

Transmission of IPv6 Packets over IEEE 802.11p Networks

`draft-petrescu-ipv6-over-80211p-00.txt`

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What is 802.11p?

- Amendment to 802.11 for Wireless Access in Vehicular Environments
- short range wireless technology used in vehicular networking is different than the short wireless technologies used in other environments.

How is 802.11p different than e.g. 802.11a/b/g/n?

- Operation Outside the Context of a BSS (OCB):
 - Lack of Beacons, Ass'n Request/Response, Challenge.
 - Fake BSSID: wildcard 48 1 bits.
- New Timing Advertisement message
 - Absent in other 802.11 variants
- Frequency range in the 5.9GHz band
 - Compared to 2.4GHz, or 5GHz bands for 802.11a/b
- Explicit prohibition of IPv6 on channel 178 (180 in Europe)
 - A strange prohibition
- Half-rate encoding
 - Compared to full-rate encoding on e.g. 802.11b
- High power levels (33 dBm in Europe, 44 dBm in US)
 - Compared to 20 dBm on e.g. 802.11b outdoors

IPv6 works over 802.11p as over e.g. 802.11b

- MTU: default 1500 bytes
- Frame Format: Ethernet Adaptation Layer
- EtherType: 0x86DD, as with Ethernet
- Link-local Addresses, as with Ethernet (RFC2464)
- Address mapping, as with Ethernet
- Very frequent Router Advertisements may be necessary to ease IP handovers in OCB context, as with Mobile IPv6.

Adaptation Layer used by 802.11p and by e.g. 802.11b

```
+-----+-----+-----+-----+  
| 802.11 Data Header | LLC Header | IPv6 Header | Payload |  
+-----+-----+-----+-----+
```

```
      ^  
      |  
802.11-to-Ethernet Adaptation Layer  
      |  
      v
```

```
+-----+-----+-----+-----+  
| Ethernet II Header | IPv6 Header | Payload |  
+-----+-----+-----+-----+
```