Automotive Cable Comparison

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Goal

- Provide preliminary direction on cabling to consider for NGAUTO based on test data currently available and experience in the automotive industry with existing networks and cables.

Cable options

- Type (STP, SPP, Coax)
  - IL, RL, EMC, PCB Design, System Grounding, Bandwidth, Cable Diameter, Relative Cost
- SDP Gauge (0.35, 0.21, 0.14)
  - Power, bending, IL, weight, size
- Coax Gauge (0.35, 0.14, 0.08)
  - Power, bending, IL, weight, size

Pugh matrix comparing cable types - 1

	STP (control)	SPP	Coax
IL (same gauge)		S	S
RL		S	+
EMC		S	-
PCB Design		S	-
System Grounding		S	-
Bandwidth (7.5 GHz)		++	++
Cable Diameter (same gauge)		S	+
Relative Cost		-	+

Pugh matrix comparing cable types - 2

	SPP (control)	STP	Coax
IL (same gauge)		S	S
RL		S	+
EMC		S	-
PCB Design		S	-
System Grounding		S	-
Bandwidth (7.5 GHz)		--	S
Cable Diameter (same gauge)		S	+
Relative Cost		+	+

Pugh matrix comparing cable types - 3

	Coax (control)	SPP
IL (same gauge)		S
RL		-
EMC		++
PCB Design		+
System Grounding		+
Bandwidth (7.5 GHz)		S
Cable Diameter (same gauge)		-
Relative Cost		-

Summary

- SPP (STP possible ≤ 4 GHz)
  - Significantly better EMC Performance
  - Easier PCB and System design
  - Low Risk
  - Should be default for PHY design

- Coax
  - Less expensive
  - Lower Weight/size
  - Higher risk of NOT meeting all requirements
  - May be considered for PHY design if SPP/STP option is also available