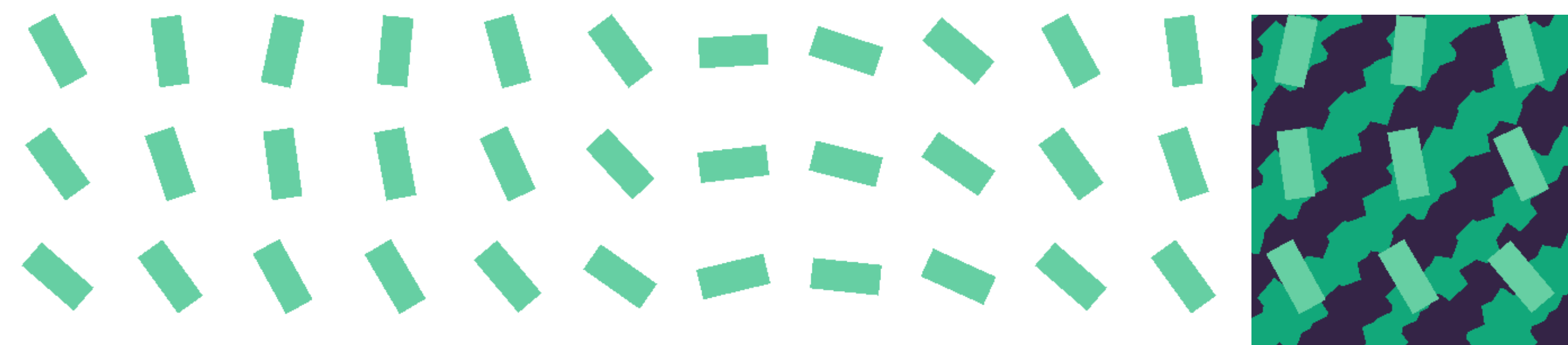




# 5G RuralFirst Broadcast Radio Trial



**5G RuralFirst**

**Andrew Murphy – Lead Research Engineer**

IBC 2019, 16 Sep 2019

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# Broadcast Radio Trial



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# Public Trial: Stronsay, Orkney





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## Public Trial

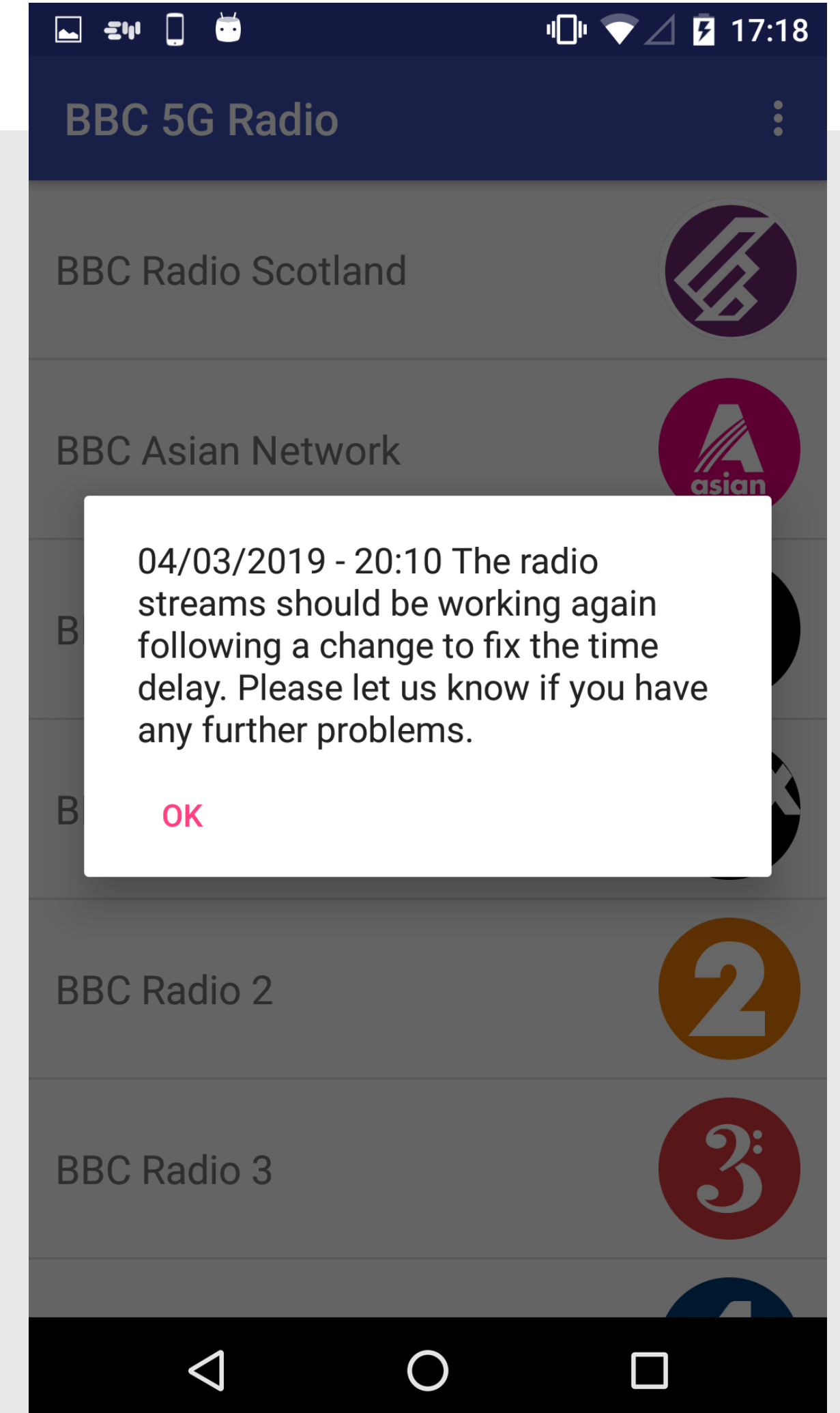
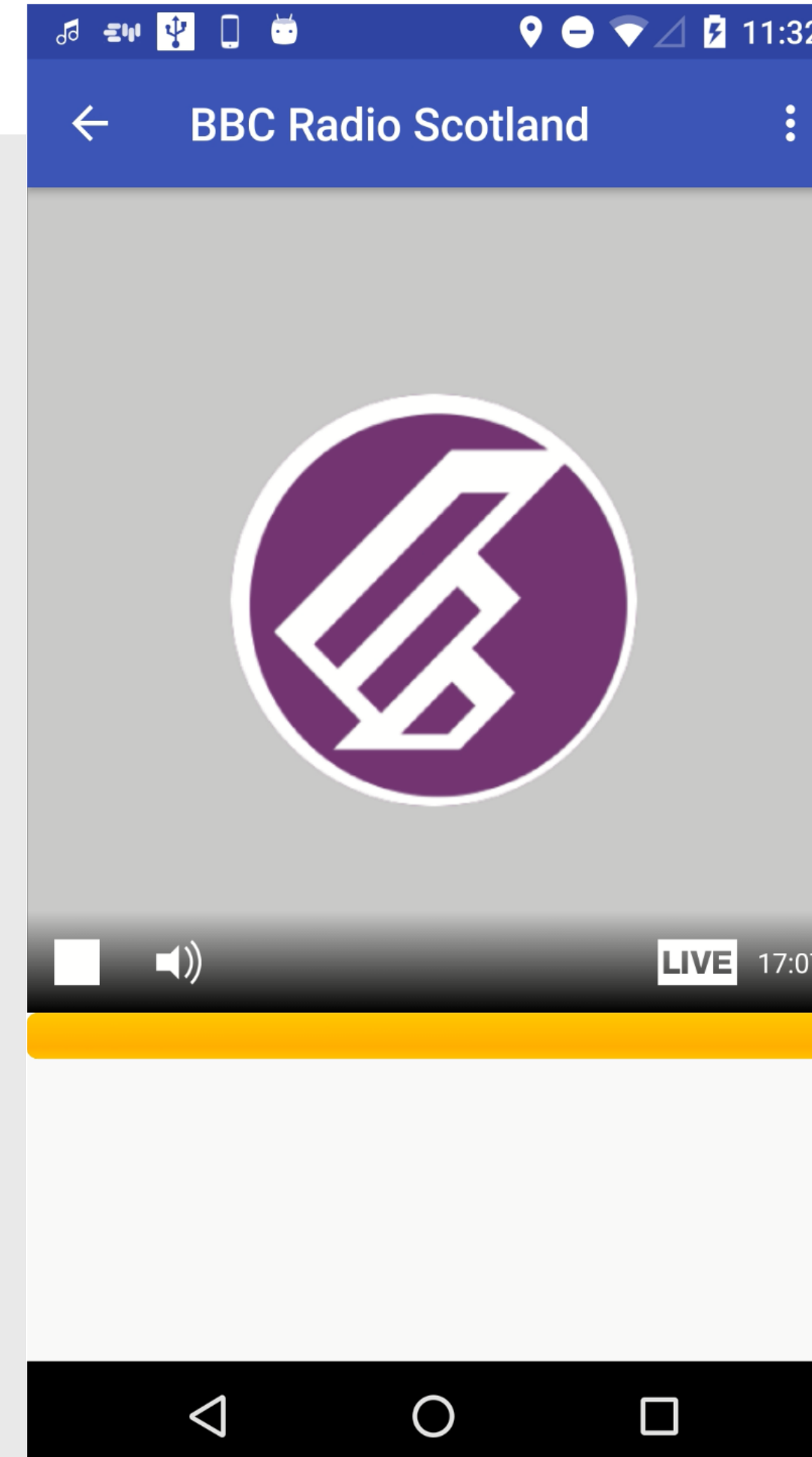
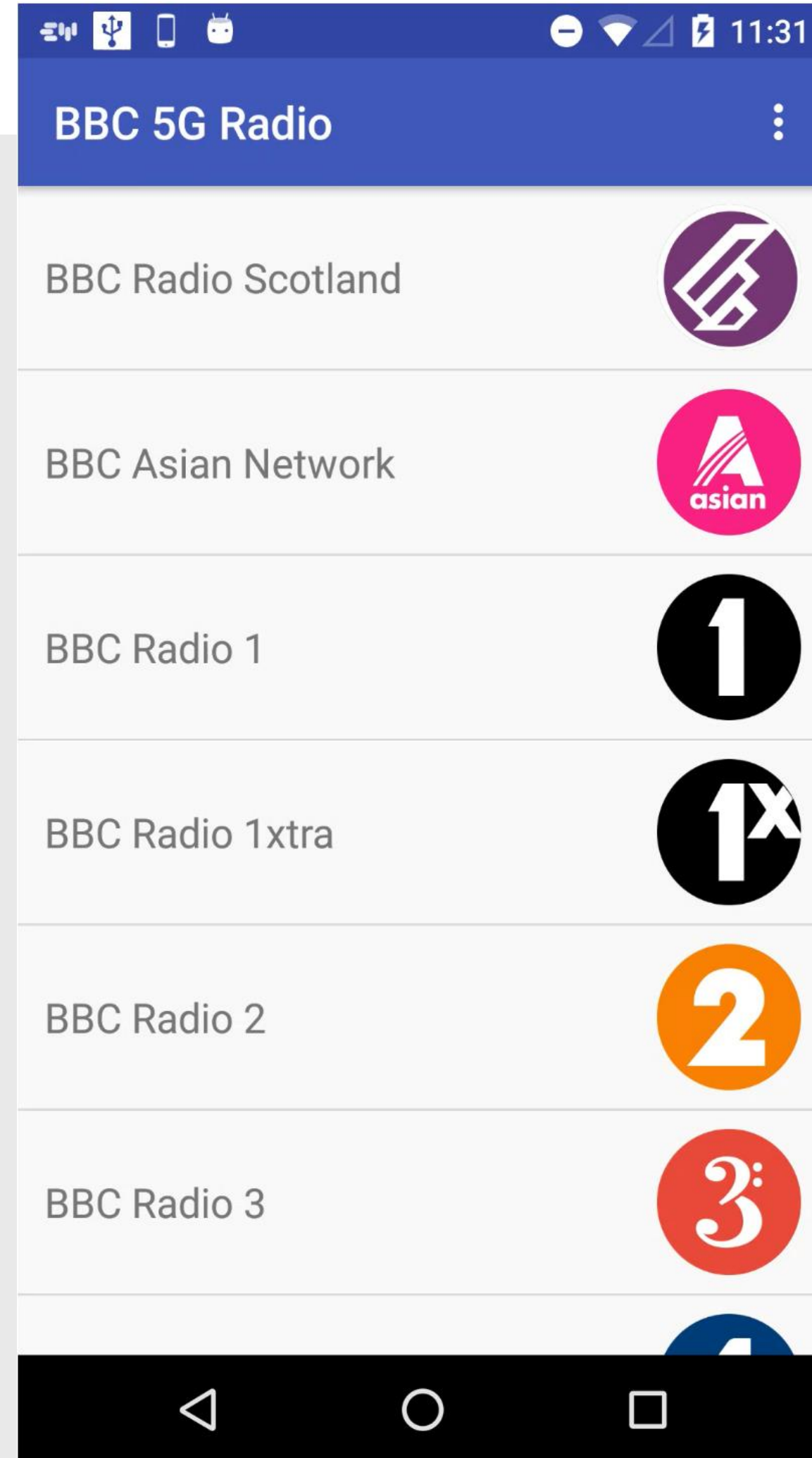
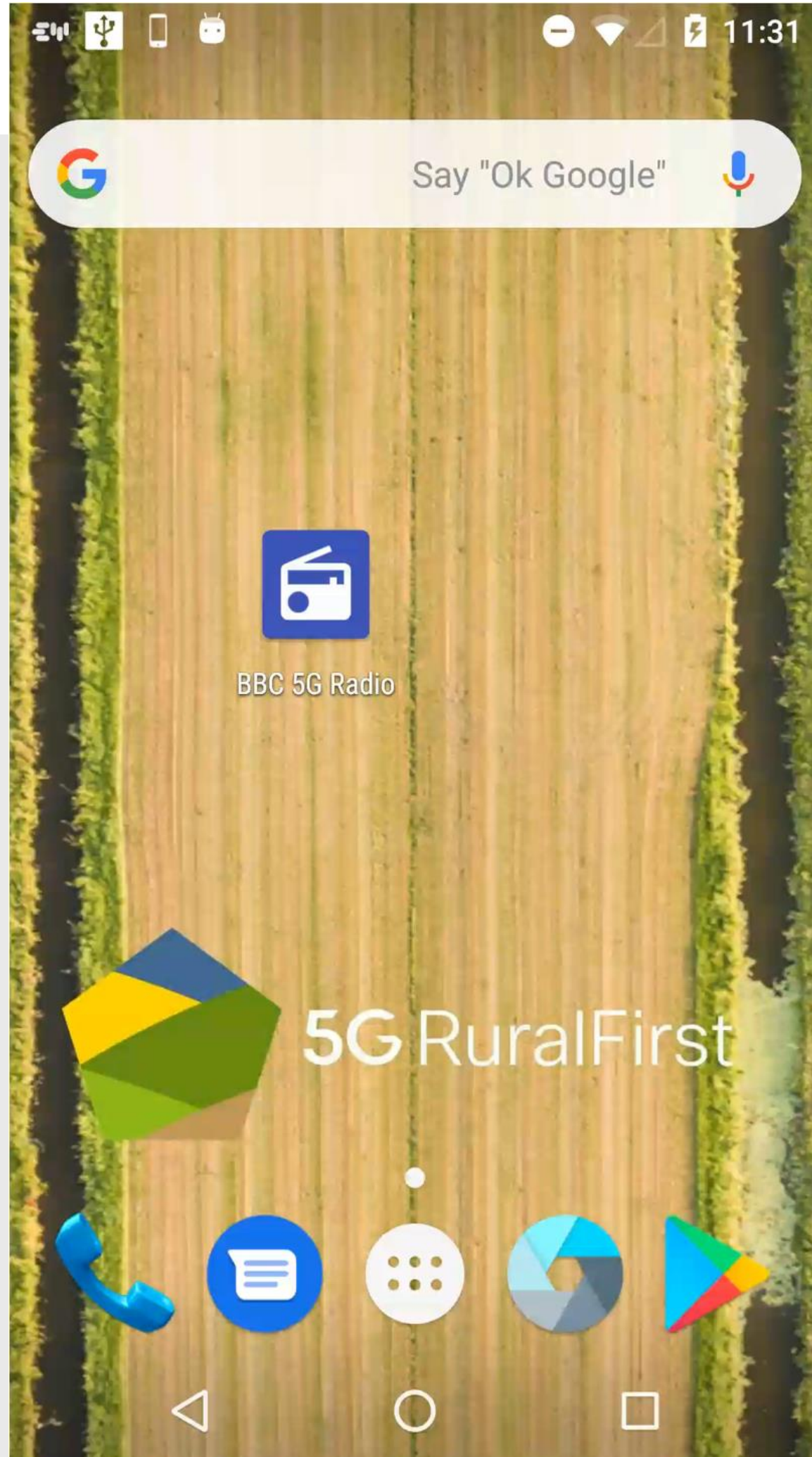
- **Broadcast delivery** of Radio over 4G (eMBMS with MPEG-DASH)
  - plus mobile broadband for catch-up services and Internet access
- **13 live radio** services (including BBC Radio Orkney)
- Recruited **20 trialists** to use the broadcast-capable handsets
- 4G technology but designed to emulate 5G features
  - Deployed our own base station – complete control of system parameters
  - Dedicated 700 MHz spectrum (2x10 MHz bandwidth)





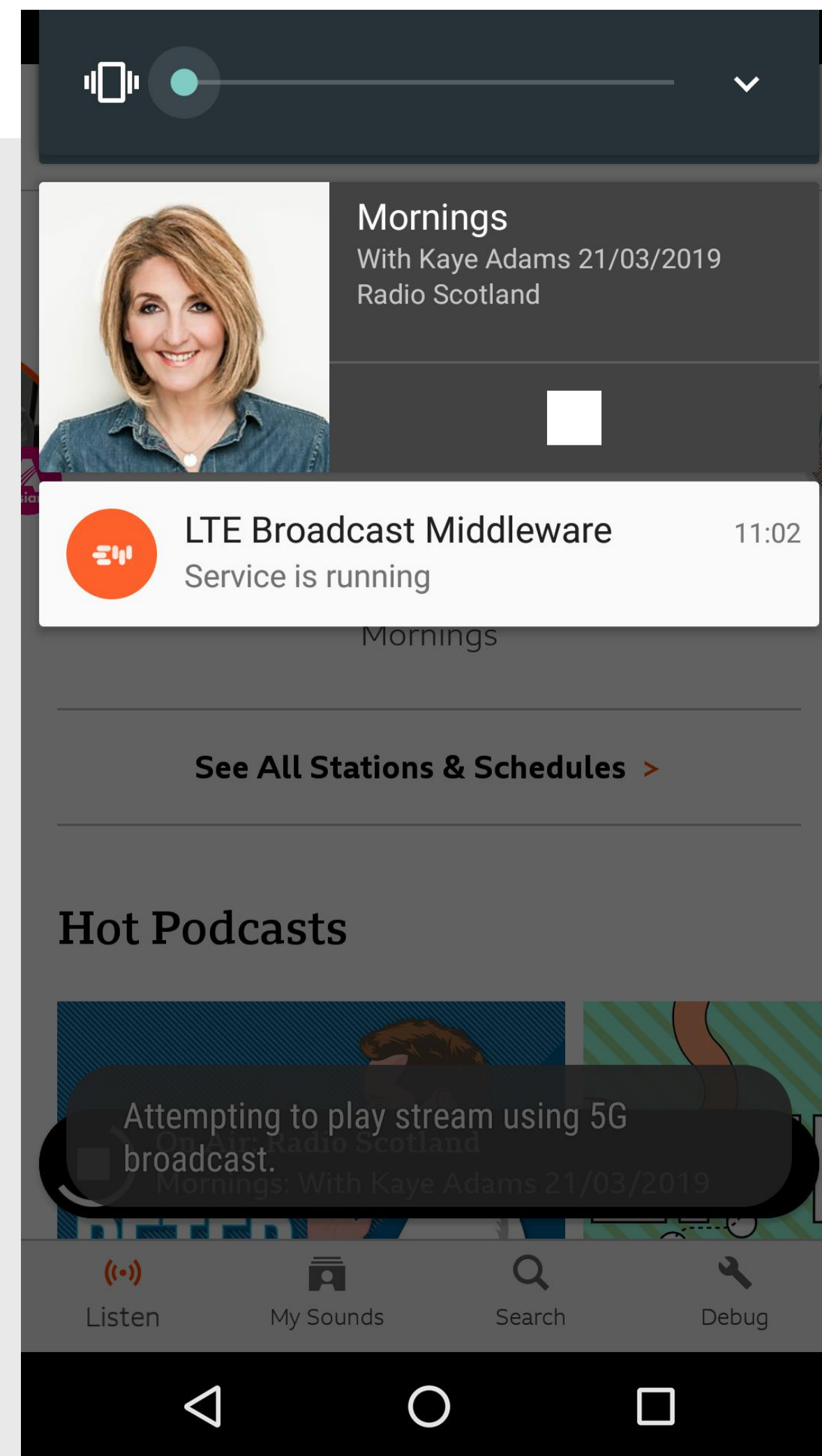
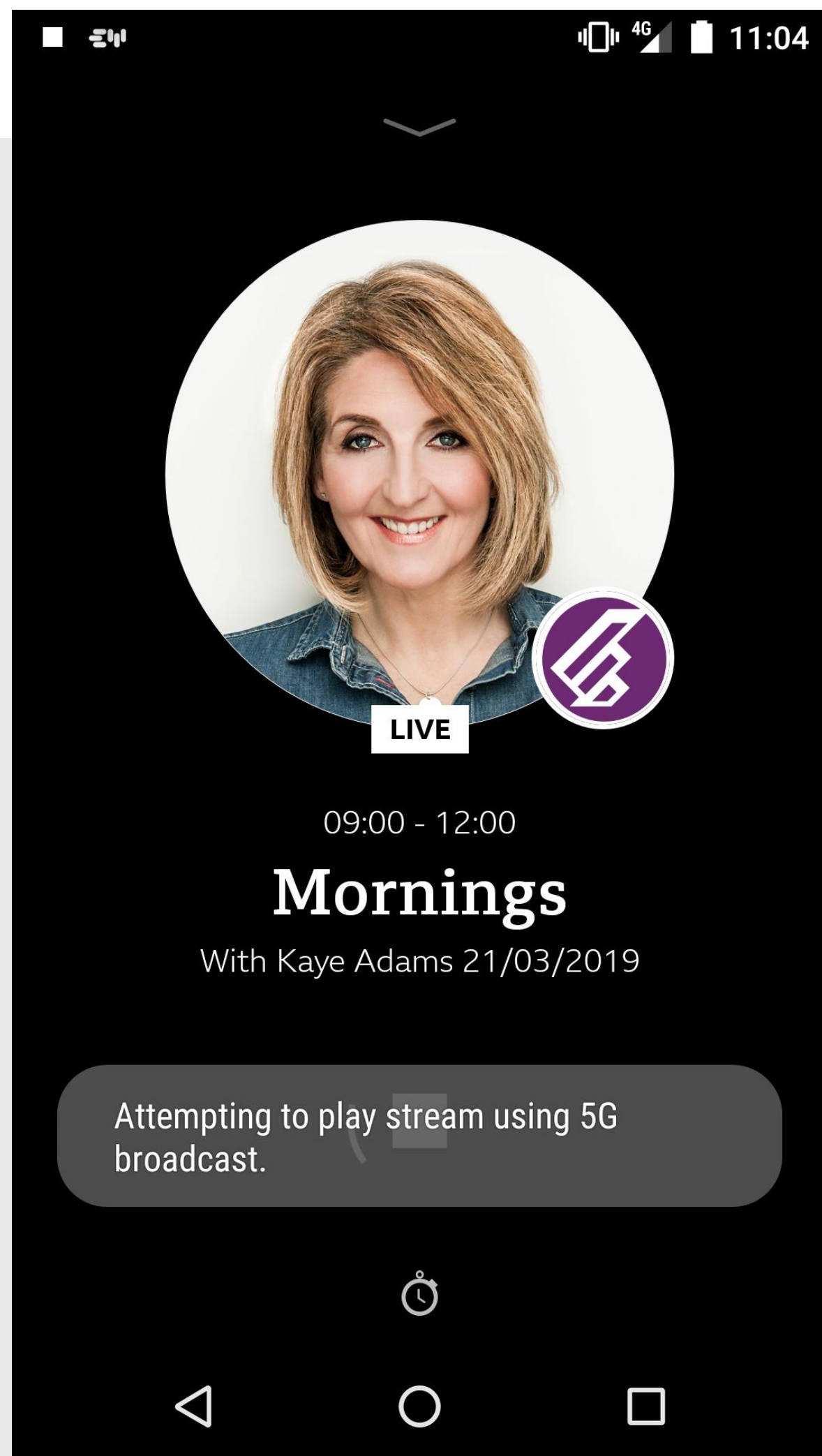
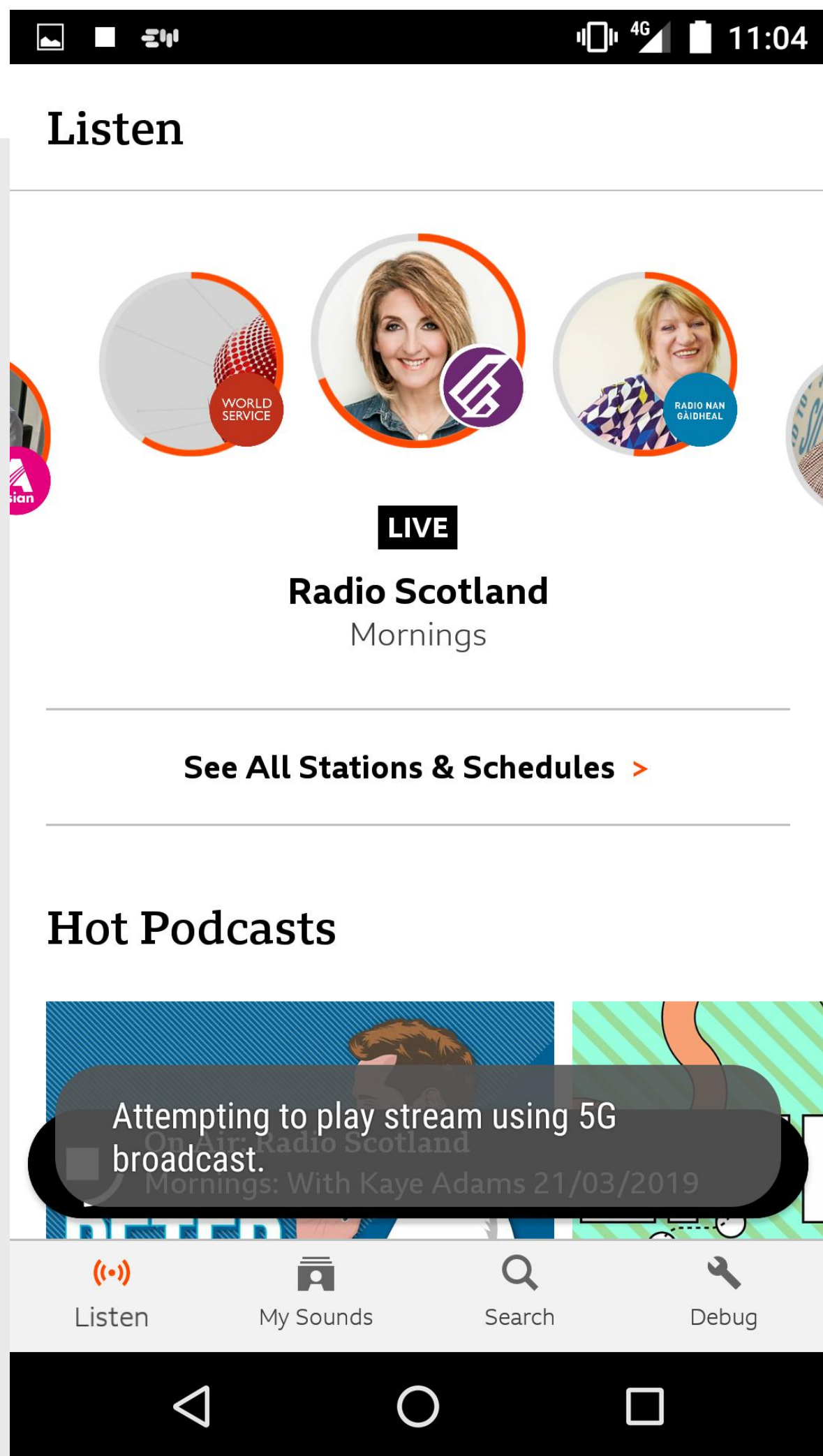
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# 5G Radio App – Dedicated Broadcast Radio Application



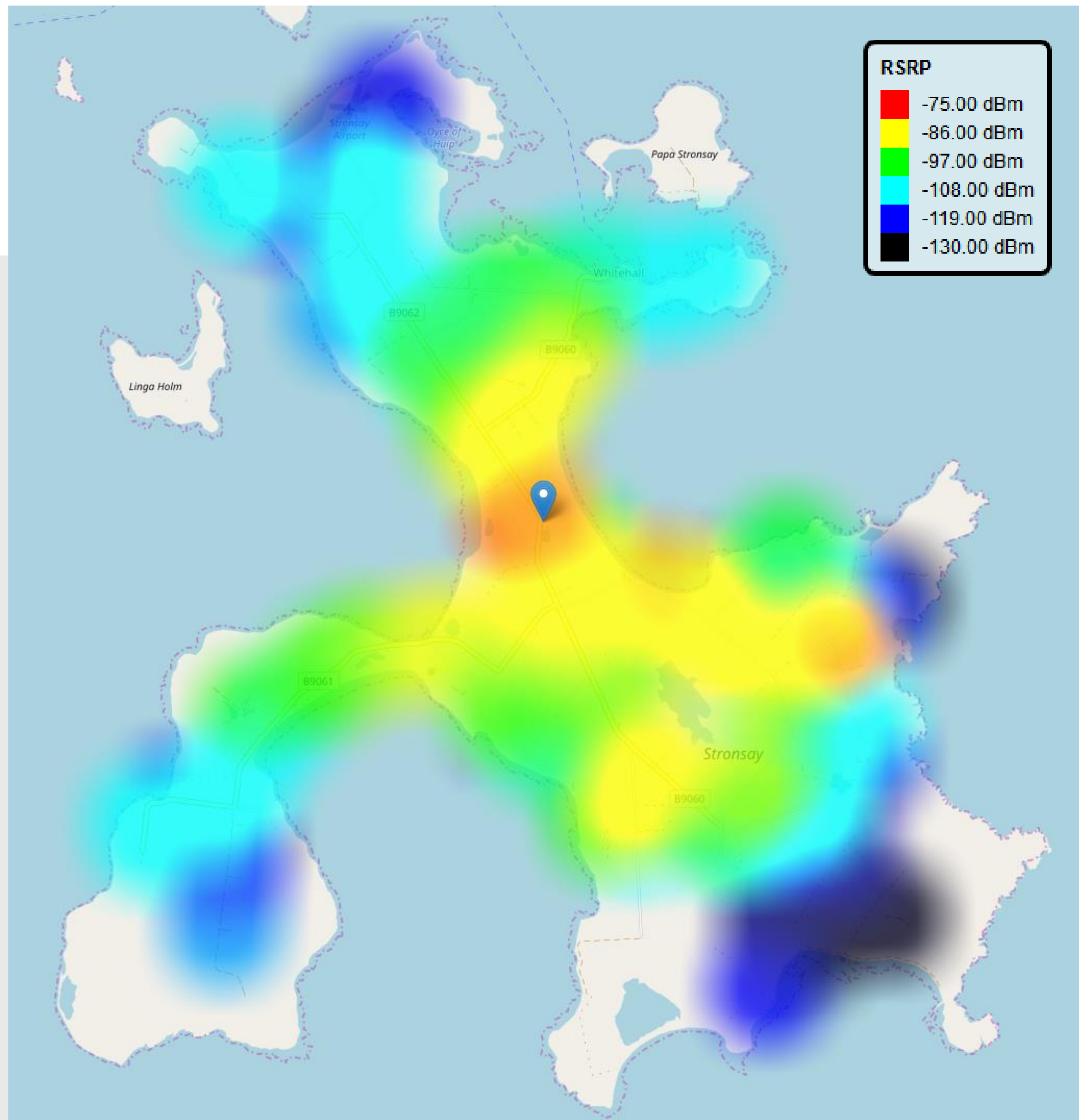
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# BBC Sounds – Broadcast and Unicast Working Together





# 5G RURALFIRST Crowd-sourced Coverage Data





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## Public Trial – Audience Research

*“I now have a **large choice of stations** readily available, most of which I’ve tried out!”*

*“**Strong uninterrupted listening.** No more balancing radios in signal areas and wiggling aerials to catch a signal”*

*“It can be used all over the house without having to re-tune it”*

*“You’d only be able to get a couple of stations before, now I’m listening to other stations on the app”*

**Almost all (9 in 10) satisfied with trial Internet service**



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## 5G Broadcast Modem

- Hardware-based **transmitter** and **receiver**
- 3GPP **Release 14/15** compliant (FeMBMS)
- Allows us to go beyond what is possible with commercial equipment
  - New techniques for standardisation
  - Rel-16, LTE-based 5G Terrestrial Broadcast
- **Stand-alone carrier**
- **SIM-free (Free-to-air) reception**
- **Transport-only mode**
  - **AAC+ Audio over RTP/UDP/IP**



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## 5G Radio Trial: Summary

- Increasing demand for content on smartphones and on the move
- Broadcast modes could help with issues of capacity and coverage on mobile networks
- Demonstrated possibilities of mobile broadcast technology
  - Audience appreciated having radio readily available on smartphones
  - Looking to wider-scale trials
  - Questions around costs and business models of 4G/5G Broadcast
- 5G as a technology is still being developed and deployed
  - No widespread support in handsets for broadcast modes
  - BBC R&D continues to work in this space

**B B C** | **Research & Development**

# Thank you

**Come and see us:**

**BBC R&D Stand  
Future Zone  
Hall 8, F08**

[bbc.co.uk/rd/ibc2019](http://bbc.co.uk/rd/ibc2019)

