

RF Spectrum Ad Hoc – Minutes November 20, 2012

Provided the IEEE-SA Patent Policy link. Everyone on the call was familiar with the patent policy.

- <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>

Discussed FDD DS band edges

Jim Farmer suggested a possible lower band of 54 MHz

Christian suggested a possible lower band edge of 550 MHz

Check with Bright House and Time Warner on the FDD Lower Band Edge

Rob Howald said it is possible that the last available spectrum could be the low end due to dropping the last analog TV channel. Not recommending it, but it could happen.

Leo suggested that to deploy EPoC they will need to move the split. If there are legacy systems they can use the lower portion of band.

Rob suggested that we propose something like 300 MHz and then see if that works for the MSOs.

Christian suggested that all the CNU's not have to support the entire frequency range.

Leo suggested that we will define a minimum and a maximum for DS and US, and they may overlap. One cannot make one CNU that support all possibilities since you need a filter in front. Other examples of similar situations are Wi-Fi in other countries and LTE.

Jim said we need to define the minimum needed to be interoperable. Maybe define some center frequencies that are mandatory, and can be

Suggestion from Rob Howald on FDD Downstream Band

DS BW (A) 300 MHz(TBD) - 1.2 GHz (Min Req'd)

DS BW(b)300-1.7 GHz DS BW(C)108 MHz-1.7 GHz DS(D)54-1.7 GHz (optional)

Steve took an action item to tabulate the center frequencies, some mandatory and some optional, and revise the Open Issues List.

Discussed 192 MHz bandwidth for the US.

Jim asked about the subcarrier spacing and issues of complexity.

Rob suggested that more carriers work better with delay spread.

Leo brought up the issue of multiple Transmitters. Their transmitter needs to have sufficient dynamic range to match PSD levels in OFDMA. Also impulse noise is different in US versus DS.

Rob said that is true today, but if we start at 15 MHz it may not be as bad.

Leo said that the burst noise will overload a subcarrier so we need to design PHY to handle this burst noise.

Rob said that no one wants to go above 16 k FFT in terms of complexity.

Ed Boyd pointed out that if we go to 192 MHz in the US then the upstream goes above 1 Gb/s which would require 10G EPON on US. The North America operators are interested in 10/10 G EPON for business services and China is mostly 10/1 G EPON for residential.

Steve pointed out that we may use lower modulation order in US due to channel quality.

Leo pointed out 88 to 108 is FM interference in the US.

Steve asked about delay spread is worse. It was pointed out that the duration is similar but the echoes decay less at lower frequencies.

Tom pointed out that High power TV channels on low frequencies can also cause significant interference. These will be worse than FM radio in many cases.

Leo pointed out for Analog TV you need SNR of 50 dB.

We may have a lot of exclusion bands in US due to the interference.

Rob said, if it is a Gateway and isolates the in-home network from EPoC the interference will be less. Also, we have a lot less measurements on the US than on the DS.

Tom said he has made measurements and once the Taps are connected it is very noisy. To protect the US you need isolate the majority of the homes to protect the US. So in practice we will need to handle the noisy US.

Rob said 75% of the ingress is from the homes. Leo said he believes it is more like 90%.

Attendance

Person	Affiliation
Edward Boyd	Broadcom
Hesham ElBakoury	Huawei
Jim Farmer	Aurora Networks
Marek Hajduczenia	ZTE
Robert Howald	Motorola
Mark Laubach	Broadcom
Benny Lewandowski	CTDI
Leo Montreuil	Broadcom
Michael Peters	Sumitomo Electric
Christian Pietsch	Qualcomm
Bill Powell	Alcatel Lucent
Steve Shellhammer	Qualcomm
Tom Staniec	Cohere Communications