department for
culture, media
and sport

Future Energy Consumption of Digital Radio Receivers

Digital Radio Action Plan Report

June 2013

improving
the quality
of life for all

Our aim is to improve the quality of life for all through cultural and sporting activities, support the pursuit of excellence, and champion the tourism, creative and leisure industries.

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Section 1: Foreword

1.1 Introduction

1.1.1 The Digital Radio Action Plan (DRAP) sets out the process for allowing Government to make a well-informed decision on whether to proceed with a Radio Switchover, and if so how, it should be implemented.

1.1.2 The DRAP is delivered through four central working groups, covering technology, market preparation, coverage planning and government policy. A key task of the Technology and Equipment Group (TEG), which is chaired by Laurence Harrison of Digital Radio UK, is to consider the future energy consumption of digital radio receivers, taking account of development in functionality and technology.

1.2 Scope

1.2.1 Action 2.6 of the DRAP requires TEG to "Report on Future Energy Consumption" of digital radios. Specifically the group was asked to:

> "*Consider future energy consumption of digital radio receivers, taking account of development in functionality and technology.*"

1.2.2 This report sets out the views of the TEG.

2 Steering Board Decision

The Steering Board considered the 'Future Energy Consumption of Digital Radio Receivers' report in May 2013 and notes the conclusion, based on the evidence available, about the reduction in the energy consumption of DAB radios and agrees with the TEG's recommendation for further research to be conducted at a future point to confirm the trends have continued.

3 Future Energy Consumption of Digital Radio Receivers Report

3.2 Background

3.1.1 As part of its wider considerations for the Government's Cost Benefit Analysis and Impact Assessment, Government (BIS, DEFRA and DCMS) commissioned a series of independent research studies into the energy consumption of comparable digital DAB and analogue radio devices. The research was conducted by a leading specialist product testing organisation, Intertek Testing Services. Three studies were carried out in March 2010, March/April 2011 and March 2013, respectively, and the three research reports produced by Intertek can be found on the Gov.UK web site at: https://www.gov.uk/government/organisations/department-for-culture-media-sport/series/digital-radio-action-plan-and-associated-documents/?546456.

3.1.2 These reports have informed the considerations of TEG.

3.2 Summary

3.2.1 TEG notes there have been significant changes in the energy consumption patterns of the digital radio receivers over the last three years. Most notably for new receivers entering the market 'in-use DAB' now consumes less power than 'in-use FM'; although 'in-use FM' in a combined FM/DAB receiver remains higher than in an FM standalone receiver.

3.2.2 While the power consumption of internet radios (internet radios included a mix of internet only, internet and FM and internet and DAB) has fallen by around two-thirds over the last three years, they perhaps unsurprisingly, consume more power than DAB and FM.

3.2.3 Table 1 below sets out the summary of the energy consumption across the three testing periods

Table 1: Overall summary of the in-use and standby power consumption figures

Mode	Average all products (W)		
	(2013 test)	(2011 test)	(2010 test)
Total number of products	78	57	164
Power consumption in-use DAB	3.75	4.05	6.96
Power consumption in-use FM (in DAB)	5.38	4.68	9.80
Power consumption in-use FM only	4.69	6.04	6.34
Power consumption internet	4.98	10.55	14.75
Standby power consumption	0.84	1.02	2.44

Sources: Intertek Testing Services

3.3 Methodology

3.3.1 Across the three studies conducted by Intertek, test data on power consumption has been provided for a total of 299 models of digital and analogue radio receivers.

3.3.2 Intertek used the same approach for each study. As a first step, Intertek carried out a market analysis – covering digital and analogue radios - to ensure that the products chosen for testing represented the market both in terms of brand coverage and specific models of radio. Resources such as GfK sales data, Mintel reports, online searches of major online retailers and price comparison website and information from trade sources were used to inform the market analysis.

3.3.3 The second study in 2011 focused on digital and analogue models launched in the market following the first study in 2010 and the third research project in 2013 focused on radios coming to market since the second testing study in 2011.

3.3.4 Receivers selected for each round of testing included a variety of types including entry level, docking stations, portable/tabletop and hi-fis. Intertek also ensured that there was good coverage of trade brands and non-trade brands as well as a range of price points.

3.3.5 For all three studies the samples selected for testing were purchased through normal consumer channels, either via the internet or from high street retailers.

3.3.6 Product testing for each study was carried out at the Intertek Milton Keynes dedicated laboratory. Power consumption measurements were taken by trained and experienced staff and complied with the relevant standards. All power consumption measurements were completed under controlled conditions.

3.4 Key Findings

3.4.1 Table 1 above provides a summary of the overall results of the in-use and standby power consumption figures for the three studies. The research over the period from 2010 to 2013 shows that the in use power consumption of newer DAB radios is markedly better compared to that of older DAB models – with an average of 3.75 watts generated in use in 2013 compared to an average of 6.96 watts in 2010. This represents an improvement of 46%.

3.4.2 FM-only radios have also witnessed a similar downward trend in power consumption with the newer models tested in 2013 generating an average of 4.69 watts in use, compared to 6.04 watts in 2011 and 6.34 watts in 2010, respectively. This represents an improvement of 26% between 2010 and 2103.

3.4.3 The research indicates that overall the average in use power consumption of DAB radios compares favourably to the average energy consumption of comparable analogue radios. In the 2010 study the DAB models' power consumption was marginally higher than the analogue radios tested; 6.96 watts on average for DAB compared to 6.34 watts on average for analogue - i.e. an average 10% more power was consumed in use by DAB. Measurements of DAB radios in both subsequent studies indicate lower in use power consumption levels compared to the FM-only models. In the latest study power consumption of a DAB radio runs at 3.75 watts on average and power consumption on an in-use FM-*only* radio runs at 4.69 watts (i.e. DAB models use 20% less power on average).

3.4.4 Finally, the data demonstrates a marked improvement in the power consumption of all radios in standby mode; with older models in 2010 having generated an average of 2.44 watts in standby, compared to 1.02 watts on average in 2011 and 0.84 watts on average for the newer models in 2013. This represents a decrease of 66% over the past three years.

3.5 Conclusion and Recommendation

3.5.1 TEG recognises that the testing undertaken by Government represents only a snap-shot of the market at a particular time. However, with the evidence available, TEG sees no reason to believe that the trends of significant reductions in energy consumption both 'in-use' and in 'standby' will be reversed and as such DAB receivers are likely to perform at least as well if not better than equivalent FM receivers.

3.5.2 TEG notes the importance of the issue of the future energy consumption of digital radio receivers and recommends that Government carries out further research at a future point to confirm that the trends in energy consumption of digital radio receivers as evidenced in the research have materialised.