RADIO SPECTRUM MANAGEMENT

Annual Report 2014/15

for the year ended 30 June 2015

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

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Our vision

To be the **world leader** in spectrum management, helping **grow** New Zealand's connectivity and **increase** economic growth through a **modern** telecommunications environment.

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Introduction

To effectively promote growth, New Zealanders need to be well connected with access to the latest technologies and for this an effective radio spectrum management regime is increasingly critical.

The Ministry of Business, Innovation & Employment (MBIE) is responsible for efficiently and effectively managing the radio spectrum, including allocating rights for the use of the spectrum and enforcing compliance with the requirements that protect it as a continuing resource.

In addition, MBIE is responsible for providing policy advice to the government on spectrum issues and administering the allocation of any spectrum the government decides to make available as tradable property rights.

These functions are completed for MBIE by the three sections of Radio Spectrum Management (RSM): Policy and Planning, Licensing and Compliance.

In particular, effective management of the radio spectrum by RSM is crucial to MBIE's intermediate outcome of a more reliable infrastructure.

This annual report describes our work programme for 2014-2015, our financial performance and how we delivered on our performance targets.

How we contribute

OUR WORK CONTRIBUTES TO MBIE'S OBJECTIVE TO 'GROW NEW ZEALAND FOR ALL'

RADIO SPECTRUM MANAGEMENT

Efficient and effective management of radio spectrum, including allocating rights for the use of the spectrum and enforcing compliance.

Providing policy advice to the government on spectrum issues and administering the allocation of any spectrum the government decides to make available as tradable property rights.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

More reliable infrastructure and responsible development of natural resources.

Better functioning markets that are more trusted and more competitive.

New Zealand Government

Building the foundations for a stronger economy in which businesses have more confidence to invest and expand and New Zealanders have more opportunity to succeed.

Our Team

RSM SITS WITHIN THE INFRASTRUCTURE AND RESOURCE MARKETS GROUP OF MBIE.

CHIEF EXECUTIVE
Ministry of Business, Innovation & Employment
David Smol

DEPUTY CHIEF EXECUTIVE
Infrastructure and Resource Markets
Andrew Crisp

GENERAL MANAGER
Resources, Energy and Communications
Brad Ward

POLICY & PLANNING MANAGER
Radio Spectrum Management
Len Starling

LICENSING MANAGER
Radio Spectrum Management
Jeff Hicks

COMPLIANCE MANAGER
Radio Spectrum Management
Chris Brennan

Note: As a result of a MBIE wide review the RSM Licensing and Compliance teams were moved to the Consumer Protection and Standards Branch of the Market Services Group on 31 August 2015.

The General Manager for RSM Licensing and RSM Compliance is now Sanjai Raj.
Until 1 July 2015 Bruce Parkes was the General Manager for Resources, Energy and Communications.

Policy & Planning

Policy and Planning

The Policy and Planning team is responsible for the legislative, regulatory and business frameworks that allow for the efficient and effective functioning of the radio spectrum regime.

The team provides advice to the government on the management of spectrum property rights and administration of radio licences, and on legislation concerning radio spectrum. It designs and administers spectrum allocations (by auction or other sale method) in accordance with government decisions. It develops the technical frameworks, band plans and technical rules that regulate how spectrum can be used. It also represents New Zealand's interests at international radio spectrum forums.

Regulatory framework

We are responsible for the regulatory framework that governs use of New Zealand's radio spectrum resource. In 2014/2015 we:

- Released amendments to the Radiocommunications Regulations 2001.
- Commenced a review of the Radiocommunications Act 1989. Key issues identified were:
    - The effectiveness of provisions relating to management of interference,
    - Competition regulation.
- Held workshops on the initial discussion document and options to improve the interference management provisions in the Act.

International coordination and representation

- Developing New Zealand positions in preparation for the World Radiocommunications Conference to be held in Geneva in November 2015 and promoting those positions in our region (at the Asia-Pacific Telecommunity).
- Supporting the team that negotiated the Trans-Pacific Partnership.
- Identifying additional spectrum bands for future mobile broadband technologies, including 5th generation cellular services.
- Identifying spectrum suitable for use by emergency services for broadband.
- Identifying future spectrum requirements for aeronautical services, including the safe operation of aircraft through aircraft tracking.
- Working with Japanese car manufacturers to manage issues arising from Japanese use of the 760 MHz band for Intelligent Transport Systems.

Technical documentation

Our technical documentation establishes the band plans, channelling and other technical parameters that allow spectrum to be used with minimal levels of interference. Accredited persons rely on this documentation when creating licences. In 2014/15 we:

- Created a list of Crown Management Right Band Plans (PIB 24)[1]
- Published the Spectrum Licence Policy Rules for Crown Management Rights (PIB 59). This was written to complement the Spectrum Licence Certification Rules (PIB 39).
    - Updated the:
        - Table of Radio Spectrum Usage in New Zealand (PIB 21).
        - Fixed Service Bands in New Zealand (PIB 22).
        - Spectrum Licence Certification Rules for Crown Management Rights (PIB 39).
        - General User Radio Licence for Ultra-Wide Band Devices.
        - Radio Licence Policy Rules (PIB 58).
        - General User Radio Licence for Short Range Devices Notice 2014.

Other Projects

Each year sees us significantly advancing, or completing, a number of one-off projects. In 2014/15 we:

- Auctioned more than 172 licences in the AM and FM bands.
- Completed sales processes for the 700 MHz auction.
- Completed transition of radio microphones out of the 700 MHz band.
- Obtained government ratification of changes to the International Telecommunications Union (ITU) Treaty.
- Obtained a Cabinet decision on allocation of the upper part of the digital television band (622-686 MHz). This remains unavailable for licensing.
- Facilitated the entry of INMARSAT New Zealand and Telecom (now SPARK) New Zealand into the Ka Satellite band. The Ka Satellite band will deliver faster broadband to the Pacific Region.
- Reviewed the fixed service bands. A full public consultation was conducted and very good industry feedback was received. Commenced implementation of the review findings.
- Reviewed spectrum options for the emergency services Whole of Government Radio Network.
- Continued planning for rechannelling the Maritime Mobile Repeater band, in consultation with the Coastguard, Maritime New Zealand and other stakeholders in the maritime sector. The changes are required due to International reallocation of our Maritime Mobile Repeater frequencies.
- Developed a proposal to allow 3.5 GHz Crown spectrum to be used for Time Division Duplex (TDD) as well as Frequency Division Duplex (FDD). Consulted on this proposal and introduced the consequential changes.
- Worked with other government agencies to establish plans to ensure that second-hand imported Japanese vehicles do not cause interference to NZ cellular networks.
- Liaised with the Civil Aviation Authority and Airways to promote the rules for Remotely Piloted Aircraft (RPAs), to ensure that operators are aware of the rules for using drones.
- Reviewed our costs and revenue, and developed options in preparation for a fees review.

[1] Public Information Brochure (PIB)

Snippet of Interest

The sale of FM broadcasting licences in December 2014 through Turners and the Trade Me auction platform created a record Trade Me auction price. A licence to transmit an FM broadcasting service from the Huntsbury Hill site in Christchurch sold for $7.8M. This use of an on-line retail auction site to sell spectrum licences was extremely cost-effective for the government, with the costs of sale an order of magnitude below the alternative methods.

Future Work Programme

We plan to consult on a new Radio Spectrum Management Five Year Outlook during 2016.

Licensing

Licensing

Our licence administration is user-focused, efficient and effective, and maximises the use of online services wherever possible.

Licensing and Registration

Highlights or work carried out in 2014/2015:

- Implemented the January 2015 amendments to the Radiocommunications Regulation 2001.
- Supported the 'approved persons' professional community and made sure that they were the initial contact for radio and spectrum licence holders.
- Provided training for ARE, ARC and approved radio examiners (ARX) including:
    - Radio licence certification technical rules and supporting radio licence policy rules.
    - Promoting the use of best practice in spectrum engineering techniques.
    - Using the Register of Radio Frequencies (RRF)[2] to efficiently process certificates and callsign applications.
- Advised F band and TS band users that they now have a change out date of 31 December 2019 for 25 kHz analogue services to move to 12.5 kHz.
- Licensed services for various visiting dignitaries.
- Registered new licences for the Cricket World Cup and FIFA Under20 World Cup matches.
- Facilitated the licensing of radio and spectrum licences for the Volvo Ocean Race stopover in Auckland in late February 2015.
- Updated and published:
    - General User Radio Licence for Fixed Radio Link Devices Notice 2014.
    - Radiocommunications Regulations (General User Radio Licence for Itinerant Differential GPS) Notice 2015.
    - Radiocommunications (Radio Standards) Notice 2015.

Test Licences

- Facilitated the entry of a short-term licence for demonstrating a radio activated train warning device in Auckland - the warning is to alert track maintenance workers.
- Worked with a US University/NASA to licence a short-term research project in Wanaka involving launching high altitude balloons on various frequencies. This may be a multi-year project.

US Antarctic Program

- RSM authorised a satellite ground station in Christchurch that allows the US Antarctic Program to communicate with aircraft flying to McMurdo station.

[2] Allows a client to search the Register of Radio Frequencies, apply for a New Zealand radio licence, renew an existing licence or update client details.

Licensing International Arrangements

› Attended the Spectrum Regulators Forum in Sydney, Australia in September 2014.

› Attended regular Radio Standards meetings with Australian Standard Regulators.

› Worked with the Australian Communications and Media Authority (ACMA) to ensure radio standards are harmonised between New Zealand and Australia.

Current projects

Maritime

› Worked with the Maritime Mobile (MM) industry on the required changes to transition 14 Maritime Mobile Repeater Channels to the new ITU MM band plan.

› Worked with Kordia to engineer and add 41 new MM Repeater licences to the Register. Clients who hold licences in the MM spectrum that is affected by the changes to the MM Repeater spectrum will move to these new channels in October 2016.

› Developed a process to allocate Fixed Access Time Division Multiple Access (FATDMA) codes to maritime transmitters used for Virtual Aids to Navigation (AtoNs).

Snippet of Interest

Radio engineering for the Volvo Ocean Race (VOR) stopover in Auckland required close liaison between RSM and the Volvo radio engineers after some VOR radio equipment arrived in Auckland on unlicensed frequencies. Rapid frequency approvals from RSM Licensing allowed Volvo radio engineers to licence the new frequencies for the TV pictures from the yachts during the harbour race. A further extension of licences was needed after Cyclone Pam delayed the fleets scheduled departure - Leg 5 Auckland to Itajai from 14 - 18 March 2015. The delay meant some short term licences due to expire had to be extended to cover the race operation while held up in Auckland.

Register of Radio Frequencies (RRF)

› Deployed a Web Services product that allows the bulk upload and download of licence information to and from the RRF.

› Ensured that the integrity of the Register of Radio Frequencies is maintained to enable effective engineering of licences.

› Continued enhancements to the RRF in response to client feedback.

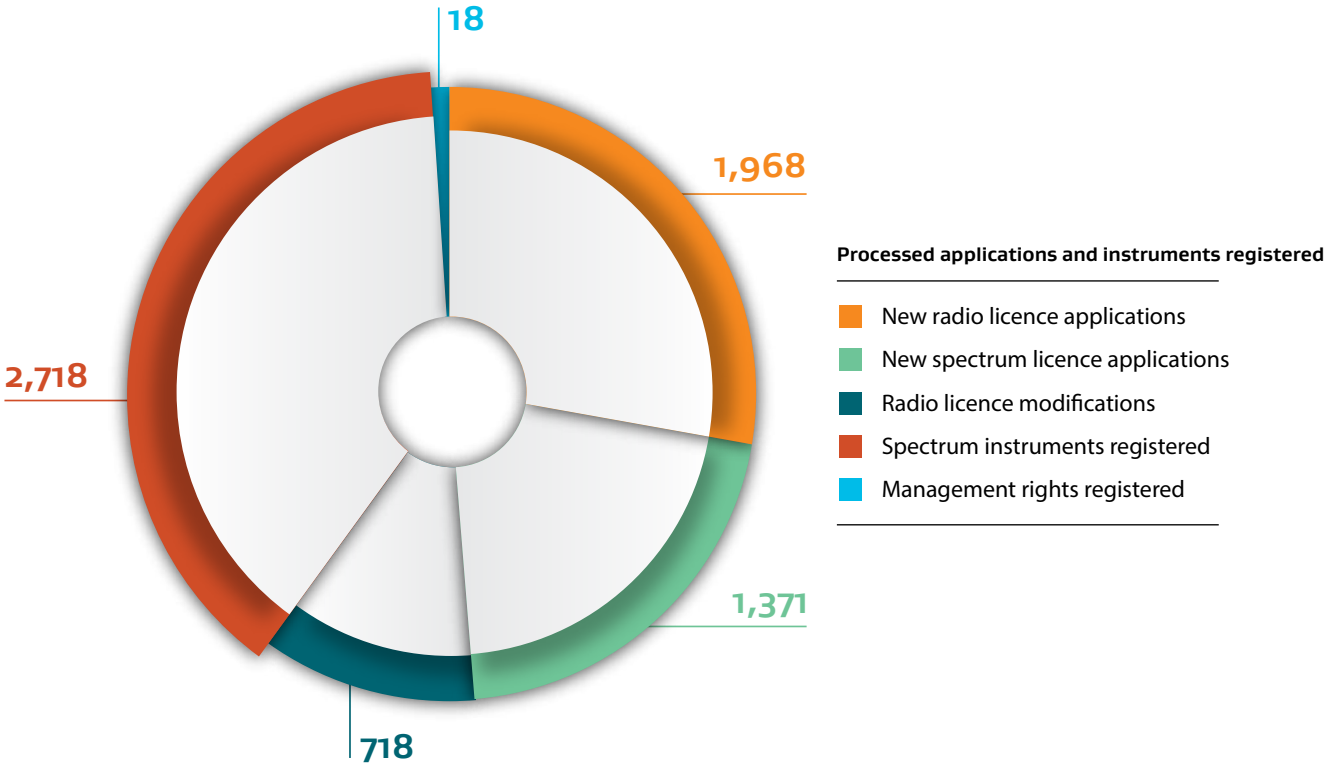
› Created online versions of two spectrum forms (Form 11-Memorandum of Mortgage and Form 18-Discharge of Memorandum of Mortgage).

Business Activity Statistics

Data for this section was obtained from our internal reporting systems.

Our business activity for 2014/2015 shows that we:

› Processed a total of 1,968 radio licence applications (including 718 modifications to existing licences) and 1,371 spectrum licence applications. We registered 2,718 new spectrum instruments and 18 new management rights in the Register of Radio Frequencies.



› Granted/registered 100 percent of correctly submitted licences, instruments and management right applications within 5 five business days.

Engineering Certification

Clients applying for licences can select an independent ARE or ARC to complete their licences. There are now 178 AREs and ARCs, of which 59 have been active in the last financial year.

AREs and ARCs certified 4,957 licences, which equates to 98.7% of all licences (up from 97% in the previous year).

Business Capability

Business Capability

We strengthen our connections with stakeholders by developing new approaches to improved business capability and higher levels of innovation. We measure and demonstrate our progress and success through regular reviews. We conduct annual forward-looking scans of external trends and developments, and allocate resources to address changing requirements.

RSM Website

We improved our client service by supporting and enhancing our online delivery of services by revamping the RSM Website. During 2014/2015 we:

- Launched RSM's improved website. At the heart of our new visual identity was the new RSM new logo.
- Refreshed the structure and layout of content to make it easier to navigate and find information.
- Revised the naming of the primary navigation that is displayed on every webpage to help orient the user to find information on specific subjects. Improvements included updating:
    - Licensing: pages for types of licences, how to apply/modify/cancel your licence, list of engineers and examiners, radio operator certificates and callsigns, licence fees and information for ARE/ARC/ARX.
    - Compliance Requirements: licence requirements, supplier requirements and prohibited equipment.
    - Projects & Auctions: pages summarising all open and closed auctions and consultations that have taken place for current and completed projects.
    - Consumers & Users: new pages explaining what interference is, buying products from overseas, traveller's tips, prohibited equipment for consumers, frequencies anyone can use, radio engineers and certifiers available for public work.
    - Online Services & Resources: Links to the Register of Radio Frequencies (RRF), Spectrum Search Lite, user guides, forms, publications and frequently asked questions.
    - About RSM: new pages for who is RSM, news and updates, spectrum policy, international relations, arrangements with other countries.
    - Online forms and publications, including PIBs and user guides.

Client Satisfaction

We incorporate client survey feedback into the RSM business plan to continue to implement improvements. The 2014/2015 client survey showed:

- A significant increase in visitor's numbers to the RSM website after it was refreshed. Feedback from the survey was highly favourable.
- More than 86 percent of clients were satisfied with RSM's service.

Compliance & Enforcement

Compliance and Enforcement

We work to make it easier for businesses to understand what they need to do to comply with regulations. This allows a regulatory environment that does not unnecessarily impose burdens on business, but rather encourages innovation.

Achievements

- Developed new tools to enable efficient investigation of interference and licensing compliance by using automated and remotely-controlled radio monitoring systems.
- Provided spectrum monitoring, technical advice and interference resolution services at all Cricket World Cup 2015 matches held in New Zealand in March and April 2015.
- Provided spectrum monitoring, technical advice and interference resolution services at all FIFA Under20 World Cup 2015 matches held in New Zealand in June 2015.
- Updated the:
  - RSM Compliance Guide.
  - Responsible Supplier registration instructions for New Zealand users of the ERAC register.

Interagency Collaboration

- Worked with intelligence and operations sections of New Zealand Customs, to identify and intercept non-compliant radiocommunications equipment, such as dog-tracking devices and jammers. The Customs intelligence gathering and targeting systems are effective in establishing "risky" travellers and importers.
- Worked with New Zealand Police to investigate illegal dog tracking devices used by hunters. We obtained location information downloaded from the illegal dog-tracking devices seized by Police. This information resulted in the prosecution of several hunters.
- Worked with Callaghan Innovation, Airways and Civil Aviation to promote awareness of radio control and video linking licensing requirements for Remotely Piloted Aircraft (drones), through media items and web site information.

International Engagements

- Worked with Ofcom, the UK spectrum regulator, to address the issue of ongoing internet supply of cellular boosters and repeaters, which are illegal to use in New Zealand and pose significant risk to emergency services and cell site operations.
- Worked with Garmin USA and the New Zealand distributor to arrange a suitable 'legal' product for the New Zealand market, allowing availability of dog tracking and training devices that use New Zealand compliant frequencies and power levels.
- Participated in several EMC standards meeting, which discussed technical amendments and updates to CISPR[3] Electromagnetic Compatibility standards. Among the topics considered were concerns about new technologies in wireless power transfer and power line communications and their possible interference with other services, including ADSL, VDSL and G.Fast telecommunications.
- Worked with Chinese regulators (under the FTA) to allow New Zealand to test electrical and electronic products and apply the Chinese CCC compliance mark for electrical safety and EMC.

[3] International Special Committee on Radio Interference which sets standards for controlling electromagnetic interference in electrical and electronic devices, and is a part of the International Electrotechnical Commission (IEC).

- Worked with Australian Communications Media Authority (ACMA) to determine the probable location of unregistered transmitters using frequencies between 3MHz and 30MHz.
- Provided input into a New Zealand Government submission (MBIE coordinating) on the review of the TTMRA conducted by the Australian Productivity Commission.
- Worked with ACMA's harmonised arrangements for EMC and radio products by New Zealand departments to "improve the movement of goods" between countries.

Audits

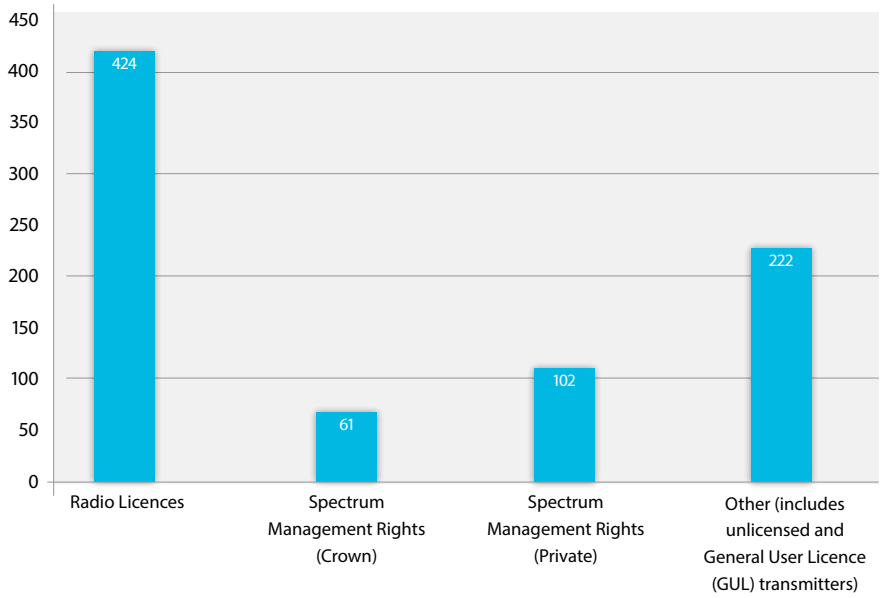
Compliance audits protect the utility of the radio spectrum. Our audit programmes achieve outcomes through a mix of education, warnings, and infringement notices.

Achievement of performance measures

Licence Audits

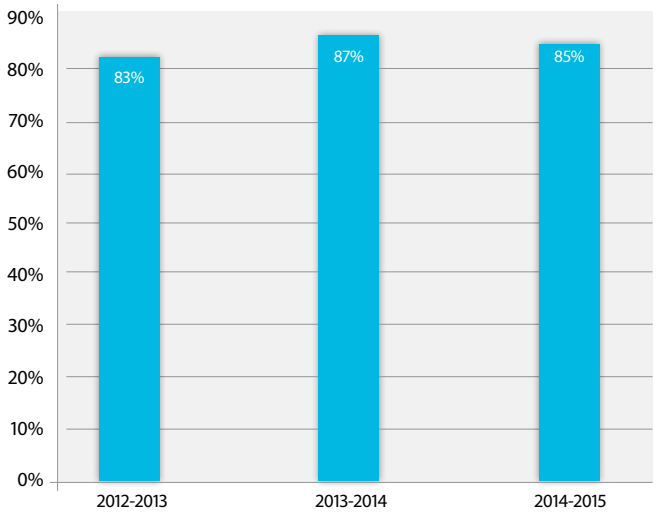
- We used over-the-air verification measurements in 98 percent of radio transmitter audits. This approach minimises user costs and encourages voluntary compliance. As a result of 809 audits, 93 warning and 32 infringement notices were issued.

Number of licence audits per licence type



- Infringement notices were issued to a range of services, such as Low Power FM stations, fixed links and land mobile services. These breaches were largely grouped under the categories of unlicensed transmitters, over-powered transmitters, and incorrect licence location, frequency or bandwidth.

Targeted licence audit outcomes: % compliant



Supplier Audits

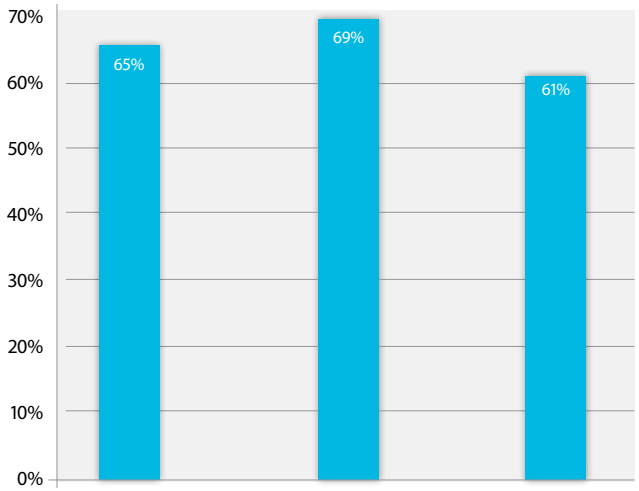
› Undertook 314 enforcement and conformance investigations. Ten infringement notices were issued confirming that EMC and Radiocommunications/radio transmitting products supplied in New Zealand present an acceptably low level of interference risk to the radio spectrum.

› Encouraged voluntary compliance through education and incentives, issuing 112 warnings of non-compliance. Most of the warning and infringement notices were issued for:

- › Incorrect or non-labelling of products.
- › Supplying products that operate outside the General User Licences (GULs).
- › Supplying products included in Prohibited Equipment Notices.
- › Incomplete or non-existent compliance folders.

› We targeted new and existing online traders to verify compliance with required performance standards and documentation. Online traders continued to present a risk to New Zealand's radio licensing framework due to the low start-up costs and ease of access to non-compliant products.

Targeted supplier audit outcomes: % compliant



Examiner Audits

› Worked with Approved Radio Examiners (ARX) and conducted three audits to verify maritime and amateur radio operators have the necessary skills and knowledge to carry out efficient and effective radiocommunications.

Enforcement

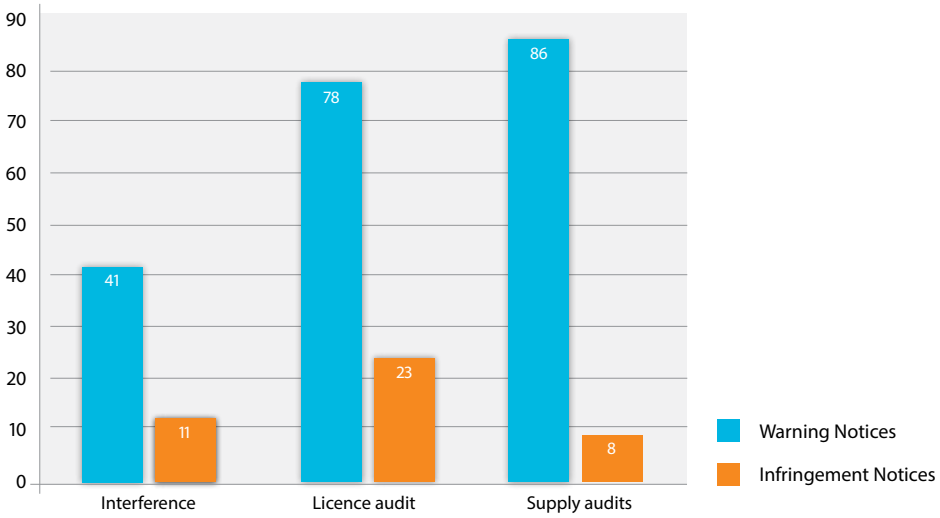
› We identified a total of 205 offences that resulted in warning notices and 42 offences that resulted in infringement notices.

› Three successful prosecutions were undertaken for:

  › transmitting radio waves in breach of the conditions of the radio licence, and

  › supplying, offering for supply and importing for supply restricted radio apparatus, without holding a Licence to Supply.

Enforcement overview of offences



Radio Frequency Interference

We investigate and resolve radio spectrum interference complaints and actively monitor the overall compliance environment. Our investigation services are supported by website information and client education aimed at reducing the number of investigations and costs.

Business activity

› Received a total of 268 interference complaints of which 26 cases related to interference to public safety radio communications services, 159 cases related to commercial licensed services, and 83 complaints were for domestic broadcasting interference.

› 100 percent of interference complaints to public safety services were responded to within two hours of being lodged.

› 99 percent of commercial interference complaints were responded to within one working day of being lodged.

› 100 percent of interference complaints to broadcasting services were responded to within two working days of being lodged.

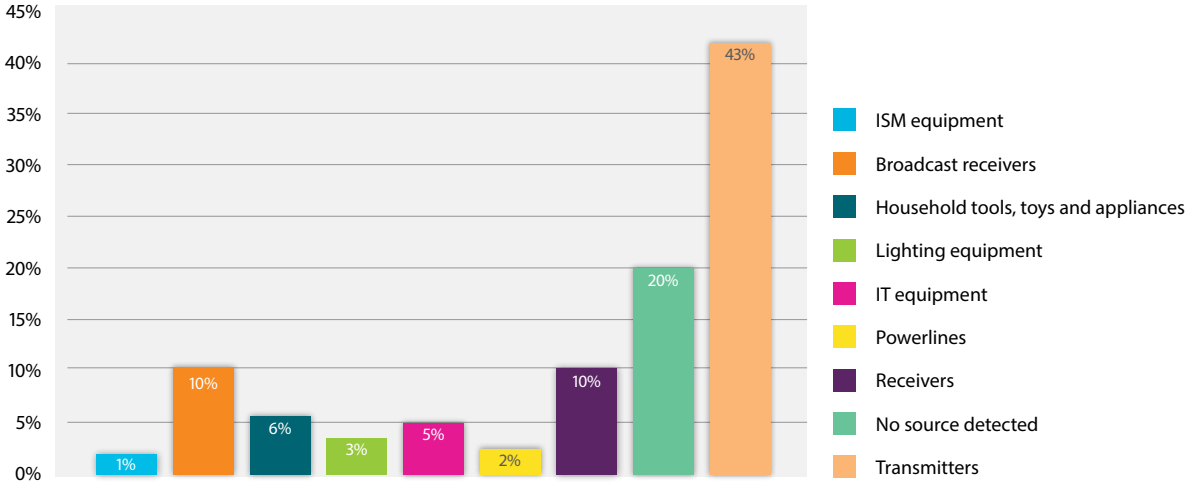
› Of the interference investigations undertaken, we issued 41 warning notices and 11 infringement notices.

› Interference complaints declined by 13 percent from the previous year.

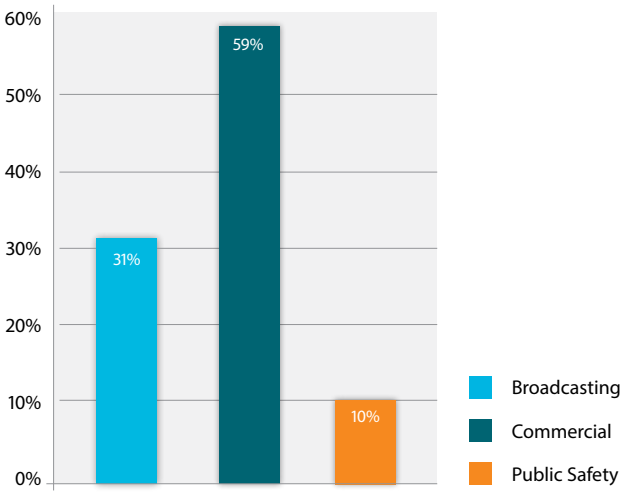
Examples of interference complaints resolved this year

- Interference to Southland and central Otago police radio network resolved with location of an interfering Low Power FM station. LPFM interference featured several times over this past year.
- Meteorological Service rain radar issue resolved with location of a non-compliant video camera system on 5GHz.
- Interference to a frequency used by a model aircraft club in the vicinity of a prison was resolved.
- Interference to cell sites in Napier resolved with location of a wireless speaker system operating in the cellular spectrum from a nearby café.
- Joint prosecution with Energy Safety of an online trader trading in the purchase of prohibited equipment that was also non-compliant with Electricity (Safety) Regulations.
- Interference to the maritime VHF distress channel in Tauranga resolved when traced to a communications system on a visiting cruise ship.
- Interference resolved from several LPFM stations transmitting on non-compliant frequencies or contravening limits on the number of stations transmitting the same programme.
- Resolved interference with telecommunication cell sites in the Taranaki area after tracing interfering radio signals coming from a visiting seismic survey vessel.

Interference sources



Interference complaint sector



Statement of Financial Performance

Statement of Financial Performance

For the year ended 30 June 2015

	2015 Budget $000	2015 Actual $000	2014 Actual $000	2013 Actual $000	2012 Actual $000
REVENUE					
Crown	320	320	787	412	223
Other[1]	6,885	7,450	7,574	8,358	8,942
Total Revenue	**7,205**	**7,770**	**8,361**	**8,770**	**9,165**
EXPENSES					
Personnel	2,543	2,039	2,067	1,849	2,214
Operating	765	831	504	1,094	2,296
Depreciation	590	554	552	511	396
IT costs	958	969	837	1,250	1,148
Occupancy	28	60	19	325	322
Support costs	2,133	3,073	2,968	1,822	1,501
Total Expenses	**7,017**	**7,527**	**6,947**	**6,851**	**7,877**
Surplus/(Deficit)	**188**	**244**	**1,414**	**1,919**	**1,288**

Notes

1. SOURCES OF REVENUE OTHER					
Spectrum Licence Annual Fees	2,423	3,243	2,623	3,350	3,627
Radio Licence Annual Fees	4,442	4,246	4,900	5,008	5,237
Other Revenue	21	(39)	51	0	78
Total Revenue Other	**6,885**	**7,450**	**7,574**	**8,358**	**8,942**
2. TOTAL EXPENSES					
Total expenses include the following costs but exclude Policy related costs					
Radio Spectrum Planning	1,698	1,557	917	1,001	977
Future auction sales	559	581	523	412	225

Acronyms and Abbreviations

ACRONYM	ABBREVIATION
ACMA	Australian Communications and Media Authority
ARC	Approved radio certifier
ARE	Approved radio engineer
ARX	Approved radio examiner
AtoN	Aids to Navigation
CCC	China Compulsory Certificate
Customs	New Zealand Customs Service
EMC	Electromagnetic compatibility
FTA	Free Trade Agreement
GUL	General User Licence
ISM	Industrial, Scientific Medical
ITU	International Telecommunication Union
MBIE	Ministry of Business, Innovation and Employment
MM	Maritime Mobile
PIB	Public information brochure
RPA	Remotely Piloted Aircraft
RSM	Radio Spectrum Management
RRF	Register of Radio Frequencies
TTMRA	Trans-Tasman Mutual Recognition Arrangement

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