|  |  |  |
| --- | --- | --- |
| FM PT51 | | FM51(19) Info93 |
| FM PT51, Meeting 35 | | |
| Friedrich-Alexander-Universität, Erlangen, 24-25 April 2019 | | |
|  | | |
| Date issued: | 19.04.2019 | |
| Source: | FAU (florian.irnstorfer@fau.de;georg.fischer@fau.de) | |
| Subject: | Advanced Receiver Design for Cancelation of DME Interference into PMSE | |
| Group membership required to read? (Y/N)  N | | |
|  | | |
| Summary: | | |
| FAU has studied a new approach for an interference cancelation (IC) advanced Receiver to receive PMSE signal in the presence of pulsatile interferers, like DME signals that arise in Avionic frequency band. The first approach is a straight forward Blanking approach, where the received signal is turned to zero during the time a pulse is detected. The second approach is an optimal interference cancelation RX that tries to reconstruct the interfering pulses by estimating their parameters. This requires more computational complexity and ideally could lead to a total subtraction of reconstructed interferer. The simple blanking IC RX is expected to provide an increase of robustness to interferers in the order of 10…15 dB. The optimal IC RX shows an increase in interference robustness by 12…20 dB. Such increases in robustness of PMSE RX to withstand pulsatile Interferers can significantly increase the region where PMSE and avionic DME are compatible.  Thanks to information provided by DFS (Mr. Wollweber) FAU has started to incorporate also non-idealities in modelling DME interferers. An assessment how real RX implementation impairments affect maximum cancelation gain also has started.  Research in this area in ongoing at FAU.  Support from DFS side on DME pulse characteristics and scenarios is greatly acknowledged.  FAU welcomes a discussion with PMSE equipment manufacturers to study incorporation of its interference cancelation algorithms into their receivers to study realistic practical gains under realistic interferer signals in solidly set-up out lab environment. | | |
| Proposal: | | |
| FAU suggests studies in SEAMCAT to assess the relation between increase in interferer robustness versus compatibility area.  Furthermore FAU suggests to conduct studies on complexity for integration into PMSE RX. | | |
| Background: | | |
| CEPT WG FM is currently conducting compatibility studies for operation of PMSE links in avionic band. | | |

Please see attached slides for more details.