Performance Criteria for RTPGE

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Motivation

- Technical PHY related proposals for RTPGE need to be rated according to their suitability for automotive use
- The following slides list the criteria the car industry will be looking for when proposals for technical solutions are made
- This is to inform the participants

Rating Criteria (1)

	Parameter	Comment	Priority
1	No special IC process required	CMOS must be possible, even if it potentially means external filters and ESD protection.	Showstopper
2	Meets Baseline EM emission	Hard requirement, nevertheless final judgement needs engineering samples	Showstopper
3	Meets Baseline EM immunity	Hard requirement, nevertheless final judgement needs engineering samples	Showstopper
4	Robustness to variation in cable parameters	Minor variations with temperature during operation should not impact the performance. Adaptive equalization potentially possible, but should be watched in terms of EMC properties	Showstopper
5	Operational link power estimate	Most important along with silicon area/cost	Highest priority power with cost
6	Silicon area (normalized to IC process size)	Most important along with operational power consumption	Highest priority cost with power

Rating Criteria (2)

	Parameter	Comment	Priority
7	Deep sleep wake time	Budget is 100 ms or less, report absolute number	High priority
8a	Allows in principle for all links in Topology 2 without shield <=0,35 mm²	Exceptions in specific car set ups are not considered	High priority
8b	% reached with unshielded, <= .35mm² if 8a is not met	If 8a is not met, 8b will give a comparison between proposals.	comparative measure
8c	Expected maximum reach on 0.35mm², 125C, 105C, 85C, in a mild EMC environment	No hard requirement, comparative measure for solutions, can be derived from the margin to the defined insertion loss, Final judgement needs engineering samples	comparative measure
9	Media useable (15m@125°C), hierarchy unshielded -> coax -> shielded	Ability of PHY to run on specified media. Flag in case there are major differences.	Needs evaluation

Rating Criteria (3)

	Parameter	Comment	Priority
10	EM emission margin	Margin to emission mask, note frequency of minimum, must meet baseline requirements	comparative measure
11	EM immunity margin	unshielded cable, this measure is secondary to power,must meet baseline requirements	comparative measure
12	Maximum imbalance tolerance	Should show up in EM margin (result from the previous two) - tolerance to 5mm conductor length difference	comparative measure
13	Potential line powering issues	Can be derived from lower cut-off frequency. The higher it is the easier the filter.	Needs evaluation
14	Energy Efficient Ethernet power estimate	optional data, not a decision maker	optional, good to know