

The 9th Annual Report of the Radio Communication Examination Standards Committee, April 2015

1. Introduction

This is the ninth annual report of the Radio Communication Examination (RCE) Standards Committee, a Committee set up under the terms of the agreement between Ofcom and the Radio Communication Foundation (RCF) for the conduct of amateur radio examinations (the Radio Communication Examinations).

The annual reports of the Standards Committee are published on the RCF website, <http://www.commsfoundation.org/rce/>. Other documents relevant to the RCE are also available on this website, including the terms of reference of the Standards Committee and the agreement between Ofcom and RCF.

2. Membership

The membership of the Standards Committee is as follows:

Prof Simon Watts MBE FREng, G3XXH, (Standards Committee Chairman)
Prof Hugh Griffiths FREng, G4CNV, Department of Electronic & Electrical Engineering, UCL
Dr Julian Gannaway, G3YGF, Roke Manor Research Ltd
Murray Niman BSc MIET, G6JYB, BAE Systems
Dave Powis BSc, G4HUP, FE Engineering Lecturer
Paul Jarvis, MCMI, G8RMM, Ofcom
Sqn Ldr David Pink, G6EGO (Air Cadet Radio Officer)
Alan Betts BSc CEng MIEE MIFL, G0HIQ (Chairman of RCE Examination Committee)
Dave Wilson, M0OBW (RCE Quality Assurance Manager)
Ian Shepherd, BSc MBA FBCS CITP, G4EVK (RCE Standards Manager)
Steve Hartley MSc CMIOSH AIEMA, G0FUW (RSGB Training and Education Committee Chairman)

3. Assessment of Overall Examination Performance

The committee received detailed reports from the Examination Committee, the RCE Quality Assurance Manager, The RCE Standards Manager, the RSGB Examination Department and the Air Cadet Organisation, on the management and performance of the examination processes. Their reports are summarised below.

The Standards Committee is satisfied that the current Foundation, Intermediate and Advanced examination syllabuses are suitable for the award of Amateur Radio licenses. Further, the examinations are compatible with the CEPT harmonised arrangements set out in Recommendations TR 61-01 and TR 61-02. The committee will continue to review the syllabuses and examinations to ensure compatibility with international and national regulations.

4. Syllabus Revisions

The EC is working with the RSGB TEC on a review of all three examinations syllabuses. One of the aims of this review, apart from ensuring the syllabuses appropriately represent modern amateur radio technology and requirements, is to make the steps between the three

levels more of a gradual progression. It is hoped that the revised Foundation syllabus will lead to training that encourages more candidates to progress to Intermediate level. A particular aim is to encourage the progression from Foundation, through Intermediate, to Advanced level.

5. Review of the Examination Committee (EC) report.

Membership

The EC recruited one new member in 2014 but still wishes to recruit new members with specialist qualifications, especially those with experience of a school education environment, familiar with the examination practices of major examination boards.

Question Banks

The committee is pleased to report that the Foundation and Intermediate examinations currently meet their specifications for questions. The shortfall of questions for the Advanced examination has reduced to 21, compared with 62 last year.

Results for 2014

The table shows the number of examinations held and the overall results for 2014 with earlier years, 2012 down to 2006 for comparison. This year the number of candidates is shown as enrolments minus absentees. The first figure is directly comparable with previous figures. The pass rate is based on the number actually sitting.

		Foundation	Intermediate	Advanced
Number of Examination sessions	2014	591	268	195
	2013	594	274	183
	2012	606	261	199
	2011	581	235	152
	2010	605	239	121
	2009	643	260	155
	2008	614	265	169
	2007	616	206	95
	2006	640	230	154
Number of Candidates	2014	1818 - 62	730 - 9	513 - 25
	2013	1759	736	473
	2012	1874	756	497
	2011	1837	694	408
	2010	1896	652	321
	2009	2021	704	426
	2008	2003	733	397
	2007	1965	646	289
	2006	2034	625	446

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Number of Passes	2014	1481	682	303
	2013	1508	664	332
	2012	1599	702	350
	2011	1570	632	279
	2010	1605	596	222
	2009	1704	662	289
	2008	1678	677	263
	2007	1605	603	161
	2006	1719	604	326
Pass rate	2014	84.3	94.6	62.3
	2013	85.7	90.2	70.2
	2012	85.3	92.8	70.4
	2011	85.5	91.1	68.6
	2010	84.7	91.4	69.2
	2009	84.3	94.0	67.8
	2008	83.8	92.4	66.2
	2007	87.4	93.4	64.1
	2006	84.5	96.6	73

The number of Foundation candidates sitting exams in 2014 increased by 3.3%. The pass rate has dropped marginally by 1.4% but this reduction is not considered to be significant.

The number of Intermediate candidates enrolling has dropped by just under 1% but the number passing has increased by 2.7%. However, the SC considers that in-year progression rate of just under 50% and from 2013 of 48.4% could be improved and further effort should be applied to this aim. The SC noted that the pass rate at Intermediate level is very high and may be too high to be a good measure of capability commensurate with the award of an Intermediate licence. There are no plans at present to alter the pass mark but this pass mark will be considered as part of the syllabus review.

At Advanced the 303 passes comprised 34 distinction, 83 merit and 186 passes, representing 11%, 27.4% and 61.4%. The mark boundaries for merit and distinction were set on the 5 years to December 2008 based on 20%, 30% and 50% of total passes. One candidate scored 62/62, which was highly commendable. The pass rate this year shows a drop on the average rate for 2005 to 2012 and a larger drop compared with the rate for 2013. This reduction in pass rate prompted a review of the examination questions by the Standards Manager, to assess whether they had become significantly harder. He concluded that this was not the case but this will continue to be monitored in future years.

The number sitting the Advanced exam is 5% up on 2013 which is encouraging. Based on in-year figures and ignoring any re-sits of the 682 candidates passing Intermediate, 522 enrolled for Advanced, a rate of 75.6%. The progression rate is 78.6% based on Intermediate passes in 2013.

The EC has produced a detailed report on the results of the RCE in 2013, aimed at examination tutors and candidates. This will be available on the RCF website at <http://www.commsfoundation.org/rce/committees/index.html#ec>.

Pass Marks

There are no proposed changes to the pass marks set for all the examinations.

6. Review of the Quality Assurance Manager's Report

Dave Wilson was appointed as RCE Quality Assurance Manager, QAM, in September 2014, having previously held the post of interim Quality Manager.

Examination Administration

Good liaison with the RSGB Examinations Supervisor has continued.

Conduct of Examinations and Inspections

Examinations are liable to routine unannounced inspections at any time, either from the Quality Assurance Manager and the team of inspectors or from Ofcom.

There were 40 unannounced inspections of examination venues during 2014. This represents only 4% of all examination sessions, compared to the aim of 10%. With the aim of increasing this inspection rate, the QAM has recruited a team of 14 independent inspectors. RSBG Regional Managers and Deputy Regional Managers will also continue to undertake inspections on behalf of the RCF, under the direction of the QAM.

The QAM now provides feedback to examination centres following an inspection, which identifies those aspects of the inspection that went well, as well as any observations on areas for improvement if needed.

Indicative local marking of Intermediate and Foundation exams

The SC discussed whether indicative local marking of exams should remain part of the standard examination procedures. After some debate the following advice to exam centres was agreed with the RSGB:

“Following the 5 Bridges Survey we have received a number of enquiries about the status of local marking. Until automatic feedback is available for all candidates local indicative marking is to remain part of the process for all Foundation and Intermediate examinations. Candidates must also be made aware that it is only a provisional result and may change. A small number of errors in local marking and premature celebrations have caused distress, formal complaints and threats of further action. Invigilators are reminded to take extra care and have two markers check each paper separately to minimise this risk, borderline results must be double marked. The benefits of immediate feedback to all candidates must be balanced against the risk of error and incorrect advice. This position will be reviewed when automatic feedback is available for all candidates.”

7. Review of the Standards Manager's Report

Ian Shepherd was appointed as RCE Standards Manager, SM, in September 2014. The SM is responsible for ensuring that all procedures associated with the RCE are up to date and fully documented. The Examination Handbook and associated procedures are being updated by a team from the EC and RSGB TEC and will be handed over to the SM in the near future.

The SM has also been working with the RSGB Examination Department on the EMAS examination software to ensure that the arrangements for maintenance and future upgrades are appropriately managed.

8. Review of the Report from RSGB HQ Examination Department

The demand for exams slightly exceeded the previous year. This year, however, the pattern of demand for examinations throughout the year was such that there were several “bottlenecks” in processing which required additional staff time. These peaks in workload coincided with the Advanced examinations and the SC noted that a move to Advanced exams “on demand” would help smooth these out. This may be difficult to achieve in the immediate future as there are insufficient numbers of Advanced questions available for “on demand” exams. However, the SC asked the EC to work with RSGB to see whether the peaks in demand could be reduced by increasing the frequency of Advanced exams.

Examination Software

The new EMAS software became operational in July 2013 and is now in use for all examinations. Some further features have still to be completed but this is in hand. Local examination officials have become increasingly familiar with the system and it is noticeable that the number of rejected optical mark sheets has halved in the last year.

9. Review of the Report from the Air Cadet Organisation

Sqn Ldr David Pink took over in 2015 from Sqn Ldr David Taylor as the Air Cadet Radio Officer.

The Army Cadet Force (ACF) is now fully engaged with the ACO, with their candidates sitting the ACO examination. The Sea Cadet Corps (SCC) has started teaching cadets to the ACO standard and are expected to start participating during 2015. This was welcomed by the SC.

A total of 138 candidates sat the ACO examination in 2014, with 87 passes. This was a reduction on the numbers taking the exam in 2013 but is still a considerable contribution to the overall number of candidates eligible to take out a Foundation licence, which was very much welcomed by the SC.

It is possible that the ACO may in future be able to offer an Intermediate Equivalent exam to their cadets. This exam would also be monitored by the SC to ensure it was appropriate for passes to allow the issuing of an Intermediate amateur radio licence by Ofcom. No decision on this possibility has yet been taken by the ACO.

10. Complaints on Questions Received by the RCE Examination Committee

Five Foundation questions were queried during the year. One concerned whether call sign suffixes are examinable, which they are. The second hinged on the need for supervision for one person’s call sign to be used by others. The EC decided on that occasion that the question was potentially unclear and two answers were regarded as correct, resulting in a pass for one candidate. The item was subsequently edited. The third query arose from the same exam that identified a misunderstanding as to which personal call signs were examinable but that did not affect exam results. Fourthly, in another exam a misprint was corrected by an invigilator, which should not have happened but it had no effect on the results. Finally, an antenna was quoted as having a gain of three. Only linear gains are given as part of ERP questions but the challenge was that it could be misunderstood as 3dB. The notation dB is not included in the Foundation syllabus but it is accepted some candidates will have met them. In future, questions will use the word ‘times’ after a gain value to indicate it is a linear quantity.

Ten Intermediate items were challenged during 2014. One identified confusion between an Alternative Address and a Temporary Location. Four questions were queried in one paper, one was a non-printing superscript, now a known problem that has suspended several items in the bank, and the others were editorial suggestions. Two other non-printing superscripts were also reported during the year. Random ordering of answers caused confusion to one candidate and invigilator where the answer identified as D referred to waveform drawing B. The matter has been resolved in the new software by identifying drawings by number rather than letter. An antenna/feeder question which was challenged was considered to be ambiguous since some antennas, such a G5RV, have both coax and twin feeder and that could affect the positioning of a balun. Two answers were deemed correct and the question subsequently edited. Another non-printing subscript was spotted by an invigilator, who also challenged securing a ladder at the top on the grounds that the ladder could not be climbed in the first place to achieve this as it was not secured!

No Advanced items were challenged during the year but a non-printing superscript was discovered during the check on a paper while it was still in draft.

11. Examination Appeals or Irregularities

Two credible allegations of irregularities were received during the year. One was that the exam packet was steamed open and the paper photocopied and passed to a candidate. The other was that the inspector at a home exam was asked to leave due to the stress to the candidate caused by the presence of strangers. A softer approach due to the known poor condition of the candidate was agreed. Both of these allegations were investigated by the EC and the QAM and appropriate action was taken.

Also in 2014 there were 12 irregularities that came to the attention of the EC and were investigated.

- A candidate was reported by the invigilator for handing in a crib sheet of regional secondary identifiers. The candidate failed and was suspended from sitting further exams for 6 months.
- An exam was affected by excessive external noise. Candidates who complained were offered the option of a free re-sit but chose to have their papers marked; both passed.
- A visiting inspector found the venue being used for another purpose but the returned paperwork suggested the Advanced exam was held as booked, instead of a few days earlier as investigation revealed. The investigation showed a long history of such activity which was denied in writing during the investigation until such time as irrefutable evidence was produced. The exam centre has been deregistered. They may re-apply at any time but have been advised this is unlikely to be successful for about five years.
- A photocopy of an OMS was returned rather than the original. The exam centre was formally advised of correct procedures and the photocopy declared invalid.
- The paper of a young candidate had been wrongly marked to show an indicative pass. One change of inked answer, which was disallowed, was locally marked as correct and another question was also wrongly marked as correct. This was most distressing for the candidate.
- An exam centre gave the wrong papers and OMS sheets to candidates. This was realised at the end of the exam and reported in the Examination Booklet. It was possible to untangle and credit the right candidates.

- An exam with a reader suffered from excessive noise from an adjacent club meeting and the reader could also be heard by the other candidates due to the lack of doors between rooms. The reader was also an amateur and the visiting inspector reported inappropriate conversation between the reader and candidate. The exam centre was obliged to accept an external invigilator for future exam(s) and meet any incurred costs.
- The answer sheets were packed in error along with the exam papers for an Advanced exam and were given out to one of the candidates who found them mid exam and handed them to an invigilator.
- A candidate was provided with an unauthorised reader. Acceptable medical evidence was supplied with the returned papers, not in advance of the exam. The reader was both an amateur and a deputy regional manager as well as a member of the club! However, the exam was also inspected and the inspection report confirms the situation and that the inspector had authorised the use of the reader. In this particular instance it was regarded as a pragmatic solution to an unexpected problem. The EC decided to recognise the result but unfortunately it was a fail.
- An exam centre mis-marked an exam paper resulting in a candidate being wrongly informed that he or she had passed.
- An exam centre returned a wrongly completed OMS and the subsequent correspondence showed their lack of knowledge of the examination rules. The OMS was disallowed but the candidate offered a free re-sit. Future inspections are planned.
- An exam centre handed the OMS and exam papers to the wrong candidates and appeared in quite a muddle. They declined local marking as they were not at all certain the papers would be accepted. The EC were able to correctly identify the papers and allowed the results, one pass and two fails. The club received suitable words of advice and a warning that future irregularities will not be so leniently dealt with.

It should be noted that the EC had to spend a considerable amount of time on these irregularities. The QAM will increase the number of inspections. There is also a need for advice and training for some exam centres and invigilators; the SC and RSGB are considering how this might be achieved.

12. Recommendations

The RCE Standards Committee made the following main recommendations for action during 2015:

- Continuing effort should be put into recruiting independent examination inspectors and examination committee members.
- Local indicative marking of Intermediate and Foundation exams will continue.
- The initial proposals for the new syllabuses will be reviewed by the SC during 2015.
- The EC should maintain their longer term project to look at the feasibility of on-line examinations and the ability to provide a cost effective but secure on-line environment.

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