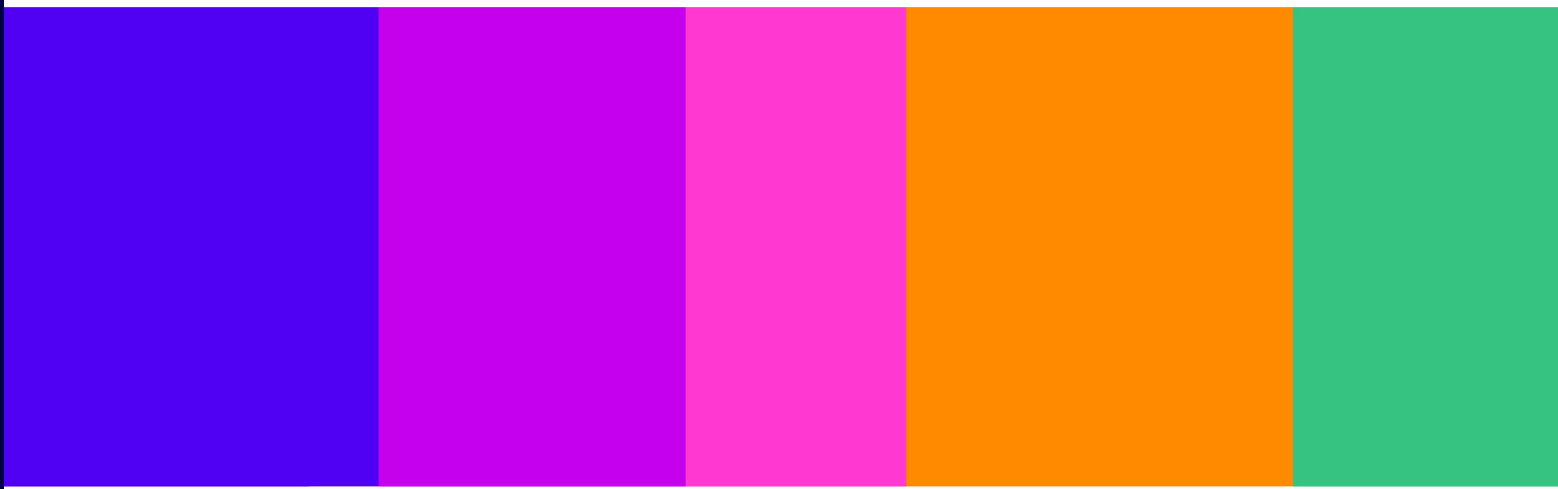


Analogue Radio Technical Code

Statement on updating the Ofcom Site
Engineering Code for Analogue Radio
Broadcast Transmission Systems

Statement

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1. Overview

- 1.1 This statement sets out Ofcom’s final position on revising our existing Analogue Radio Technical Code (formerly called the ‘Ofcom Site Engineering Code for Analogue Radio Broadcast Transmission Systems’) following a [public consultation](#) which we carried out earlier in 2024.
- 1.2 We have carefully considered the responses which we received to this consultation, and we have decided to implement changes which are summarised in brief below.

What we have decided – in brief

We have made changes to the Analogue Radio Technical Code (“the Code”) in the following main areas:

Renaming the code

We have renamed the Code to the ‘Analogue Radio Technical Code’ for consistency with Ofcom’s other technical codes for broadcast radio and TV services.

Commissioning and testing responsibilities

The new version of the Code clarifies licensees’ responsibilities for carrying out technical acceptance testing of new or modified analogue radio transmitters. The Code now explicitly states that these matters are the responsibility of individual licensees, and Ofcom will no longer carry out transmitter acceptance measurements at the request of licensees. This brings our approach to acceptance testing of analogue radio transmitters into line with our existing policy for DAB digital radio transmitter installations.

To assist licensees (and their contractors) who need to carry out transmitter acceptance measurements themselves, we have published additional technical guidance on a suggested practical transmitter measurement methodology alongside this statement.

Service resilience

We have introduced a new requirement for analogue radio licensees to consider the resilience of their services. The Code now requires that analogue radio broadcasters should consider the end-to-end resilience of their services and have service continuity plans in place in case of failures occurring. While licensees do not need to share these plans with Ofcom or report on them, they may form part of the evidence that licensees would need to provide to Ofcom if an investigation were initiated into a major service outage. The new requirement is similar to service resilience provisions which we have already introduced in Ofcom’s digital radio and TV technical codes.

AM radio audio bandwidth

We will adopt the proposals set out in our consultation whereby Ofcom will consider, on a case-by-case basis, requests from licensees to adopt wider audio bandwidth on their AM radio transmitters. Such requests will only be granted where technically feasible, and where they will not cause a significant increase in interference to other spectrum users.

Other changes

The Analogue Radio Technical Code now includes a reference to Ofcom's existing obligation for all relevant spectrum (Wireless Telegraphy Act) licensees to observe our requirements on exposure to electromagnetic fields.

2. Introduction

The consultation and responses received

- 2.1 Our [consultation](#) (*Analogue Radio Technical Code - Consultation on updating the Ofcom Site Engineering Code for Analogue Radio Broadcast Transmission Systems*) was published on 26 January 2024.
- 2.2 By the closing date of 22 March 2024 Ofcom had received a total of five responses to this consultation. Two respondents asked for their identity and comments to remain confidential, and two respondents asked for their identity to remain confidential, although were content for their responses to be published. We have therefore published the following responses on our website alongside this statement:
- A response from Arqiva Ltd; and
 - Responses from two organisations who wished to remain anonymous.
- 2.3 Sections 3 to 6 of this statement set out Ofcom’s consideration of the proposed changes to each section of the Code in light of the comments we received, and also contain our final decisions on each proposed change.
- 2.4 Where we have decided to modify our original proposals (or where respondents have suggested changes which we have ultimately not adopted) we also set out our reasoning for our final positions in these sections.
- 2.5 Where we have decided to adopt changes in the form proposed in the consultation (and where stakeholders did not raise objections or make alternative suggestions) we will only include a brief overview of that specific change in this statement. The consultation document itself contains full details of the rationale for our proposed changes.
- 2.6 Some of the comments we received fall outside the scope of the consultation. We have summarised these comments in Section 7 of this statement (*Other matters raised by respondents*).

3. Scope, Tests and Inspections

Overview of changes proposed in the consultation

- 3.1 Our consultation proposed the following main changes to the *Scope, Tests and Inspections* section of the Code:
- Remove the word ‘Scope’ from the title of the section;
 - Move text dealing with licensees’ ‘other responsibilities’ to the *Introduction* section of the Code;
 - The existing text in ‘other responsibilities’ dealing with electromagnetic fields would be re-written and moved to Section 5 of the Code;
 - Removal of references to CE marking and the former R&TTE Directive;
 - Modify the text to clarify that, going forward, analogue radio licensees will not be able to request that Ofcom staff carry out technical acceptance checks on new or modified transmitter installations (making the situation consistent with Ofcom’s existing approach to digital radio transmitter acceptance). Licensees will instead be required to carry out their own checks and submit the results of these checks to Ofcom;
 - Ofcom may however elect to attend site acceptance tests where there is a compelling reason for us to do so, and we will reserve the right to carry out our own technical compliance checks on analogue radio transmitter equipment;
 - Editorial changes including removal of references to matters which fall outside of Ofcom’s direct regulatory locus such as compliance with Health and Safety legislation; and
 - Editorial changes to simplify the wording in this section.

Ofcom’s consideration of consultation responses

- 3.2 We received three responses to our proposals for amending this section. Two were from confidential respondents who did not raise any objections, and one was from Arqiva which raised a concern about our proposed wording relating to on-site adjustments.
- 3.3 We have summarised the comments below and outline our consideration of each point made by these respondents below.

On-site adjustments

- 3.4 Arqiva noted that the consultation included one proposed change to section 2.4 of the Code where the proposed text would read:

“No change or adjustment to the transmitter, RF distribution system or aerials [...] is permitted without the explicit permission of Ofcom [...]”.

- 3.5 Arqiva was concerned that the inclusion of “or adjustment” in this section could bring in to scope all preventative and corrective maintenance activities that are part of Arqiva’s normal operation of analogue radio licensees’ services, which if implemented might present

significant additional burdens on both Arqiva and Ofcom. Arqiva therefore requested that this wording be changed or removed.

Ofcom response

- 3.6 The intent behind the wording in this paragraph is to require licensees to seek Ofcom's consent before making a change to components of their transmission system that could result in either a loss or change of coverage, or in an increase in interference to other spectrum users. Our intention is not to impede organisations from carrying out maintenance activities. We therefore agree that it would be undesirable to bring routine preventative and corrective maintenance activities into the scope of the Code, and we will therefore modify the text to remove the phrase 'or adjustment'.

CE Marking

- 3.7 We proposed to remove the reference to CE marking from the Analogue Radio Technical Code. A respondent who preferred to remain anonymous commented that the UK Government has announced that it would recognise acceptance of CE marking indefinitely, and that Ofcom may need to revise its position on this.

Ofcom response

- 3.8 As set out in the consultation, we are proposing to remove any reference to equipment type approval from the Code. Licensees will instead need to satisfy themselves that any equipment they intend using for their broadcast service meets the relevant standards in force at the time.
- 3.9 Therefore, we will remove these references as originally proposed.

Attendance at site commissioning

- 3.10 A confidential respondent commented that the *"ending of any attendance at commissionings by Ofcom does not come without risk"* and states that this places an expectation on Ofcom to quickly respond to, and investigate, reports of interference to other spectrum users.

Ofcom response

- 3.11 While we agree that causing undue interference to other spectrum users must be avoided (and be resolved as quickly as possible when it does occur), Ofcom has established procedures in place to manage and resolve reported cases of interference between spectrum users. As explained in our consultation, Ofcom does not generally carry out compliance measurements for other classes of RF (radio frequency) transmitter installations, and under our proposed approach to analogue radio acceptance tests we retain the right to attend commissioning tests or carry out measurements: our consultation sets out a risk-based description of the circumstances where we might expect to do so.

Final position

- 3.12 We will proceed to make the changes as proposed in the consultation but with a minor editorial amendment as outlined in sections 3.4 to 3.6 above.

4. Characteristics and Limits of Transmission for FM radio services (87.5 – 108 MHz)

Overview of changes proposed in the consultation

- 4.1 Our consultation proposed the following main changes to the *Characteristics and Limits of Transmission for FM radio services (87.5 – 108 MHz)* section of the Code:
- Add a requirement for licensees to consider the technical resilience of their FM services (reflecting a similar requirement which we introduced into the digital radio and television technical codes in 2023); and
 - Make several minor editorial changes, including updating references to international technical standards, and to improve clarity and consistency with current terminology.

Ofcom's consideration of consultation responses

- 4.2 One confidential respondent provided feedback to this question. The respondent was content with Ofcom's proposals, although submitted a number of supplementary comments relating to the audio spectral content of broadcast radio signals which were not directly related to the consultation question and we deal with these in section 7 of this statement.
- 4.3 In their response to Question 4 (Transmitter equipment) another confidential respondent welcomed the inclusion of a requirement to consider breakdowns and resilience, although had no further comments on our proposal.

Final position

- 4.4 We will proceed to make the changes as proposed in the consultation.

5. Characteristics and Limits of Transmission for AM radio services (531 kHz - 1602 kHz)

Overview of changes proposed in the consultation

- 5.1 Our consultation proposed several minor editorial changes to the *Characteristics and Limits of Transmission for AM radio services (531 kHz - 1602 kHz)* section of the Code.
- 5.2 The consultation also sought input from broadcasters who might be interested in adopting a wider audio bandwidth than the 6 kHz bandwidth limit currently stipulated by the Code for AM services, and asked them what changes to the Code provisions would be needed to enable such a change to go ahead. We also asked about the potential costs of making the change to enable us to judge how realistic an option it would be for licensees to implement.

Ofcom's consideration of consultation responses

- 5.3 We received four responses to this question, all generally in support of the changes we proposed, although some respondents suggested that Ofcom should consider a wider audio bandwidth than we were proposing, and also made further suggestions for how interference could be managed. We set out the themes raised by respondents below.
- 5.4 We also received a number of comments relating to the demand for, and licensing of, AM radio services, as well as a suggestion that Ofcom should review the field strength threshold used when planning those services. These points lie outside the scope of this consultation, although we provide further details in section 7.

Implementing wider bandwidths – demand and feasibility

- 5.5 An organisation who did not wish to be named expressed support for adopting a wider audio bandwidth. It stated that costs and timescales should be minimal, unless a broadcaster is using a narrow bandwidth transmitting antenna, or has old audio processing.
- 5.6 Two confidential respondents stated that they were responding on behalf of several AM broadcasters interested in making the change. One of these respondents sought to clarify that the proposed changes would apply to Restricted Service licensees (RSLs). The respondent expressed concern that Ofcom was seeking views on AM bandwidth only from existing AM broadcasters, and suggested that it is reasonable for the views of all stakeholders to be taken into account.
- 5.7 One of the respondents who works with a number of AM broadcasters, asserted that most of the AM transmitters remaining in the UK are easily capable of operating with 9 kHz audio bandwidth. Respondents provided some indicative costs that ranged from near-zero for low power RSLs to a few thousand pounds if new audio processing is required to be installed and commissioned.

Ofcom response

- 5.8 The wording in the consultation that invited existing AM broadcasters (following discussion with their transmission operators) to provide information on adopting a wider audio bandwidth aimed to focus responses on those that would be directly affected by any change to the Code provisions. We confirm that we have not limited consideration of responses only to those parties, and are taking into account all responses we receive. We also confirm that any changes apply equally to Restricted Service licensees.
- 5.9 The number of responses we have received is fairly small, and only one AM broadcaster has responded directly. Nevertheless, the feedback we have received suggests that there is some level of demand for Ofcom to consider permitting AM broadcasters to use a wider audio bandwidth, and that it is both feasible and relatively inexpensive for changes to be implemented.

Audio bandwidth and associated technical parameters

- 5.10 All four responses to this question were in support of Ofcom permitting wider audio bandwidths on a case-by-case basis, although their views differed slightly on how this should be implemented in practice.
- 5.11 Two respondents who preferred not to be named suggested that Ofcom should consider permitting an increase in audio bandwidth of up to 10 kHz or 12 kHz. These respondents recognised that this would place additional energy outside the 20 kHz bandwidth that is used when planning and coordinating AM radio services, and may therefore potentially increase interference to radio services using neighbouring frequencies. They cited low power AM services in Europe as a particular example of services that might be affected by interference. To avoid this happening, they suggested that the additional audio bandwidth should be used during daytime hours only, with licensees being required to demonstrate that their infrastructure can switch between enhanced bandwidth during the day and standard bandwidth at night. They stated that modern audio processors can be pre-set to achieve this switching at set times.
- 5.12 Two other confidential respondents suggested that a relaxation of the limit on audio bandwidth to 9kHz would provide better audio quality for listeners. They suggested that the Code requirements for spectral occupancy could remain unchanged by default, although could be amended on a case-by-case basis to remove the sideband limits at ± 7.5 kHz by agreement with licensees that wished to operate with bandwidths up to nearly 9 kHz. With modern audio processing, these respondents suggested that the limits at ± 9 kHz could remain unchanged. Retaining the existing limits at ± 9 kHz would have the advantage that there would be no additional interference outside the currently coordinated frequency allocations. One respondent stated that transmitting a bandwidth wider than 9 kHz is not useful as tests they have carried out suggest that *“most radios will not give a response beyond 9kHz audio frequencies and the likelihood of domestic and international interference increases”*. The respondent noted that 9 kHz is in use in a number of other countries and listed Spain, East Asia and Australia and New Zealand as examples.

Ofcom response

- 5.13 Our consultation did not suggest a preferred figure for what an enhanced audio bandwidth should be limited to, as we wished to gather information from licensees and their transmission contractors on what was feasible. Having considered the responses, the option of retaining the current limits, yet allowing licensees to request a relaxation of the sideband

limits at ± 7.5 kHz (whilst maintaining the existing limits at ± 9 kHz) balances the advantage of providing enhanced audio quality, and avoids risking an increase in interference to other UK or overseas AM radio services.

Final position

- 5.14 We will proceed to make the changes as proposed in the consultation, and accept applications from AM broadcasters to adopt a wider audio bandwidth on a case-by case basis. For those applicants, we will consider relaxing the sideband limits at ± 7.5 kHz that they are required to respect. The sideband limits at ± 9 kHz will continue to apply in all cases.

6. Transmitter equipment

Overview of changes proposed in the consultation

- 6.1 Our consultation proposed the following main changes to the *Transmitter equipment* section of the Code:
- Removing the requirement for licensees whose transmitters are the only service feeding an antenna system to incorporate a forward/reverse monitoring point to include a directional coupler;
 - Removing the text relating to antenna return loss for AM transmitters;
 - Removing wording that sets out specific tolerances of power supply voltage that equipment should be able to accommodate; and
 - Inserting wording relating to Electromagnetic Fields as has been added to the Digital Radio Technical Code.

Ofcom's consideration of consultation responses

- 6.2 We received two confidential responses to this question. One respondent suggested that Ofcom should retain a return loss requirement for AM transmitters, as a transmitter operating into a poorly matched load may shut down or can cause spurious emissions. The respondent suggested that the current requirement could be replaced with a simplified specification for achieving 12 dB return loss at the transmitter carrier frequency only.
- 6.3 Two respondents commented on our proposal for removing the requirement to provide a directional coupler for transmitter systems where a single transmitter feeds an antenna. One respondent supported the proposal, whereas a second respondent suggested that the requirement to incorporate a directional coupler should remain for higher power transmitters, and suggested 250 watts as a threshold.

Ofcom response

- 6.4 Ofcom's chief concerns from a technical perspective are that a service is provided reliably consistent with licence requirements, and that undue interference is not caused to other spectrum users. Over time we are moving towards regulation judged on the outputs of a service. Some of the changes we proposed in our consultation aim to reduce unnecessary regulation, particularly of inputs to the technical delivery of a service that are better specified and dealt with by the relevant licensees. Removing the return loss requirement for AM transmitters is an example of this. Although the respondent is correct that a poorly performing antenna can result in interruptions to service and, in extreme cases interference, we deem that the licensee's responsibility under its licence to deliver a service to listeners adequately captures a requirement to install and commission a transmitter system of sufficient technical quality and to deliver the service during the licensed period. We deem it is not necessary for Ofcom to specify a system parameter that is rarely measured in a regulatory capacity.
- 6.5 Similarly, our proposal to remove the requirement for transmitter systems to incorporate a directional coupler aimed to reduce the cost burden on licensees, and brings consistency to

the approach for analogue and digital licensees. As noted in our consultation document, we anticipate few new analogue transmitters coming on-air in the future as broadcasting moves increasingly towards digital transmission, and that those that do are likely to be of fairly modest power, and we do not therefore consider it worthwhile introducing a threshold for the power above which a directional coupler would be required to be provided.

Final position

6.6 We will proceed to make the changes as proposed in the consultation.

7. Other matters raised by respondents

Introduction

- 7.1 Some respondents provided comments and suggestions on areas that were related to, but were not specifically included in the scope of the consultation.

Frequency response of broadcast systems

- 7.2 One confidential respondent suggested that Ofcom should consider regulation of the audio spectral content of broadcast radio services, as they stated that *“We notice excessive audio processing which affects both the perceived levels and frequency response”*. The respondent suggested a method for assessing the audio spectral response of an audio service by considering its long term average level and then looking at the spectral content average over a time period to ascertain the nominal frequency response. The respondent suggested that in the interests of customer satisfaction, Ofcom considers imposing an audio level limit (with further consultation as necessary).

Ofcom response

- 7.3 Ofcom’s general approach is to apply proportionate regulation taking into account the duties and powers given to us by law. We have requirements in the Code governing the spectral content of analogue radio services, but only with a view to managing the amount of radio frequency spectrum each broadcast service occupies so that we can manage and avoid interference between services. We do not place specific sound quality regulations on broadcast licensees. Instead, we deem that sound quality is a matter for the broadcast licensees to manage taking into account the needs and expectations of their listeners. We have no evidence that there is a significant level of listener dissatisfaction with sound quality, and therefore do not see a need to impose any new regulation in this area. We would review this position in the future if that situation changes.

Review of AM planning standards, and use of other technologies

- 7.4 One confidential respondent suggested that a review of the AM planning standard¹ is overdue, as man-made electrical noise has now replaced night-time sky wave interference as the dominant interference to AM radio reception.
- 7.5 Two respondents who preferred not to be named said that there should be an easy process to authorise additional features such as AM stereo or DRM². These respondents suggested that future considerations could include allowing power increases for AM stations, as well as

¹ The target field strength used to define the coverage of an AM radio served. These are 66dBµV/m for commercial radio services and 76dBµV/m for community radio services, both at 1.5m above ground level

² DRM = Digital Radio Mondiale, a digital transmission standard designed to operate in frequency bands used by AM radio services

a general discussion and overhaul of the band and service planning to allow and encourage new services to maximise efficient use of the spectrum.

Ofcom response

- 7.6 Given the limited number of services remaining using AM transmission, and the trends in listening, we deem it would not be efficient use of our resources to review the AM planning standards.
- 7.7 Similarly, we do not intend considering permitting alternative technologies such as DRM or AM stereo in the band. Although these have been considered in the past, the number of receivers that would be able to make use of those services is very small and it is unrealistic to expect that new services broadcast using those technologies would drive any significant uptake by consumers. If any existing AM licensee wishes to increase transmission power, they can make a proposal for a licence variation. Ofcom would consider such requests taking into account matters such as interference to other services, the UK's international agreements and the circumstances of the original licence award.

Demand for AM radio and future licensing

- 7.8 Two confidential respondents made comments regarding the demand for AM radio services, and made suggestions how AM radio services could be licensed in the future. A third confidential correspondent said that some effort to regenerate interest in the AM band should be considered.

Ofcom response

- 7.9 The consultation was focused on matters relating to our proposals for revising the Analogue Radio Technical Code. These comments relate to matters that lie outside technical regulation and the scope of this consultation, and therefore have not been considered.