
Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Technical contribution on Human Body Communications]

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Source: [Kenichi Takizawa] Company [NICT], [Ryuji Kohno] Company [NICT, Yokohama National University] [Hitoshi Yoshiyuki] Company [ALPS Electric, Co., Ltd]

E-Mail:[kohno@nict.go.jp, hitoshi.yoshiyuki@jp.alps.com]

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Abstract: [HBC technology based on FSK modulation is provided for IEEE802.15.6.]

Purpose: [This material on human body communications, i.e. HBC with electro-magnetic field on a human body is prepared to be considered as an extension of wireless BAN in IEEE802.15.6. A ready commercially available specification is described as a practical solution for HBC.]

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Major Specification for HBC from ALPS Electric

- Modulation
 - FSK-based modulation
- Frequency band
 - 10-14MHz.
- Data rate
 - 100 kbps.
- Tx signal level
 - from 0.8 Vpp to 1.8 Vpp
- Contact address
 - Ryuji Kohno, kohno@ynu.ac.jp
 - Hitoshi Yoshiyuki, hitoshi.yoshiyuki@jp.alps.com

Comparison with other proposals

Proponent	Samsung	ETRI	ALPS Electric
Modulation	Orthogonal modulation	ASK	FSK
Frequency Band	10~50 MHz	5~50 MHz	10-14 MHz
Data rate	1 Mbps	1k~10Mbps	100 kbps
Tx Signal level	-4dBm (~0.4 Vpp)	-15dBm (0.1Vpp)	0.8 Vpp ~1.8 Vpp

Conclusion

- Alps has implemented a commercial level of HBC systems.
- Comparing with other HBC or EFC systems, modulation scheme, frequency band allocation, and data rate are different.
- This type of systems has not been approved compliance for radio regulation yet.
- It is not clear yet whether this type of system can coexist with other radios including WBAN and implanted devices safely.
- HBC may be an extension of WBAN if it is compliant for both RR and FDA safety rule.