

COMUNICAÇÕES QUÂNTICAS: QUE FUTURO?

16°

CONGRESSO DO COMITÉ
PORTUGUÊS DA URSI

INSTITUIÇÕES ASSOCIADAS



TRANSCEIVER SYSTEM FOR AUDIO ALARMING USING RADIO FM STATIONS

Miguel Coelho (miguel.calca@av.it.pt)

Luís Santiago (luissantiago@av.it.pt)

António Navarro (navarro@ua.pt)

Nuno Borges de Carvalho (nbcarvalho@ua.pt)



instituto de
telecomunicações

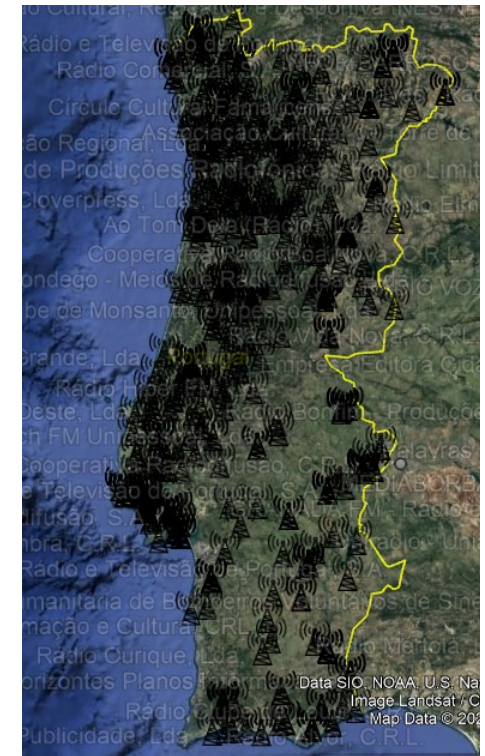
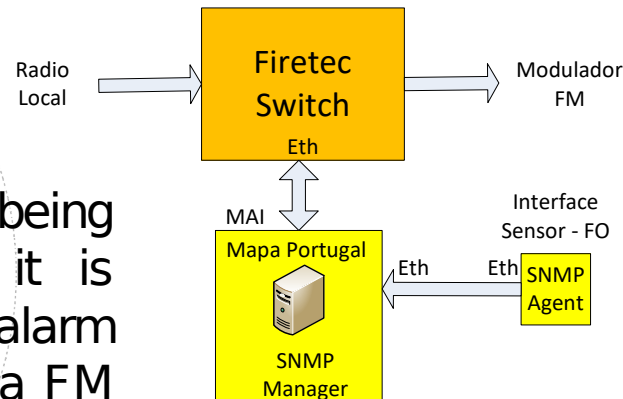
Problem

“A Grande parte das vítimas mortais do incêndio em Pedrógão Grande, em 2017, registaram-se na estrada 236-1 quando as pessoas tentavam fugir das chamas. Rui Oliveira/Global Images”

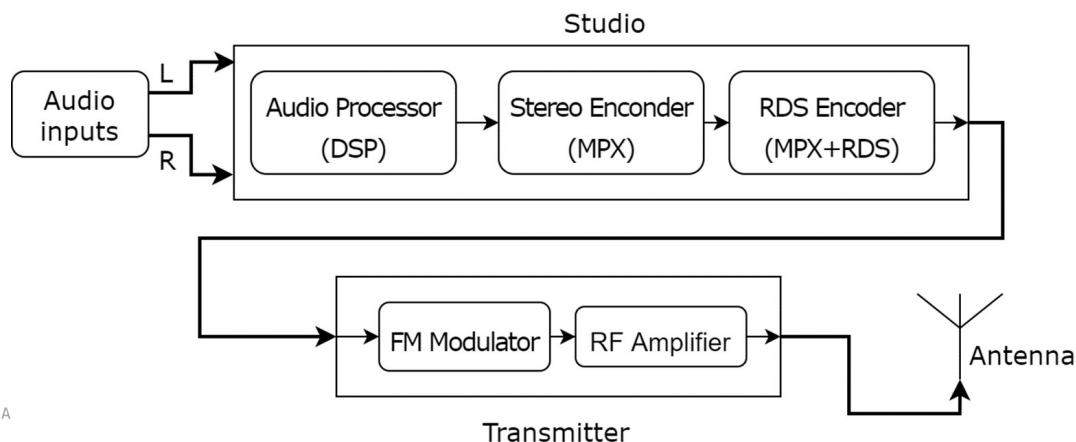


Solution

To prevent people from being surrounded by flames, it is intended to develop an alarm system to alert drivers, via FM radio, about the location of fires and roads to avoid.



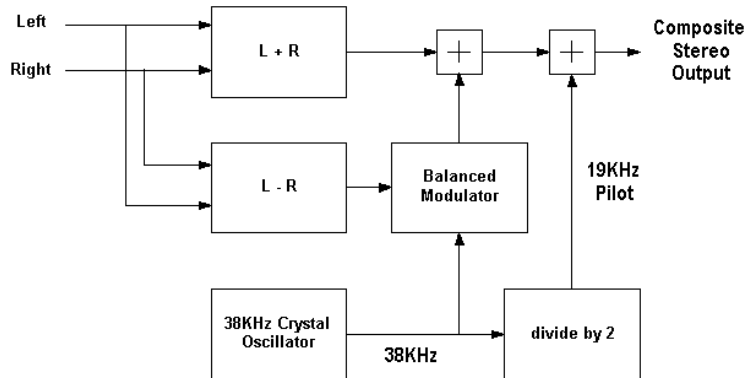
Typical FM radio broadcasting system



Concepts

MPX

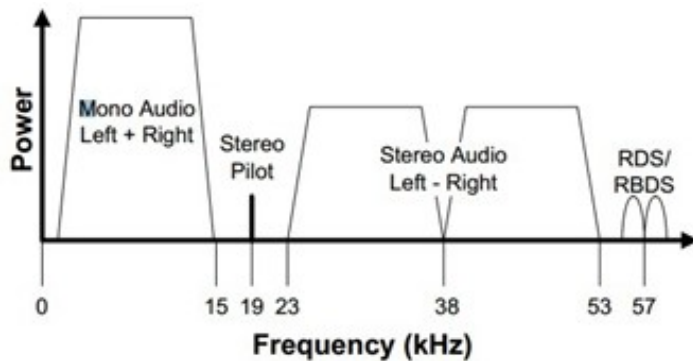
Block Diagram of a Stereo Encoder



RDS

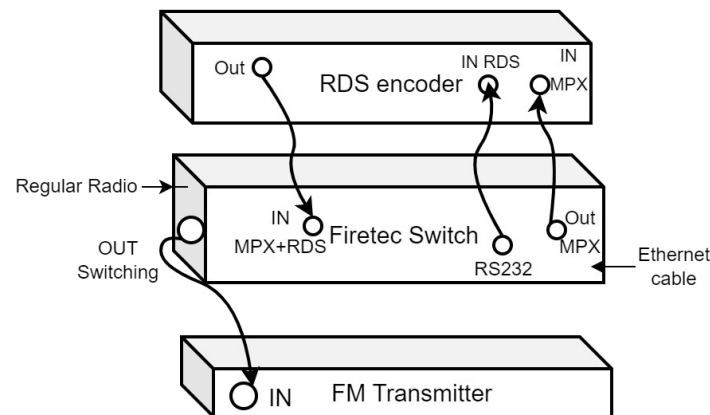
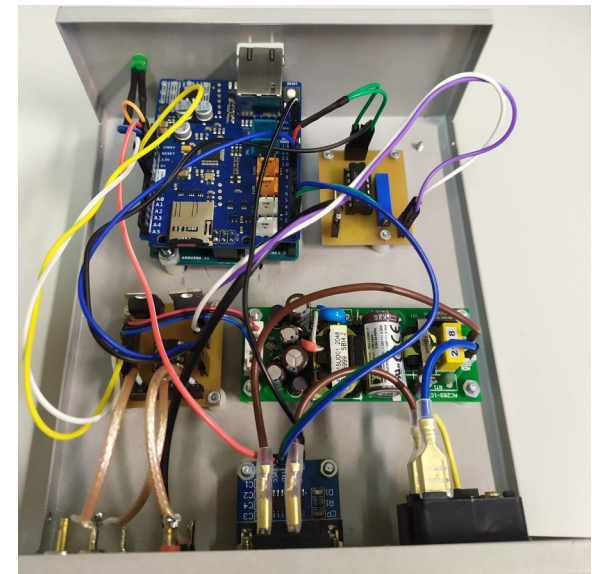
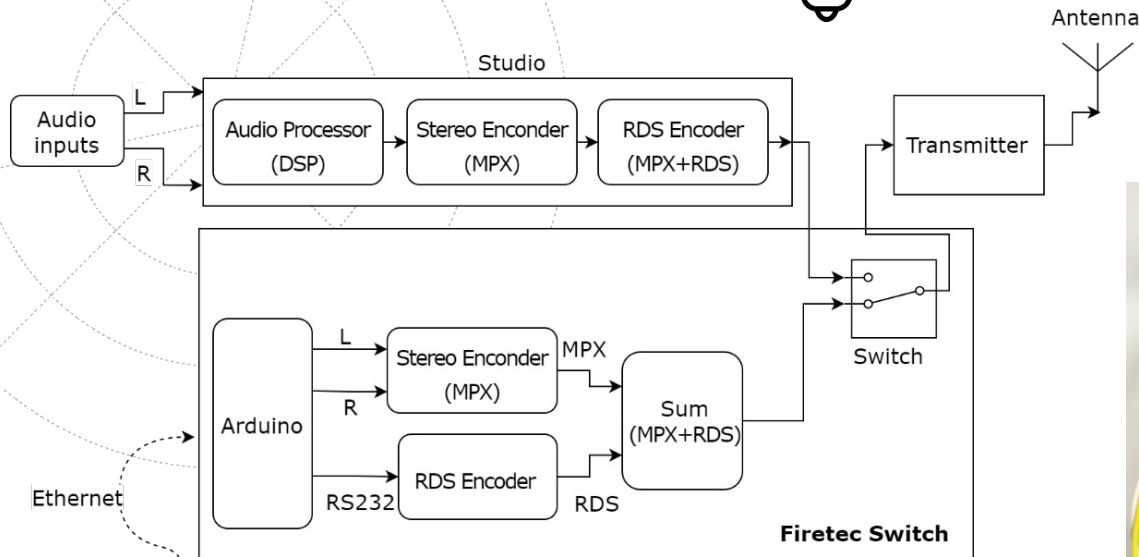
Information fields	Definition
PS (Programme Service)	Eight-character static display that represents the station identity name
PI (Programme Identification)	Unique 4-character hexadecimal code that identifies the station (national, regional)
RT (Radio text)	64 character free-form text message
CT (Clock Time and date)	Can synchronize a clock in the receiver or the main clock in the car
AF (Alternative Frequencies list)	This provides the receiver with a list of frequencies that allows the receiver to re-tune to a different frequency providing same station

FM MPX frequency spectrum

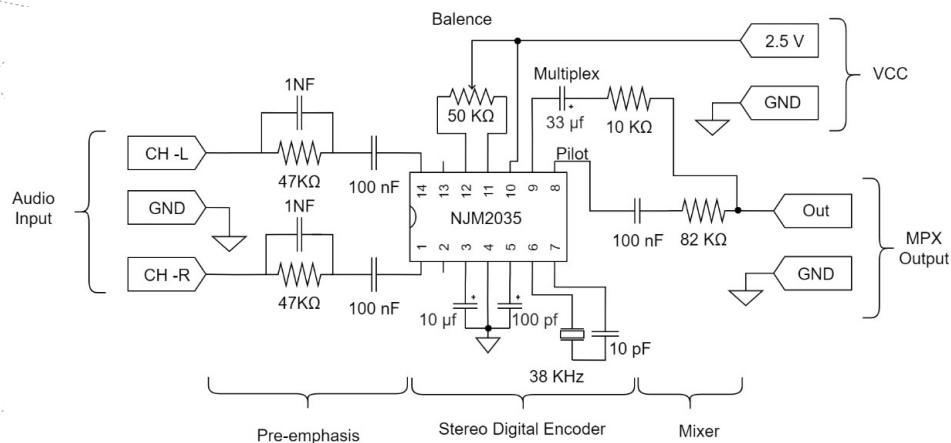


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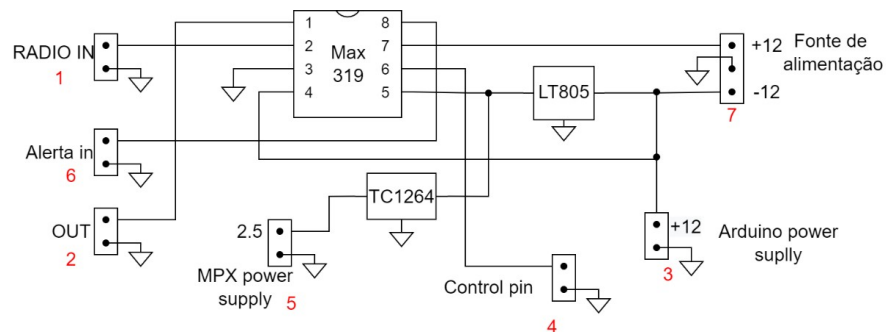
ARCHITECTURE



MPX circuit



Switch circuit



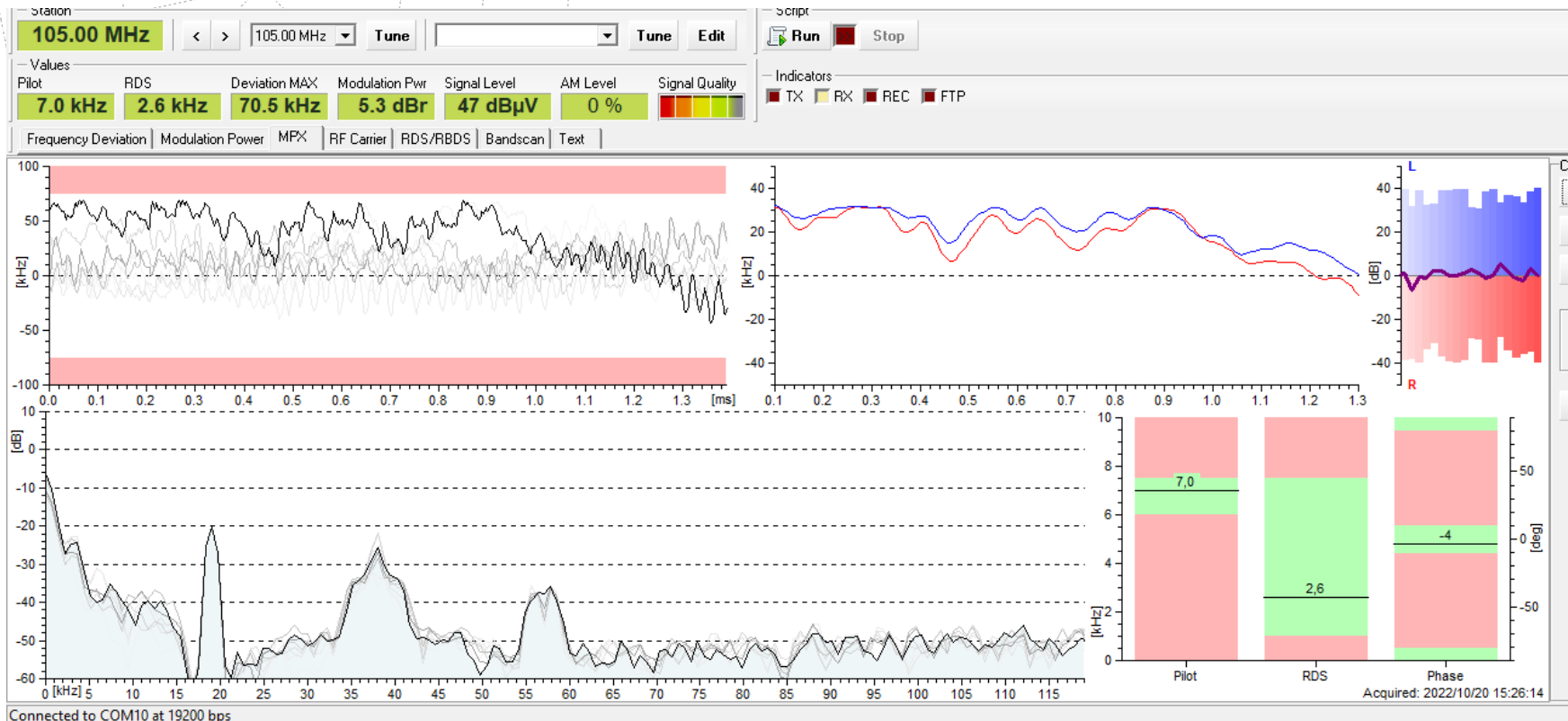
RDS encoder



P232U

Results Discussion

TERANOVA (105.0 MHz)

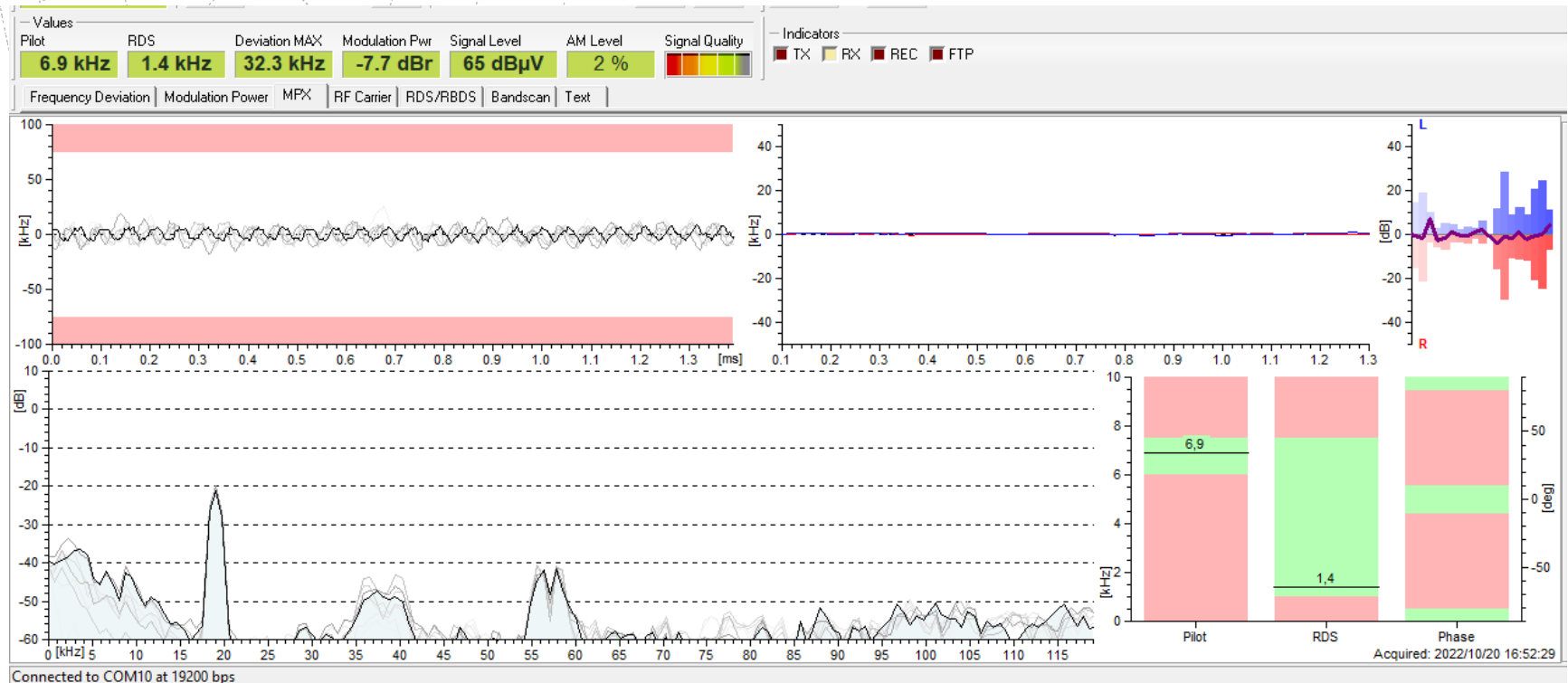


P275 FM Analyzer

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Results Discussion

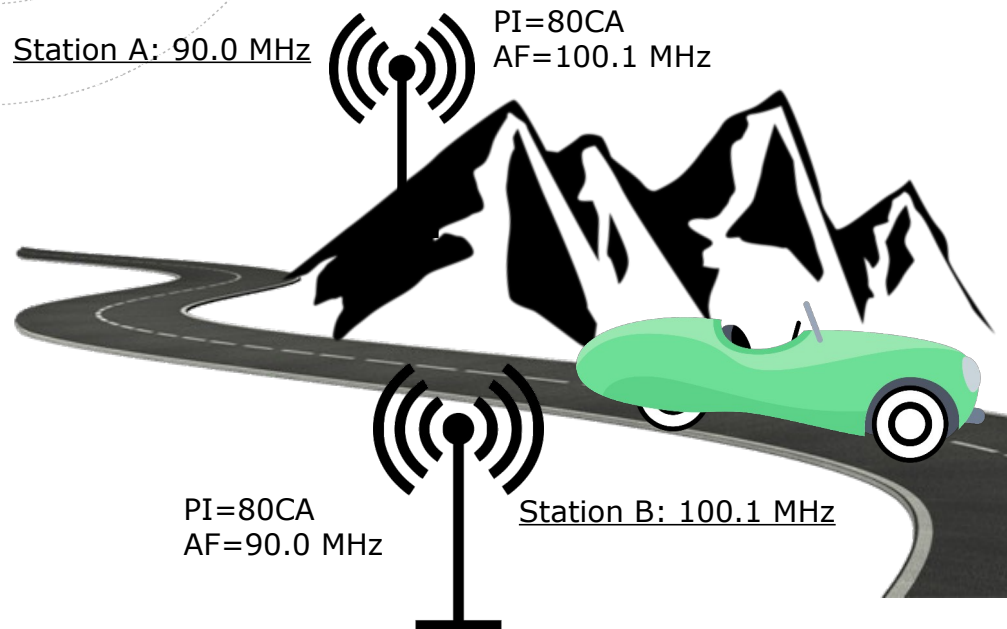
Alarm message



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Conclusions and future work

- Audio quality analysis;
- RDS: Switching the radios PI to a common PI;
- RDS: Change the AF of the radios to AF of the closest local radios.



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Acknowledgments

- FCT/MCTES
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- ERC

Questions?



Miguel Coelho
miguel.calca@av.it.pt

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