence as well as capability validation and performance assessment



KEY SERVICES

Capability Life Cycle EMS Support

- Managing the EMS dependent equipment certification process through engagement with the Defence Spectrum Office (DSO), procurement agencies and the ACMA
- Preparation of EMS management plans for spectrum dependent capabilities
- EMS risk assessment and spectrum efficiency assessment for new capabilities
- Support to EMS risk mitigation activities including interference analysis, laboratory and field testing
- Simulation and modelling for EMS based operational scenarios to identify strategic needs and functional performance specifications for EMS dependent capability acquisitions
- Radiofrequency systems modelling in support of test and evaluation activities
- SME support for EMSO and Regulatory Spectrum Management capability acquisitions

EMS Operations and Activity Support

- Modelling based prediction and visualisation of EW battle effects and analysis of CoA for complex EW problems and deficiencies
- EMS battlespace scenario modelling for EMS based wargaming activities
- EMS engineering support for military EMSO, including optimisation of EMS mission plans using advanced algorithms to achieve the intended Electromagnetic Operational Environment (EMOE) effect and generation of frequency nomination plans
- Technical support for evaluation and coordinated implementation of EMSO strategies, plans and policies
- Technical and regulatory EMS assessment of domestic EW activities (e.g. major events, Raise Train and Sustain (RTS) activities) for national security agencies for EMS risk identification/ reduction and providing advice on achieving the desired EMS effect
- EMS characterisation of domestic and international geographical areas of interest through EMS baselining and data analysis

EMS Policy and Regulatory Services

- Develop, manage and implement strategic plans for spectrum policies and regulatory frameworks to support critical terrestrial and space communications services
- SME support for military spectrum policy, doctrine and framework development
- Engage local and overseas policymakers and regulators in international, regional and bilateral spectrum harmonisation fora to advance strategic spectrum interests
- Spectrum management and advisory services to the Aerospace and Defence industry organisations
- Represent industry interests in the national, regional (APT) and global (ITU) regulatory processes
- Identification and evaluation of emerging technologies, market, industry ecosystem and regulatory trends that could shape spectrum policies, rules, and regulations
- Undertake collaborative proceedings with key stakeholders to coordinate positions, prepare plans and negotiate agreements, to promote client's long-term spectrum requirements and interests
- Conduct sharing and compatibility technical studies between radio services in key frequency bands, to promote client's spectrum interests

Radio Frequency Engineering

- Systems design and analysis of multi-domain communications network, radar and missile defence networks, counter UAS and EW systems
- Baselining of ranges and training areas using RF measurements
- RF measurement and spectrum monitoring for interference resolution
- Testing of EMS dependent systems to produce spectral occupancy and receiver susceptibility data to assist in risk reduction activities for EMS management

EMS Training

Scan here to find out more about our EMSES training programs.



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