ZigBee ION Test Cases

1. 2.4GHz RF Conformance

#	Test case	Observables
1	Transmit Power Spectral Density (PSD) mask	**2.4GHz**: |f-fc| > 3.5 MHz, Relative limit: -20dB, Absolute limit: -30dBm **915MHz**: |f-fc| > 3.5 MHz, Relative limit: -20dB, Absolute limit: -20dBm (RBW 100 KHZ)
2	Symbol rate	**2.4GHz**: 62.5 ksymbol/s ± 40 ppm **868MHz**: 20 ksymbol/s ± 40 ppm **915MHz**: 40 ksymbol/s ± 40 ppm
3	Receiver sensitivity	**2.4GHz**: -85 dBm **868/915MHz**: -92 dBm (PSDU length = 20 octets, PER < 1%)
4	Receiver jamming resistance	**2.4GHz**: Adjacent channel rejection: 0dB, Alternative channel rejection: 30dB **915MHz**: Adjacent channel rejection: 0dB, Alternative channel rejection: 30dB (PSDU length = 20 octets, PER < 1%)
5	TX-to-RX/ RX-to-TX turnaround time	12 symbol period
6	Error-Vector Magnitude (EVM)	35%
7	Transmit center frequency tolerance	±40 ppm
8	Transmit power	-3 dBm
9	Receiver maximum input level	-20 dBm
10	Receiver ED	8 bit integer ranging from 0x00 to 0xff
11	LQI	Using Receiver ED or SNR
12	CCA	Using ED threshold or Carrier sense

2. MAC level Interoperability

- Beacon: Nonbeacon-enabled network, Beacon-enabled network
- Address: 16-bit address, 64-bit address

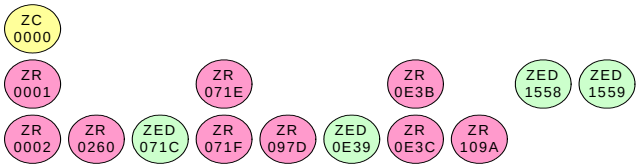
#	Test case	nonbeacon-enabled network	beacon-enabled network
1	Active scan	O	O
2	Active scan – leading to a beacon notification	O	O
3	Passive scan		O
4	Passive scan - leading to a beacon notification		O
5	Orphan scan – not associated	O	O
6	Associate	O	O
7	Orphan scan – associated	O	O
8	Disassociate – initiated by the device	O	O
9	Disassociate – initiated by the coordinator	O	
10	Disassociate – initiated by the coordinator and poll from device		O
11	Disassociate – initiated by the coordinator and sync once from device		O
12	Disassociate – initiated by the coordinator and sync and track by device		O
	Data transmission – initiated by the device	O	O
13	Data transmission – initiated by the coordinator	O	
14	Data transmission – initiated by the coordinator and poll from device		O
15	Data transmission – initiated by the coordinator and sync once from device		O
16	Data transmission – initiated by the coordinator and sync and track by device		O
17	Bidirectional data – sync and track	O	O
18	Bidirectional data - GTS		O

3. Network level Interoperability

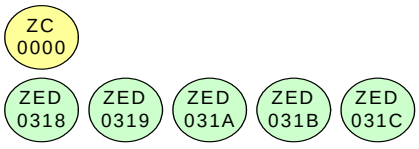
- Beacon: Beaconless, Fast beacons, Slow beacons
- Network: Rangy, Kempt, Bushy, Mixed ZR+ and ZR- Kempt, BLE (Battery Life Extension) Kempt

#	Test case	beaconless				Fast beacons				Slow beacon
		Rangy	Kempt	Bushy	Mixed ZR+ and ZR- Kempt	Rangy	Kempt	Bushy	BLE Kempt	Kempt
1	Network Formation	O	O	O	O	O	O	O	O	O
2	Broadcast Transmission	O	O	O		O	O	O	O	O
3	Tree Routed Transmission	O	O	O		O	O	O	O	O
4	Route Discovery	O	O		O					
5	Table Routed Transmission	O	O		O					
6	Force Route Discovery	O	O							
7	Tree Repair	O	O		O					
8	Network Destruction	O	O	O	O	O	O	O	O	O

Rangy



Kempt



Bushy

4. Application level Interoperability

#	Test case
1	ZigBee Node ZDO Device Discovery
2	ZigBee Node ZDO Service Discovery
3	ZigBee Node ZDO Management
4	ZigBee Node Remote Binds
5	ZigBee Node Startup/Join sequences using Home Controls stack profile
6	ZigBee Node AF Direct Data Transfer using the Test Profile Application
7	ZigBee Node APS Indirect Data Transfer using Test Profile

References

1. IEEE 802.15.4, MAC and PHY Specifications for Low Rate-WPAN
2. 043213r04 ZigFest Planning Guide
3. 03536r01 Level 1 Interoperability Test Procedures
4. 03531r07 Level 2 Interoperability Test Procedures
5. 053439r04 Level 3 Interoperability Test Procedures