



Australian Government
**Australian Communications
and Media Authority**

Australia's regulator for broadcasting, the internet, radiocommunications and telecommunications

www.acma.gov.au

Household Television Environment Research 2007–08

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Summary

This report presents an overview of a study conducted for the Australian Communications and Media Authority by Woolcott Research Pty Ltd in late 2007 and early 2008.

One hundred and twenty case studies were undertaken in the greater Sydney metropolitan region to identify kinds of television setups that households presently have, and have converted or will convert to digital television. The study included an inventory of television and associated technology as well as a brief interview with the research participants about their equipment and connections, eliciting the terms householders use to describe them.

The information collected in the study is intended to help ACMA, government and stakeholders understand household uptake and use of digital television (DTV) and the issues that households may face in switching to digital by the end of 2013.

In the 120 households (which included 20 multi-dwelling units (MDUs), 290 television setups were identified, or an average of 2.4 sets per household. This is slightly higher than the average of 2.2 television sets found in ACMA's December 2007 national survey, *Digital Television in Australian Homes*.¹

Of the 120 households, 40 had digital television. However, the sample was not completely random. Approximately two-thirds of participants were aware of the planned switchover from analog to digital television, a finding which is in line with those of other studies.

Television environments in the households differed in level of complexity. The complexity breakdown was:

- 65 'simple' environments with 0–1 peripheral devices attached to the main television set (47 analog and 18 digital)
- 36 'medium' complexity environments with 2 peripheral devices attached to at least 1 set (17 analog and 19 digital)
- 19 'complex' environments with 3 or more peripherals attached to at least 1 set (7 analog and 12 digital).

Those living in houses were more likely than those in flats and apartments to have already converted to digital. Setups in digital households, as well as the television setups in households with children, were more likely to be of greater complexity, while those in flats or apartments and analog households were more likely to have relatively simple television setups.

Twenty-nine households had a subscription television service.

The research found differences between what equipment and connections respondents reported that they had (at the time of recruiting) and what the inventory actually revealed.² Eight of the 120 households reported that their main television setup was analog when it was found to be digital, and six of the 120 households reported that they did not have subscription television, yet were found to have such a service by the interviewers.

¹ http://www.acma.gov.au/WEB/STANDARD/pc=PC_311307

² Interviews were generally held three or more days after the initial recruitment call.

The television setups were often something of a muddle, with a number of sub-optimal or incorrect connections identified. The setup of the television and associated equipment was usually done by a resident of the household. When this was not the case, a younger family member no longer living at home was most often responsible.

When a new television set was purchased, the old television set was in most cases moved to another room and used to create a new 'island' (i.e., a setup based around one television set). Households seldom engaged professional installers, although in households with a subscription television service, a technician from the subscription television company had usually integrated the set-top box within the existing setup.

It was found that while VCRs were often still connected to setups, they were seldom used.

Many antenna systems were found to be old and in poor condition, including aerials with damaged or broken elements, which may result in poorer quality reception. Participants, particularly those in MDUs, were found to have limited knowledge of their aerial or antenna system.

The language elicited by the interviews revealed a generally low level of knowledge of the technical terms for antenna systems, as well as for cabling and connections. Respondents more often referred to connections or cables by their colour than the by correct names such as 'coaxial' or 'RCA'.

Overall, the observations from the research suggest that there will be a number of challenges to households connecting to digital television and enjoying a quality digital television experience. Given the general lack of knowledge of correct terminology for cables, connections and other aspects of the television setup, providing consumers with accessible information about digital television, particularly over the telephone, is specifically identified as a challenge.

Introduction

The Australian Communications and Media Authority (ACMA) regulates broadcasting services in Australia. Its activities include planning the radiofrequency spectrum that radio and television services use, issuing and renewing licences to broadcasters, administering commercial ownership and control rules to maintain media diversity, regulating broadcasting content, developing program standards or licence conditions on specific issues, and supporting the development of codes of practice for the industry to ensure community safeguards.

Key tasks for ACMA in the household switchover from analog to digital terrestrial television broadcasting (DTTB) by the end of 2013 include:

- assessing digital signal coverage
- considering the availability and possible use of spectrum following the switchover
- advising over technical and other factors which may influence the timetable for the switchover
- researching technical impediments to the take-up of digital television.

Technical work underway or planned includes measuring the coverage of digital signal and the performance of digital receivers.

In the lead-up to the digital switchover, ACMA is also monitoring digital signal and reception issues that arise for households in adopting DTTB.

The Household Television Environment Research project

This report outlines the approach and outcomes from a study conducted by Woolcott Research to provide ACMA with information about household television setups, how households are currently using television and associated equipment, and the sort of language they use to describe it.

The Household Television Environment Research project was undertaken to inform a range of activities concerning consumer uptake and use of DTTB. Information about how consumers use and describe their television setups will help the Australian Government, including ACMA, industry, and other interested stakeholders to better understand some of the reception, installation and other issues that consumers might face in the switchover, and help ensure that future research is well designed, questions well framed, and results appropriately analysed.

The research design and methodology was slightly unusual, in combining semi-qualitative research in an interview component with a quantitative audit. Rather than depending on surveys where respondents are asked to recall and report information in detail, researchers who were experienced interviewers paid field visits to participating households to study objectively the television setup or 'environment', and to match this against the language the householders used to describe their television environment.

A total of 120 case studies were recorded between December 2007 and March 2008, documenting 290 individual setups and supported by more than 1,000 photographs.

This report does not comprehensively detail all results, but rather outlines the methodology, presents a number of insights and general findings, and examines ‘typical’ examples of households captured within the study.

Further analysis of the data will be undertaken after the case studies have been indexed and catalogued more comprehensively. One possible topic for further analysis may be the type and condition of antenna systems in relation to geographical location, to supplement signal strength measurement studies and other work being carried out by ACMA.

Research design

The research design included a total of 120 in-home interviews undertaken in the greater Sydney metropolitan area. Each interview was conducted with decision-makers (either main or shared) about the purchase of television equipment within each household. (All respondents were aged 18 years or over.)

Each interview had two main components:

- an audit of television (and associated) equipment
- a brief interview with the research participants to elicit the language they used to describe the various components of the equipment and connections in their home.

Interviewer training

As the research design was specialised, a small number of specially trained experienced interviewers were used (five), with continuity from the pilot to the main study.

For both the pilot and main fieldwork, interviewers were briefed in person, with a real television setup, and were taken through the entire interviewing process step-by-step. A mock interview was conducted, photographs taken and supporting documentation filled out. The training was as detailed and thorough as possible, allowing the interviewers time to observe and react to all aspects of a basic setup.

The briefing session also familiarised the interviewers with the project objectives, and gave them the skills to resolve the range of fieldwork issues that might arise. The pilot interviews made it clear from the outset that the interviewers would have to deal with a wide range of television setups. The interview structure was therefore made as flexible as possible (closer to a qualitative discussion than a set question–answer session).

Paperwork

The interviewing paperwork was modular in design, to allow for complex situations and responses, including unanticipated devices and cabling types, while at the same time ensuring that the format of the data was uniform enough for later collation (see Appendices 2–9). A ‘seating plan’ diagram format (see Appendix 4) was used to capture the main interview data, and allowed interviewers to connect and label devices during the interview process logically and diagrammatically, rather than spreadsheet-style. One was completed per ‘island’—where an ‘island’ was a single television set and all equipment associated/linked with it.

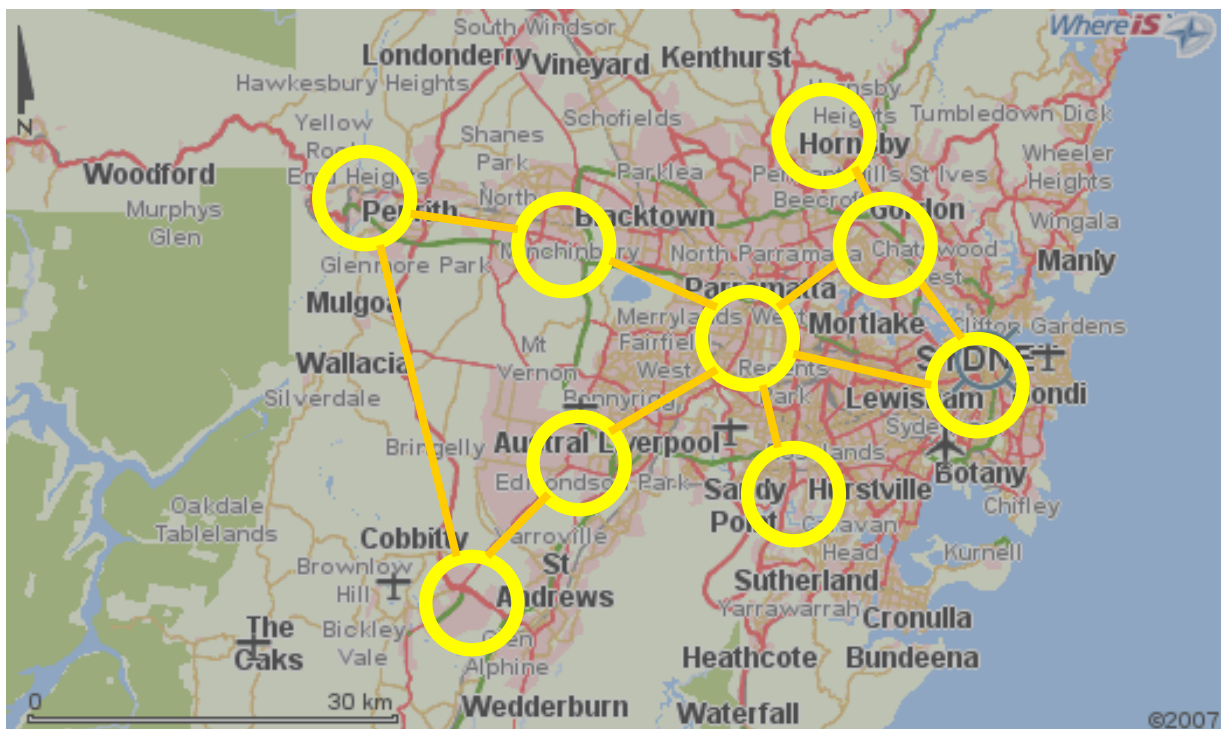
A more detailed breakdown of equipment (in list format) ensured that all equipment data were captured (see Appendix 5).

Location of households

As the project was not large enough for a truly representative sample of the complexities of television setups, quotas were set to ensure a range of household types (and levels of complexity of television setups).

A geographic pattern was developed to increase the diversity of households and to cover Sydney's greater metropolitan area. Three general lines were drawn north, south and west from the CBD, and radii at three distances from the CBD were marked along each, producing nine locations.

Interviewers were pre-assigned to each location.



Recruitment of participants

Recruitment for the project was conducted by cold calling and a telephone interview.

Telephone numbers within a 15-kilometre radius of the centre of each of the nine locations were randomly sampled from the DtMS system (an electronic copy of the White Pages).

Potential respondents were given a brief explanation of the study and an outline of the process and offered an incentive of \$100 cash. Screening questions collected basic information about the household to ensure representativeness and observe the quotas.

Respondents who were interested and qualified for the study were told that an interviewer would contact them to arrange a suitable time for the interview. They were also sent a letter from ACMA, detailing the aims of the study and assuring its legitimacy (see Appendix 10).

The interviewers contacted the potential respondents usually within three or four days of the initial recruitment call (to allow time for the ACMA letter to arrive), arranged an interview time, and then conducted the interview.

Pilot interviewing

A series of 10 pilot interviews were carried out between 6 and 19 December 2007 and the results and feedback were provided to ACMA before the fieldwork proper began.

The distribution of the pilot interviews was as follows:

- 1 analog household, with 1 television, and a ‘simple’ configuration (0–1 peripheral)
- 3 analog households, with 2+ televisions, and a ‘medium’ complexity configuration (2 peripherals on at least 1 set)
- 2 analog households, with 2+ televisions, and a ‘complex’ configuration (3+ peripherals on at least 1 set)
- 1 digital household, with 1 television, and a ‘simple’ configuration (0–1 peripheral)
- 2 digital households, with 2+ televisions, and a ‘medium’ complexity configuration (2 peripherals on at least 1 set)
- 1 digital household, with 2+ televisions, and a ‘complex’ configuration (3+ peripherals on at least 1 set).

The process

Interviewers conducted the audit part of the study first. As they were generally accompanied by the research participant, they took care in any talk about the equipment not to influence the language that the research participant would normally use (and therefore affect the data to be collected in the second part of the study).

Equipment

The interviewers carried the following equipment:

- a digital voice recorder (for the language elicited in the interview; the recordings were later transcribed)
- a digital camera (for photographs, where possible, of each television environment and individual pieces of equipment)
- a torch (for viewing behind television setups)
- a cable description list (for the interviewer’s reference—see Appendix 3)
- mapping diagram sheets (completed by the interviewer in the audit to show the connections between each piece of equipment for each television setup in a household—see Appendix 4)
- detailed equipment breakdown sheets (also completed by the interviewer in the audit—see Appendix 5)
- respondent validation sheets (to obtain permission from the householder for the interview and to show receipt of their payment—see Appendix 6).

While the pilot interviews were deemed successful in capturing information, they highlighted the need for a greater emphasis on the interview/language component, and

modifications were made accordingly to the interviewers' questionnaire/discussion guide (see Appendix 7 for the draft guide, and Appendix 8 for the final version).

Also, to help ensure that interviewers captured all the required information, a household summary/cover sheet (to be completed by the interviewer before departing the household) was added to the paperwork (see Appendix 9).

Quotas

Following the pilot and discussion with ACMA, quotas were established for the project to ensure that the study drew on households that were representative for certain characteristics of their television environment.

These characteristics were:

- whether the household was analog or digital (defined by how free-to-air television broadcasts on the main household television set were received)
- the complexity of a television setup.

Regarding complexity, however, it was recognised that there was no available research on which to base a quota system (i.e., the actual proportion of 'simple', 'medium' and 'complex' television setups was unknown). Progress reports for each category were made throughout the study, to check the numbers that were eventuating within each group.

The complexity grade was assigned to the television setup in each household that the respondent considered to be their main television set.

Main interviewing

For the main study, the interviewers conducted a further 110 in-home interviews across the nine Sydney locations between 1 February and 26 March 2008.

The 110 households were distributed for signal type as follows (evenly by location):

- 74 analog
- 36 digital.

There were 29 households with subscription television included.

An overall quota of 20 multi-dwelling unit (MDU) households were included in the study total of 120 (though these units were not distributed evenly by location).

The complexity characteristics of the total 120 household main television setups were as follows:

- 65 simple environments with 0–1 peripheral devices attached to the main television set (47 analog and 18 digital; 29 with 1 television setup or island; 24 with 2 islands; and 12 with 3+ islands)
- 36 medium complexity environments with 2 peripheral devices attached to 1+ set (17 analog and 19 digital; 9 with 1 television setup; 11 with 2 islands; 16 with 3+ islands)
- 19 complex setups with 3+ peripherals attached to at least 1 set (7 analog and 12 digital; 5 with 1 television setup; 8 with 2 islands; 6 with 3+ islands).

Research outcomes

Interviewer feedback

A group discussion and debriefing session was held with the interviewers at the conclusion of the fieldwork, in which differences and commonalities in their experiences were discussed.

The outcomes of this discussion, and supporting post-interview analysis (conducted by cross-analysing various household features recorded in the interviews), are reported below.

Participation

Although it was anticipated that householders would be reluctant to allow an interviewer into their home to detail and photograph their television setups, this was not in fact the case. Rather, householders contacted were surprisingly open to participation in the project for the \$100 cash incentive.

Further, the great majority of those initially recruited by telephone followed through with the interview. In total, just 15 recruited households did not, some indicating that they had changed their minds between recruitment and follow-up, but most due to availability issues.

The interviewers also reported that (apart from a few cases where they had difficulties in re-contacting the potential respondent), the scheduling of the interviews went smoothly, with the participants showing flexibility in offering a range of suitable times from which the interviewer could choose.

As the participants were randomly selected (and therefore mostly not familiar with research studies), it is interesting to note the perception of the interviewers that overall the respondents were quite relaxed about the interviews and willing to participate.

Differences between specifications at recruitment and actual household setup

Of interest from the outset of the project was whether any discrepancy would be found between the equipment and signal type that people thought they had (as described to the interviewer during recruiting) and what equipment they actually had (as recorded by the interviewers during the audit).

While generally participants were fairly accurate, some discrepancies were evident.

Respondents from 8 of the 120 households reported that their main television setup was analog when it was in fact digital.

Respondents from 6 of the 120 households reported that they did not have subscription television, yet were in fact found to have such a service.

Interestingly, respondents also overestimated the number of television sets in the household. Respondents from 11 households reported that they had more than one television in their household, yet the audit showed just one working set.

As one interviewer said:

You could never really be sure what you were going to get. ... You may be expecting one thing, but you'd end up with another when you went inside and had a look.

Setting up the television

One of the first interview questions was about who had set up the equipment. In the great majority of cases, someone within the household had been responsible for the installation and connection of the television and its components. However, the research participant was not necessarily that person.

In a handful of cases the person who set up the equipment did not live in the household. This was usually a younger family member who no longer lived at home. Only a few of the 120 interviewees reported some professional help.

It was sometimes the case that someone from the household had been responsible for the original setup of the equipment but when the household took up subscription television a technician from the subscription television company had later integrated the subscription television set-top box in their system (i.e., they did not do this themselves).

The interviewers suggested that when they were speaking with someone who had not been responsible for the setup, they were generally less likely to be knowledgeable about the equipment or connections.

Upgrading

The interviewers reported that a number of participants (more often those in larger households with children) said that when they bought a new television set they were unlikely to dispose of their old one. Instead, they more often moved the old television into another room (creating a new island). If they built up multiple islands this way within the household, the oldest television may eventually be disposed of.

The interviewers also suggested that the research participants seemed to have upgraded in most cases because of a desire for more modern equipment rather than a need to replace non-functioning sets.

Equipment and components

Aerials

The interviewers suggested that the research participants often did not know what type of aerial they had. Those residing in multi-dwelling units tended to have less knowledge of their aerials. Some in larger building complexes said that they had never seen the aerial they were connected to, and other than suggesting that it was on the roof somewhere could provide no further details.

Understandably, participants tended to have a very limited knowledge of types of aerials. Rather than using the particular name for an aerial or antenna, they often simply attempted to describe its appearance.

Though relatively few in number, those setups without any form of external aerial connection were generally connected to an internal antenna. Respondents often referred to these as ‘bunny ears’ or ‘rabbit ears’.

Video cassette recorders

The use of video cassette recorders (VCRs) was another area where interviewers observed similarities between householders.

In many cases VCRs were connected to an island but were seldom if ever used.

... they just sit there as a big unnecessary digital clock—that’s all they’re used for.

While few participants said that they purchased or hired videos, some were still using their VCR for recording. Those who still used their VCR in this manner were also likely to be watching free-to-air television channels through their VCR, and using the VCR remote control to change channels.

Some participants also indicated that they obtained a better picture if their aerial was connected to the VCR rather than directly to the television set.

Cabling and connections

Another common observation was that respondents generally lacked knowledge of cabling and connections. The interviewers reported that respondents showed very little knowledge of what type of connections or cables were used in their household television environment, even when the respondent had been the person who had undertaken the setup.

When asked about how things were connected, or what a particular cable type was called, many participants said that they had no idea.

Connecting a new piece of equipment was often a case of trial and error. That is, respondents reported that they took the cables supplied with the equipment and tried plugging them in where they guessed they may go, and would just try again with a different combination of connections until they achieved the desired result.

Some participants suggested that little actual knowledge was required, as the instruction manual gave steps to follow to connect a new device, and it was not necessary to actually understand what they were doing. So, when asked to explain how they had set up, these participants said they simply followed the instructions supplied.

Terminology for cables was often limited to colour (generally ‘black’). Some respondents had knowledge of RCA connectors, and understood that they had to connect like-colour (i.e., the yellow ‘out’ connection from one device will lead to the yellow ‘in’ connection on another). However, the interviewers did not believe that respondents had any real understanding of what the different colours were for.

It’s not like they knew that the picture signal was transmitted through the yellow connection or anything; they just knew to connect the yellow to the yellow.

Other observations

The interviewers agreed that they generally did not know what to expect from a property judging simply by location or size/type. They were often surprised at the type of television environments that they found inside properties.

While it was hypothesised that the inner (generally more affluent) locations may be more likely to have digital and/or more complex islands, this was not necessarily the case, as

within each location there was a range of dwelling types, and respondents from different income levels. However, several factors did support a simple cross-classification of household characteristics. These are outlined below.

Awareness of the digital switchover

A majority of the research participants (around two-thirds) were aware of the future switchover to digital. However, fewer (less than one-third) were aware of when it would happen.

Renters were less likely to be aware of the digital switchover than home-owners, and although slight, this trend is supported by analysis of the transcripts.

Signal type

Quotas were set for numbers of digital and analog households in the study. However, as noted above, there was some confusion among the research participants about which signal type they received.

The majority (some 66 per cent) watched free-to-air television on their main television set in analog.

The interviewers suggested that research participants in MDUs, as well as renters, were more likely to be analog households. Analysis of the data confirmed this:

- approximately 50 per cent of separate houses were digital
- approximately 25 per cent of MDUs were digital.

Household complexity level

Some differences in complexity level of setups were evident between groupings. Lower income households were more likely to have a simple arrangement, while higher income households were more likely to have medium complexity arrangement. There were no perceived (or measurable) differences in this respect in relation to the age range of participants.

There were, however, suggestions that those with children in their household were less likely to have a simple setup, while MDU residents and renters were more likely to fit in this category.

Analog households were more likely to be simple in complexity level, while digital households were more likely to be in the medium complexity group.

Selected findings

The data captured in the study are a rich resource for further analysis. Some suggestions for future use of the research data are:

- the proportion of antenna systems that may need some form of remediation or replacement to be able to receive digital
- sub-optimal setups, including incorrect cabling and connections
- the terminology used by respondents to describe various components and connections, and their level of knowledge.

Work has commenced on indexing and cataloguing the case studies for further analysis.

In total, 290 individual television sets were identified in the study, an average of 2.4 per household. This is slightly higher than the 2.2 television sets found on average in ACMA's December 2007 survey, *Digital Television in Australian Homes*.³

Nearly 80 per cent of the television sets were cathode ray or CRT, and just under 20 per cent were LCD or plasma flat panel televisions. While only four per cent with CRT sets used the terms 'cathode ray' or 'CRT', half of those with LCD television sets correctly used the term 'LCD'.

The maximum number of separate setups or islands found in the study was five, with one or two most common. Subscription television was not correlated with the number of setups or their complexity.

Main observations

The research identified a number of potential problems and issues for the switch to digital television. One of these was the prevalence of aerials with damaged or missing elements, which may result in poorer quality reception. While this may not present problems to reception quality in high signal-strength areas, it may result in poorer reception in areas where signal strength is more marginal. While analog pictures deteriorate gradually with lower signal strength, the so-called 'digital cliff' means that once digital signal strength drops below a critical level, picture and sound abruptly disappear.

The following photographs illustrate some of the potential issues observed in the study.

³ http://www.acma.gov.au/WEB/STANDARD/pc=PC_311307

Figure 1 illustrates aerials in the study with broken or missing elements.



Figure 1: Aerials with damaged or broken elements

In a number of cases, equipment was incorrectly connected, or connected in a sub-optimal way. In Figure 2, the red audio cable is connected to one of the component video connectors. It should be plugged into the red connector directly underneath the white plug.



Figure 2: Incorrect connection of devices

Many setups reflect a jumble of cables, as in Figure 3.



Figure 3: Complexity in cabling

Peripheral devices are becoming more complex. Connecting a VCR to a television set 10 years ago involved few options, but this has changed greatly, and connecting modern equipment is now much more complex, as shown for example in Figure 4.

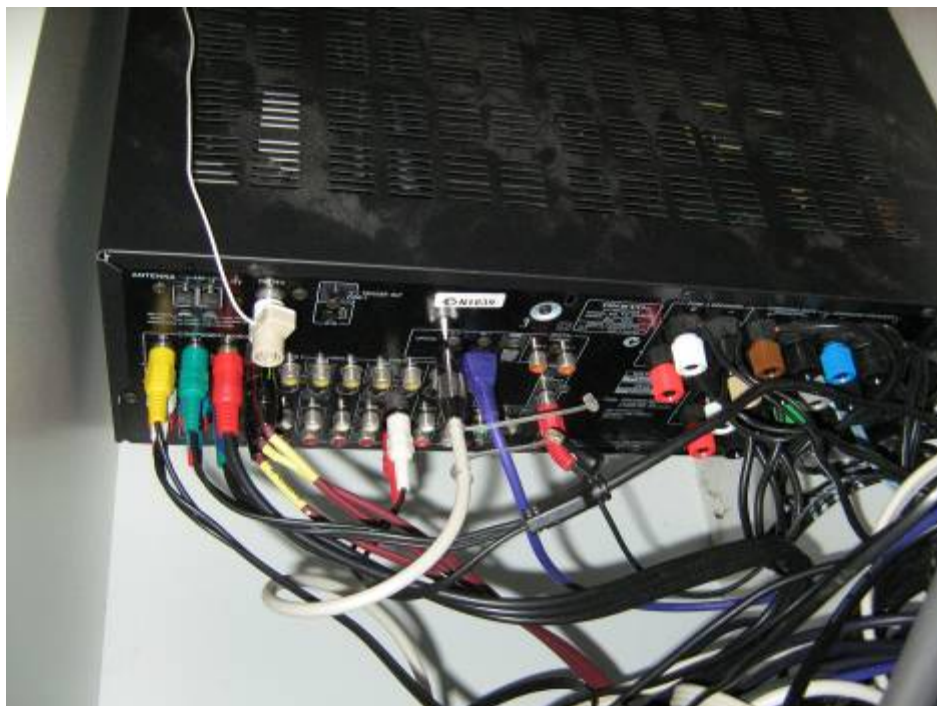


Figure 4: Complexity of equipment (AV receiver)

Appreciating the complexity of householders' setups, their comprehension of setups and the terminology they use to describe equipment, cables and connections will help agencies provide appropriate advice to households and effectively troubleshoot problems in the switch to digital television.

Terminology used by participants

The following tables summarise some of the results from the study's investigation of the terminology used householders to describe and refer to their equipment, cables and connections.

While nearly half of the respondents with an LCD television referred to it by the name of the technology used to display the television image, only four per cent referred to CRT sets as 'cathode ray' or 'CRT'. Mostly CRT television sets were referred to as 'normal', 'basic', 'standard' or 'ordinary' television (21 per cent of mentions) or 'older model', 'old-fashioned' or 'simple' (19 per cent), or simply as 'a television' (16 per cent).

Table 1: Mentions by device type—Television

	Total (n = 290) %	CRT (n = 231) %	Rear projection (n = 2) %	Plasma (n = 14) %	LCD (n = 43) %
Normal/basic/standard/ ordinary TV	17	21	—	—	2
Older model/old-fashioned/ simple	15	19	—	—	—
TV (NFI)	13	16	—	7	2
Flat-screen/flat panel/flat- faced	10	7	—	2 1	2 3
LCD	9	1	—	7	4 9
Large/big/heavy TV	8	8	—	1 4	2
Small TV	7	8	—	—	2
Analog	5	6	—	—	—
Cathode ray/CRT	3	4	—	—	—
Cheap	3	4	—	—	—
Plasma	2	—	—	3 6	—
High-definition	2	1	—	—	7
Digital	1	—	—	7	5

Note: Some infrequently mentioned terms have been excluded.

The terms used to describe ‘video cassette recorders’ (VCRs) and ‘digital video disc’ or ‘digital versatile disc’ (DVD) players were largely as expected (see Tables 2 and 3); although even for these devices some respondents used other terms.

As noted earlier, however, many VCRs, though still connected, were seldom if ever used, having been largely replaced by DVD players.

Table 2: Mentions by device type—VCRs

	Total (n = 93) %
Video/video player	36
VCR	25
Video recorder	24
VHS/VCH	7
Ancient/nearly defunct/ not very useful	4
Video tape	3
Multi-system	1

Table 3: Mentions by device type—DVDs

	Total (n = 153) %	DVD (n = 99) %	DVD-R (n = 15) %	DVD/TV /VCR (n = 2) %	DVD/set- top box (n = 1) %	DVD/ stereo (n = 1) %	DVD/ VCR (n = 31) %	DVD home theatre (n = 2) %
DVD/DVD player	67	93	47	—	—	—	3	50
Combination/combo player	9	—	—	50	—	—	42	—
VCR/DVD	6	—	—	—	—	—	29	—
DVD recorder	5	—	47	—	—	—	3	—
TV with built-in DVD/VCR	3	—	—	50	—	—	10	—
DVD/CD player	2	3	—	—	—	—	—	—
DVD and video/tape recorder	2	—	—	—	—	—	10	—
Surround sound DVD	1	1	—	—	—	—	—	50
Good for movies	1	1	7	—	—	—	—	—
Digital video	1	1	—	—	—	—	—	—
Video and CD	1	—	—	—	—	—	3	—
Stereo built-in DVD	1	—	—	—	—	100	—	—
DVD/set-top box	1	—	—	—	100	—	—	—
Compact	1	1	—	—	—	—	—	—
HD DVD	—	—	—	—	—	—	—	—

In general, set-top boxes were referred to as such, although some participants had other names for them, such as ‘digital box’.

Table 4: Mentions by device type—Set-top box

	Total set-top box (n = 30) %
Set-top box	67
Digital box	17
Black box	7
Desk-top box	3
Dish receiver	3
Integrator	3

While some householders showed some confusion about whether they were receiving analog or digital signal, most participants correctly identified the signal type.

Table 5: Mentions by signal type

	Total (n = 127) %	Digital (n = 40) %	Analog (n = 87) %
Analog	57	15	76
Digital	19	48	6
Don't know	9	8	9
HD digital	6	18	—
Foxtel digital	2	8	—
Standard digital	2	5	1
Free to air/free in the air	2	—	3
FM/VHF	2	—	2
Normal	1	—	1
Old-fashioned	1	—	1

As noted above, most participants could not identify the type of aerial they had. The general terms they used are set out in Table 6.

Table 6: Mentions by type—Aerials

	Total (n = 117) %	Internal (n = 31) %	External (n = 87) %
Typical/standard/ordinary antenna	27	3	37
T-Bar/cross bar/branches/prongs	14	—	20
Antenna/bunny ears/rabbit ears	14	55	—
UHF/VHF (VHS)	10	3	13
Tall/big	9	—	13
Internal/indoor antenna	8	32	—
Metal	6	—	8
Square/rectangle	3	—	3
Main antenna	2	—	2
Visual aerial	1	—	1
Caravan aerial	1	—	1
Antler antenna	1	3	—
Two-split antenna	1	3	—

A notable finding from the study was that few participants knew the correct terms for cables and connectors (Table 7). Thirty-one per cent of mentions of coaxial cables and connections used the term ‘coax’ or ‘co-axial’, but 21 per cent still had ‘no idea’ or ‘didn’t know’. Only about 15 per cent of mentions of RCA connections were correct, with 19 per cent calling them ‘colour-coded’. Twenty-eight per cent had ‘no idea’ or ‘didn’t know’ what RCA connections were called.

This finding, by itself, means that care will be needed to describe the connections and cables in easily understood language when providing information and advice to consumers.

Table 7: Mentions by connection type

	Total (n = 423) %	RCA (n = 186) %	Component RCA (n = 17) %	Coaxial (n = 177) %	Coax splitter (n = 8) %	SCART (n = 16) %
No idea/don't know	26	28	12	22	—	69
Coaxial	15	1	29	31	—	6
Colour-coded (R/W/Y)	9	19	—	—	—	—
RCA	7	15	—	1	—	—
Aerial/antenna cable	5	—	—	11	—	—
Normal cable/lead	4	4	—	6	—	—
Connecting cables/cable/wires	3	4	—	2	—	—
White/black	3	—	—	7	—	—
Different colours (NFI)	2	5	—	—	—	—
Sound/audio cable/cords	2	4	—	—	—	—
Component cables	2	1	41	—	—	—
Splitter/splitter box	2	—	—	—	8	—
RHC/RC/ACR	2	3	—	1	—	—
TV cable	1	—	—	3	—	—
TV cable	1	—	—	3	—	—
Direct cabling	1	1	—	2	—	—
Black	1	—	—	3	—	—
Serial cable	1	1	—	—	—	6
S video	1	—	—	—	—	—
HDMI	1	—	—	—	—	—
USB	1	—	—	—	—	—
Optical	1	—	—	—	—	—
RGB	0	1	—	—	—	—

Implications

Overall, the findings of the Household Television Environment Research project are that householders lack knowledge about setting up; and about aerials, cables and connections and the correct terminology to describe them. The increasing complexity of components and the number of options for connection compounds the problem. These matters are likely to affect the consumer experience of digital switchover. In particular:

- many television setups are sub-optimal
- equipment is often incorrectly connected
- many antenna systems are aged and in poor condition, with broken and missing elements.
- the advice in owner manuals is often inadequate.

Sub-optimal setups and the general complexity of modern equipment will also make it difficult for householders to connect a set-top box or other components into an existing television setup, particularly given inadequate advice in most owner manuals.

Effective communication with and advice to householders experiencing difficulties in getting connected or receiving digital television signals should take these matters into account.

Examples of household setups

A ‘simple’ television setup: Digital

Household type: Separate house

Household income: \$25,000 to \$49,000

Set up by: Participant (male; age range 25 to 34)

Participant’s terminology:

Television	‘A bigger TV’
DVD	‘DVD player’
Signal type	Unknown



A ‘medium’ complexity television setup: Analog

Household type: Separate house

Household income: < \$25,000

Set up by: Participant (female; age range 75+)

Participant’s terminology:

Television	‘A TV machine’
DVD	‘DVD’
VHS	‘Video’
Signal type	Unknown



A ‘medium’ complexity television setup: Digital

Household type: Townhouse
Household income: \$25,000 to \$49,000
Set up by: Technician
Participant: Female; age range 25 to 34
Participant’s terminology:

Television	‘Large’, ‘Old style’, ‘Television’
DVD	‘DVD Player’
VHS	‘Antiquated video’
Signal type	‘Digital’
Set-top box	‘Digital box’



A ‘complex’ television setup: Analog

Household type: Separate house

Household income: \$100,000+

Set up by: Participant (male; age range 18 to 24)

Participant’s terminology:

Television	‘TV’, ‘Television’, ‘Idiot box’
DVD	‘DVD player’
VHS	‘VCR’, ‘Video recorder’, ‘Video player’
Signal type	‘Analog’ (suggestion after prompting)
Subscription TV set-top box	‘Foxtel box’
Sound system	‘Hi-fi system’



A ‘complex’ television setup: Digital

Household type: Townhouse

Household income: \$25,000 to \$49,000

Setup by: Participant (female; age range 25 to 34)

Participant’s terminology:

Television	‘TV’, ‘An LCD’
DVD	‘DVD recorder’
Signal type	‘Digital’
Subscription TV set-top box	‘Foxtel IQ box’
Sound system	‘Stereo’
PS3	‘Playstation 3’



Appendices

Appendix 1: Recruitment screener (pilot)

Good afternoon/evening, my name is ... from Woolcott Research and I'm calling on behalf of the Australian Government. ACMA, the Australian Communications and Media Authority is the body responsible for the regulation of our telecommunications industry, and as there will be some significant changes to the way television is broadcast in the future, they need to conduct a study in numerous households throughout Sydney to see how people can prepare for this, and we would be grateful if we could include your household if you qualify for the study.

This process would require qualified staff from our company establishing a suitable time and date to visit your home and conduct the interview/audit process—which would take around three quarters of an hour. Each participating household would be offered \$100 in cash upon completion as a way of thanking them for their time.

Si. Does this sound like it would be something you may be interested in?

Yes 1 CONTINUE

No 2 THANK AND CLOSE

Sii. And would you be the main or joint decision-maker in relation to the purchase of household television equipment?

Yes 1 CONTINUE

No 2 ASK FOR DECISION MAKER & RE-INTRODUCE

I will give you some details about our company and the legitimacy of the study in a minute, but I just want to give you more of an idea of the process involved.

It would involve one of our fully trained interviewing staff conducting an interview at your house at a time convenient to you. In order to arrange this, the interviewer will need to call you back to introduce themselves and arrange an interview time to suit you. When they visit, they will first need to look at all of the television equipment within your home, and record information about each of them, the antenna or aerial (inside or outside), the equipment that plugs into each television, and the sorts of cables that you are using to connect the various pieces of equipment you may have. They will also need to take photos of all these aspects, and would then talk to you about the equipment you have. It doesn't matter how much you know about the equipment you use—we don't need to speak to experts.

This information will assist ACMA in understanding how people are using televisions (and other equipment) so that they can better plan for the changeover from analog to digital television—and therefore assist households in how best to manage this process.

We understand that some people may be a little nervous about this, which is why we're offering you the credential details about our interviewers, our staff and ACMA itself.

The interviewers being used for this job are fully trained executive interviewers who have all had police checks undertaken as part of their employment conditions. These interviewers are employed through Woolcott Research, which is a fully accredited independent market research company. Should you desire it, you can check our credentials through the Australian Market & Social Research Society. This is a national body that oversees the Market Research industry (ph. 9566 3102). You should also feel free to call the Australian

Communications and Media Authority directly (ph. 9334 7700). The name of our contact there is Dean Martin.

I would also like to assure you that the photos that I mentioned will only be of the equipment, and will not have any other household detail in them—and all of the information collected remains totally anonymous, as none of your personal information (such as your address, etc.) would be stored with the information collected. Instead, these details will contribute toward a large pool of data we will be collecting from over 100 households throughout Sydney.

Now, I just need to ask a few initial questions to determine which household type you fit into.

Q1. Firstly, how many TVs do you have within your household?

One	1
Two	2
Three or more	3

Q2. Thinking about the TV that you would consider your main TV, does that TV have an in-built digital tuner, or a connection to a digital set-top box (this is not a Pay TV set-top box, but allows people to see the free-to-air channels digitally)?

Yes	1	DIGITAL HOUSEHOLD
No	2	ANALOG HOUSEHOLD

Q3. And do you watch the free-to-air TV channels through a Foxtel or Optus Pay TV decoder box?

Yes	1	FOXTEL HOUSEHOLD
No	2	

Q4. Still thinking about your 'main' TV set, approximately how many devices would you have connected to it? (this includes things like VCRs, DVD players/recorders, a Foxtel box, a set-top box, or a games system such as Playstation, Nintendo, Xbox, etc.)

Nothing connected to TV	1
One device connected	2
Two devices connected	3
Three or more devices connected	4

Q5. And lastly, what type of household do you live in? Would it be a READ OUT

Separate house	1
Semi-detached house	2
Row/terrace style house	3
A townhouse	4
Flat, unit or apartment	5
Other (SPECIFY) _____	6

Thank you very much for that. As I've already indicated, the interviewer who will be visiting you will need to call to arrange an exact time with you, but at this point, are there any bad times/days that wouldn't be suitable for you? **RECORD**

Thanks again. We will also have ACMA send a letter to you confirming our involvement with this important project. Can I please have your address? **RECORD**

If you have any more queries about the process, you can contact either David Walker or David Benjafield here at Woolcott Research on 9261 5221.

Appendix 2: Recruitment screener (main)

INTRO

Good evening, my name is <NAME>, from Woolcott Research and I'm calling on behalf of the Australian Government.

ACMA, the Australian Communication and Media Authority is the body responsible for the regulation of our telecommunications industry, and as there will be some significant changes to the way TV is broadcast in the future, they need to conduct a study in numerous households throughout Sydney to see how people can prepare for this, and we would be grateful if we could include your household if you qualify for the study.

This process would require qualified staff from our company establishing a suitable time and date to visit your home and conduct the interview/audit process, which would take around three quarters of an hour. Each participating household would be offered \$100 in cash upon completion as a way of thanking them for their time.

HELP SCREEN:

Offer as an aside to all screens throughout the interview.

We understand that some people may be a little nervous about this, which is why we're offering you the credential details about our interviewers, our staff and ACMA itself.

The interviewers being used for this job are fully trained executive interviewers who have all had police checks undertaken as part of their employment conditions. These interviewers are employed through Woolcott Research, which is a fully accredited independent market research company. Should you desire it, you can check our credentials through the Australian Market & Social Research Society. This is a national body that oversees the Market Research industry (ph. 9566 3102). You should also feel free to call the Australian Communications and Media Authority directly (ph. 9334 7700). The name of our contact there is Dean Martin).

I would also like to assure you that the photos that I mentioned will only be of the equipment, and will not have any other household detail in them – and all of the information collected remains totally anonymous, as none of your personal information (such as your address, etc.) would be stored with the information collected. Instead, these details will contribute toward a large pool of data we will be collecting from over 100 households throughout Sydney.

Si. Does this sound like it would be something you may be interested in?

1: Yes

2: No (terminate)

Sii. And would you be the main or joint decision-maker in relation to the purchase of household TV equipment?

1: Yes

2: No (terminate)

Firstly, I just want to give you more of an idea of the process involved.

It would involve one of our fully trained interviewing staff conducting an interview at your house at a time convenient to you. In order to arrange this, the interviewer will need to call you back to introduce themselves and arrange an interview time to suit you. When they visit, they will first need to look at all of the television equipment within your home, and record information about each of them, the antenna or aerial (inside or outside), the equipment that plugs into each television, and the sorts of cables that you are using to connect the various pieces of equipment you may have. They will also need to take photos of all these aspects, and would then talk to you about the equipment you have. It doesn't matter how much you know about the equipment you use—we don't need to speak to experts.

This information will assist ACMA in understanding how people are using televisions (and other equipment) so that they can better plan for the changeover from analog to digital TV—and therefore assist households in how best to manage this process.

1: Continue

2: Terminate—doesn't accept conditions

As the study must be representative of all Sydney households, we need to include households with a varying range of technology. So just a few initial questions to determine which household type you fit into.

Q1. Firstly, how many TVs do you have within your household?

1: One

2: Two

3: Three or more

9: No TVs (terminate)

Q2. Thinking about the TV that you would consider your main TV, does that TV have an in-built digital tuner, or a connection to a digital set-top box (this is not a Pay TV set-top box, but allows people to see the free-to-air channels digitally)?

1: Yes

2: No

Q3 And do you watch the free-to-air TV channels through a Foxtel or Optus Pay TV decoder box?

1: Yes

2: No

Q4. Still thinking about your 'main' TV set, approximately how many devices would you have connected to it? (This includes things like VCRs, DVD players/recorders, a Foxtel box, a set-top box, or a games system such as Playstation, Nintendo, Xbox, etc).

1: Nothing connected to TV

2: One device connected

3: Two devices connected

4: Three or more devices connected

Q5 And lastly, what type of household do you live in? Would it be a:

- 1: Separate house
- 2: Semi-detached house
- 3: Row/terrace-style house
- 4: Townhouse
- 5: Flat, unit or apartment
- 6: Other (record)

Thank you very much for that. As I've already indicated, the interviewer who will be visiting you will need to call to arrange an exact time with you, but at this point are there any bad times/days that wouldn't be suitable for you?

Thanks again. We will also have ACMA send a letter to you confirming our involvement with this important project. Can I please have your address?

If you have any more queries about the process, you can contact either David Walker or David Benjafield here at Woolcott Research on 9261 5221.

I certify that this is a true, accurate and complete interview taken in accordance with IQCA standards and the MRSA Code of Professional Behaviour (ICC/ESOMAR). I will not disclose to any other person the content of this questionnaire or any other information relating to this project.

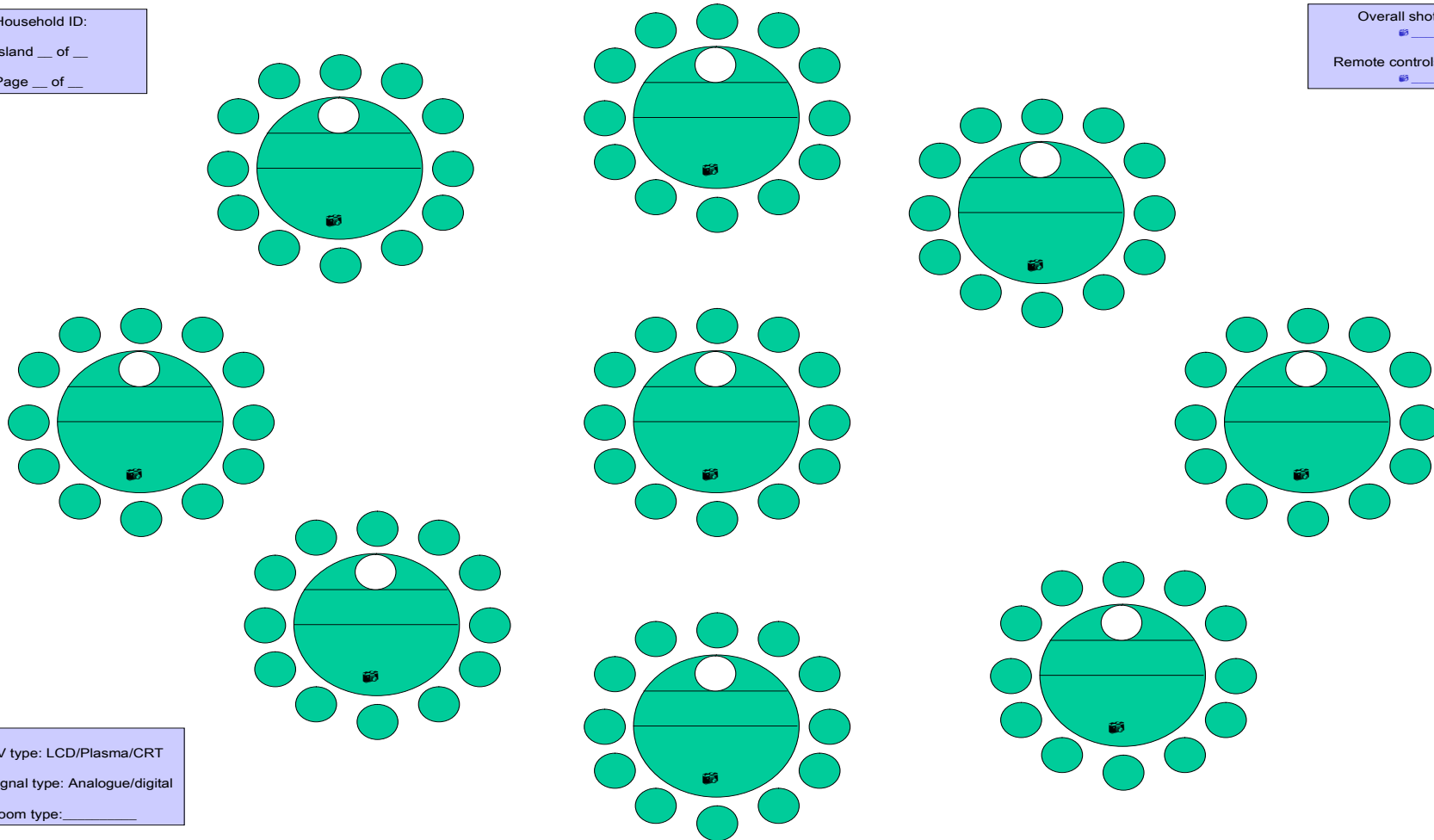
Appendix 3: Cable description list

Cable number	Cable type	Picture	Definition	Description
1	RCA		The RCA is the most common connector type on consumer gear for composite and component video, as well as for both digital and analog audio. RCA jacks colour-coded yellow on a device are usually composite video inputs or outputs.	May be any of a range of colours, and used with almost any modern device. Plug may have grooves in outer ring, not shown in picture. Cable normally 2 mm diameter.
2	Component RCA			Looks identical to RCA, but labelled specifically as 'component'.
3	Coaxial		PAL (Belling Lee) connectors are push-on connectors traditionally used for TV antenna wall plates and connections. With the exception of TV/VCR hook-ups, PAL connectors are being replaced by F-type connectors as required for CATV, SATV and DTV. PAL connectors are specified by IEC standard IEC60169-2.	Classic 'antenna' cable in Australia. Approx. 5 mm in diameter.
4	SCART		SCART (Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs) connectors are used to connect audio and video equipment using the composite video signal format.	
5	HDMI		Used exclusively for HDMI (high definition media interface) connections between the audio/video source and the audio/video monitor or equipment, combining a digital audio and a digital video cable into a single connector. Found on the latest (2006) upmarket generation of DVD players/recorders, plasma and LCD displays and digital surround-sound amplifiers and receivers.	Digital cable, and more likely to be used on newer devices.
6	4 Pin Mini Din		Very common on consumer audio/video gear. Carries an S-video signal (also referred to as S-VHS on older VCRs). The cable consists of twin coaxial cables in a common sheath.	S-video.
7	IEEE1394		Widely used for digital video and audio for DV (digital video) in cameras, DVD recorders and PCs. The 6-pin connector has twin separately shielded twisted data pairs for transmission and reception of data signals plus two power conductors. The smaller 4-pin connector has only two data pairs and is used primarily with battery-powered devices.	Same as the 'camera' end of the cable provided with digital camera.
8	FireWire		See IEEE1394.	 Often, but not always, has this logo.
9	USB		A 4-wire cable terminated with type-A, type-B or a combination of A and B USB connectors.	 Often, but not always, has this logo.
10	Optical		Commonly called 'TOSLINK' (Toshiba link). These cables/connectors are used for digital audio using light from an LED 'transmitter' as the source.	Very small cable (around 1 mm) into a much bigger head.
11	HD15			The kind of cable normally used for computer monitors.

Appendix 4: Mapping diagram sheet

Household ID:
Island __ of __
Page __ of __

Overall shot:
☒ _____
Remote controls
☒ _____



TV type: LCD/Plasma/CRT
Signal type: Analogue/digital
Room type: _____

Appendix 6: Respondent validation sheet

Job No: 7431-F

Location:

I acknowledge that the \$100 received by me today regarding this project is accepted as compensation for expenses incurred.

I agree that I am the person whose signature appears below.

I have not attended a discussion group for market research in the last six months.

I agree that the specifications asked of me at the time I was recruited are true and correct in my case.

I give permission for photos to be taken of my televisions and associated equipment.

Date	Time	Name	Signature (\$100 received)	Specs correct	Specs incorrect (Comment)

Appendix 7: Pilot questionnaire/guide

Thank them for their time, explain that we need to understand how people describe the different aspects of their TV setup, so have a few questions to ask. Explain that it is NOT a test, and as such there are no right or wrong answers. Assure them that we are speaking to a number of different people, and that the results are all combined together, and each individual's responses will remain totally anonymous.

The voice recording is for in-office use only. It is standard market research procedure, and is used to speed up the interview process (as the interviewer doesn't need to waste time writing down all the responses given).

PART 1: HOUSEHOLD DETAILS

RECORD HOUSE ID NUMBER.

Initially we just need a few details about the household for classification purposes.

How many people live in the household?

How many of them would be adults? And how many are children?

How long have you lived at this address?

Was your TV system set up by someone in the household?

IF YES: Who within the household is responsible for the setup of your TV and associated equipment?

IF NO: Who set it up for you (other family member/friend/hired professional/deal with TV purchase)

PART 2: LANGUAGE/DESCRIPTION OF COMPONENTS

I now need to get an idea of how you would describe some of the different pieces of equipment that you have. It will probably be easiest if we go through each piece that I have recorded and ask you how you would normally refer to it.

So how would you describe this? (Point to each item.) Are there any other terms you would use? What do you use it for?

NOTE: INTERVIEWER NEEDS TO MENTION WHICH 'ISLAND' THEY ARE TALKING ABOUT SO THAT THE VOICE-RECORDING CAN BE MATCHED TO THE DISGRAM AND EQUIPMENT LIST. GO THROUGH EACH, ONE AT A TIME.

Antennae (PROBE FOR: cabling, sockets, socket type, etc.)

What type of antenna is it?

Televisions (PROBE FOR: type and interfacing),

What sort of signal do you receive?

IF DIGITAL, ASK: Do you know what type of digital signal you receive (High Definition vs Standard Definition)? Are these the terms used? How else can it be described?

Each peripheral device (VCR, DVD, DVR, STB, game consoles, devices used outside the house, computer tuner cards, etc.)

Cables and connectors used

Remote controls

Audio equipment.

PART 3: FURTHER HOUSEHOLD DETAILS

I have a few extra household details that I need to record. Some of them aren't really questions I need to ask, but I need them recorded.

I need to record your gender. So you are ...

I need an approximate age range. Would you be ... READ OUT

18–24 years

45–60 years

25–34 years

61–75 years

35–44 years

Over 75 years

I need to record the type of household, so this is a...?

Separate house

Townhouse or villa

Semi-detached house

Flat, unit or apartment

Row/terrace house

Other (PLEASE INDICATE)

And could you tell me if this residence is rented or owned by you?

And finally, which of the following best describes your household income before tax?
READ OUT

Less than \$25,000

\$75,000 to \$99,000

\$25,000 to \$49,000

\$100,000+

\$50,000 to \$74,000

Refused (DO NOT READ)

Appendix 8: Final questionnaire/guide

Thank them for their time, explain that we need to understand how people describe the different aspects of their TV setup, so have a few questions to ask. Explain that it is NOT a test, and as such there are no right or wrong answers. Assure them that we are speaking to a number of different people, and that the results are all combined together, and each individual's responses will remain totally anonymous.

The voice recording is for in-office use only. It is standard market research procedure, and is used to speed up the interview process (as the interviewer doesn't need to waste time writing down all the responses given).

PART 1: LANGUAGE/DESCRIPTION OF COMPONENTS

RECORD HOUSE ID NUMBER.

I need to get an idea of how you would describe some of the different pieces of equipment that you have. It will probably be easiest if we go through each piece that I have recorded and ask you how you would normally refer to it.

GO THROUGH EACH 'ISLAND' SEPERATELY. NOTE ISLAND NUMBER IN RECORDING AT START OF CONVERSATION FOR THAT ISLAND. THEN NOTE EACH DEVICE NUMBER AS YOU ASK ABOUT THAT DEVICE.

FOR EACH ISLAND YOU HAVE TO COVER OFF EACH OF THE FOLLOWING:

Was this system set up by someone in the household?

IF YES: Who within the household is responsible for the setup of your TV and associated equipment?

IF NO: Who set it up for you (other family member/friend/hired professional/deal with TV purchase)?

Were there any difficulties in setting it up?

Aerial (PROBE FOR: cabling, sockets, socket type, etc.)

What sort of aerial do you have? How would you describe it?

And how would you describe this? (POINT TO CONNECTION/DEVICE IN THE ROOM)

Televisions (PROBE FOR: type and interfacing), STATE DEVICE NUMBER

How would you describe this? What other terms would you use?

How is the signal received?

And what sort of signal do you receive on this TV? What type of picture do you get?

IF DIGITAL, ASK: Do you know what type of digital signal you receive (High Definition vs Standard Definition). Are these the terms used? How else can it be described?

For each peripheral device (VCR, DVD, DVR, STB, game consoles, devices used outside the house, computer tuner cards, audio equipment, etc.) STATE DEVICE NUMBER

How would you describe this? What other terms would you use?

How is it connected? What type of cables/connectors are used?

What is it used for?

Remote controls

How would you describe this? What other terms would you use?

PART 2: FURTHER HOUSEHOLD DETAILS

I have a few extra household details that I need to record. Some of them aren't really questions I need to ask, but I need them recorded.

Initially we just need a few details about the household for classification purposes.

Firstly though, can I ask if you were aware that the plan is for the current analog signal to be switched off in 2013?

Now, how many people live in the household?

How many of them would be adults? And how many are children?

How long have you lived at this address?

I need to record your gender. So you are ...

I need an approximate age range. Would you be ... READ OUT

18–24 years

45–60 years

25–34 years

61–75 years

35–44 years

Over 75 years

I need to record the type of household. So this is a ...?

Separate house

Townhouse or villa

Semi-detached house

Flat, unit or apartment

Row/terrace house

Other (PLEASE INDICATE)

And could you tell me if this residence is rented or owned by you?

Finally, which of the following best describes your household income before tax? READ OUT

Less than \$25,000

\$75,000 to \$99,000

\$25,000 to \$49,000

\$100,000+

\$50,000 to \$74,000

Refused (DO NOT READ)

Appendix 9: Household summary sheet

Household ID:

Recruitment info:

Number of TVs:

Signal type: digital/analog

Pay TV: yes/no

No. of devices connected to main TV:

Dwelling type:

Household info:

Number of TVs:

Signal type: digital/analog

Pay TV: yes/no

No. of devices connected to main TV:

Dwelling type:

Photo checklist:

Island no.						
Overall shot						
Remote shot						

Please include blank shot if no remotes for island.

Aerial shot:

If no, why?

Incentive/validation form signed:

Interview date:

Interviewer initials:

Appendix 10: ACMA letter



Australian Government
Australian Communications
and Media Authority

Level 15 Tower 1 Darling Park
201 Sussex Street Sydney NSW

Tel: (02) 9334 7700, 1800 226 667
Fax: (02) 9334 7799

PO Box 0250
Queen Victoria Building NSW 1230
www.acma.gov.au

Dear Respondent

Participation in the ACMA Household Television Environment Study

Thank you very much for agreeing to take part in this important study about the televisions and associated equipment you have and use in your home.

This work is being conducted for the Australian Communications and Media Authority (ACMA), a Commonwealth government agency involved in planning the switchover from analogue to digital television. ACMA has commissioned Woolcott Research to conduct this particular study.

This letter is to reassure you of the legitimacy of the study and how it will be conducted.

Essentially it will involve a Woolcott Research representative ringing you and making an appointment to come to your home at a time that is suitable for you. The name of this person is included in the attached letter from Woolcott Research. They will need to spend about an hour with you.

During that time, they will have to look at all of the televisions in your home and record information about them, the antenna or aerial (outside or inside), the equipment that is plugged into each television, and the sorts of cables and connectors that are used. They will also have to take photos of these aspects, and then ask you to talk about what each is used for and provide a few more details.

This information will be used to help ACMA understand how people are using televisions and related equipment so it can better plan the eventual changeover to digital TV and help householders where it is necessary.

A \$100 cash incentive will be paid to all participants who complete the study, to thank them for their time.

We understand some people might be a little nervous about all of this detail being recorded, however we would like to reassure you of the following:

Firstly, the information provided to ACMA will not be linked to your name or address. Your information will just be given an anonymous household number.

Secondly, all the Woolcott representatives have had police checks, and have been working for the company for some time.

Thirdly, they will be under strict instructions only to photograph the equipment and antenna, and not any other detail, such as entry or exit points.

If you would like any other information about the study and how the information will be used, please contact Dean Martin at ACMA, on (02) 9334 7743 or by email <mailto:dean.martin@acma.gov.au>.

Once again, thank you for your time and involvement,

Yours sincerely



Hugh Clapin
A/g Manager, Strategic Research

3 December 2007