

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

Submission Title: [Underlying considerations behind the proposed Consultation of Japanese 950MHz usage by WPAN]

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Re: [15-07-0789-00-004d-japanese-950mhz-regulation(2)]

Abstract: [**The slides are intended to explain the underlying considerations within sub-WG of MIC regulatory committee.**]

Purpose: [To clarify the background of technical requirements before formal issuance of Call for Proposal by TG.]

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Summary

The recently proposed consultation document by MIC committee for opening 950.8 to 955.8MHz band is expecting further deployments of WPAN devices onto variety of usage scenarios of which requirements include the preferred utilization of 950MHz band than 2.4GHz ISM band. Background consideration includes followings,

- (1) Co-existence of WPAN & RFID is more manageable.**
- (2) As RFID system are based on Band Selection function using LBT, WPAN is able to search & select the unused sub-channel which is upto 600kHz, i.e., adaptive agility.**
- (3) Fairness between License-Exempt low power WPAN system and Licensed high power RFID system is reflected in the requirements of transmission duty ratio control and maximum duration of transmission.**

Co-existence of WPAN & RFID is more manageable in several application spaces than 2.4GHz ISM-band, e.g. Industrial, Social infrastructural and medical systems.

Freq (MHz)	Ch#	RFID Licensed 4WEIRP	RFID Light-Licensed 4WEIRP	RFID -License-exempt 10mW	WPAN ^{10mW} License Exempt	WPAN ^{1mW} License Exempt
951.0	1					A, B, C
951.2	2					A, B, C
951.4	3					A, B, C
951.6	4					A, B, C
951.8	5					A, B, C
952.0	6					A, B, C
952.2	7	A	A	A		A, B, C
952.4	8	A, B	A	A		A, B, C
952.6	9	A	A	A		A, B, C
952.8	10	A	A	A		A, B, C
953.0	11	A	A	A		A, B, C
953.2	12	A	A	A		A, B, C
953.4	13	A	A	A		A, B, C
953.6	14	A, B	A	A		A, B, C
953.8	15	A	A	A		A, B, C
954.0	16			A		A, B, C
954.2	17			A	A	A, B, C
954.4	18			A	A	A, B, C
954.6	19			A	A	A, B, C
954.8	20			A	A	A, B, C
955.0	21					A, B, C
955.2	22					A, B, C
955.4	23					A, B, C
955.6	24					A, B, C

A: Carrier Sense 5ms @ -74dBm
Tx duration 4 s max
w/t Cease-TX 50ms
B: No Carrier Sense
No TX duration Control

A: Carrier Sense 5ms @ -74dBm
Tx duration 4 s max
w/t Cease-TX 50ms

A: CarrierSense 10ms@-64dBm
Tx duration 1 s max
w/t Cease-TX 100ms

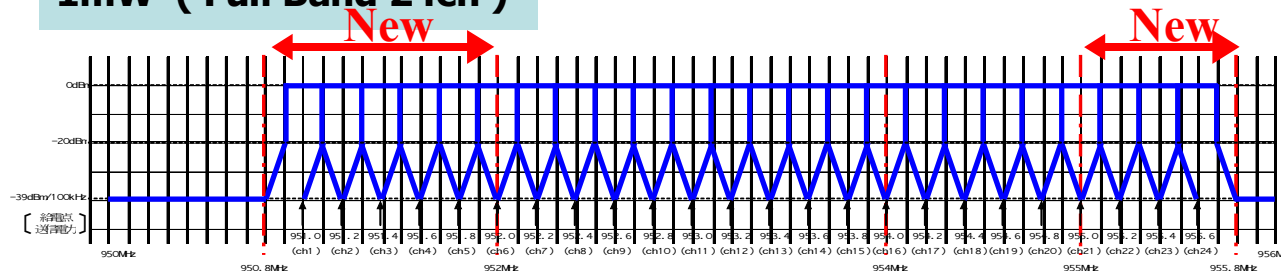
A: Carrier Sense 10ms@-75dBm
Tx duration 1 s max
w/t Cease-TX 100ms

A: CarrierSense 5ms @ -74dBm
Tx duration 1 s max
w/t Cease-TX 100ms
B: CarrierSense 128us
@ -75dBm
Duty Ratio Control 10%
Tx duration 100ms max
w/t Cease-TX 100ms
C: No Carrier Sense
Duty Ratio Control 0.1%
TX duration 100ms max
w/t Cease-TX 100ms

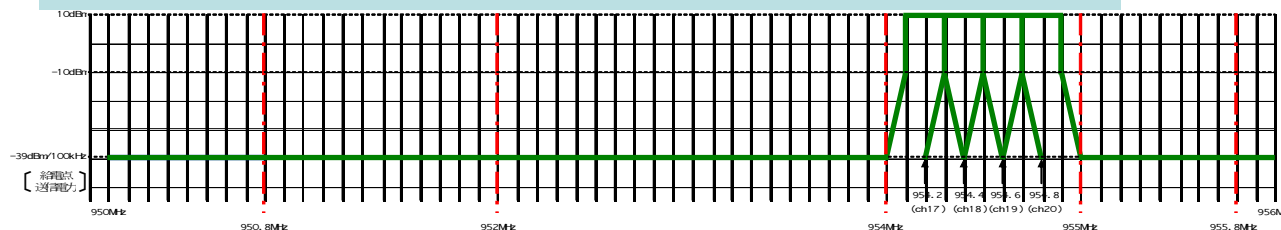
As RFID system are based on Band Selection function using LBT, WPAN is able to search & select the unused sub-channel, transmit the frame and release it as quick as possible. The compromise was the bandwidth of temporal occupancy, which is upto 3 sub-channel, i.e. 600KHz, because of segregation from the broadband consumer/entertainment applications.

200KHz Channelization \Rightarrow Upto 3 Channel bonding (Buttable)

1mW (Full Band 24ch)

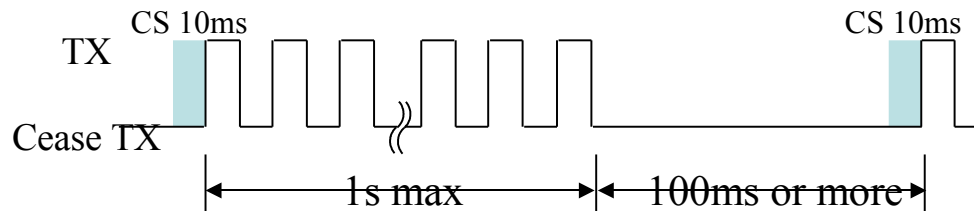


10mW (Specific Channel 4ch [17ch,18ch,19ch,20ch])

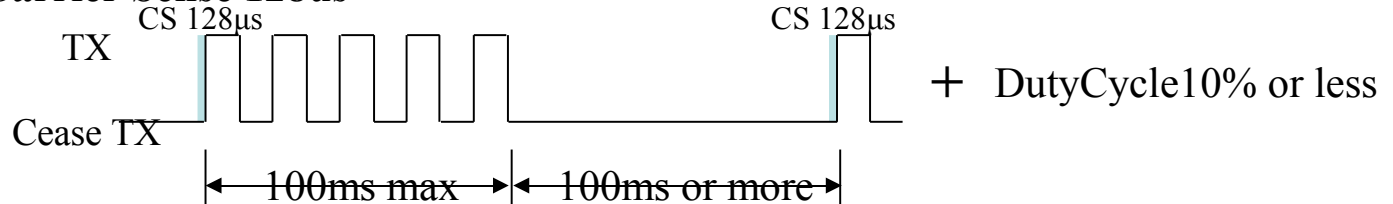


Fairness between License-Exempt low power WPAN system and Licensed high power RFID system is reflected in the requirements of transmission duty ratio control and maximum duration of transmission with Cease-transmission time enforced.

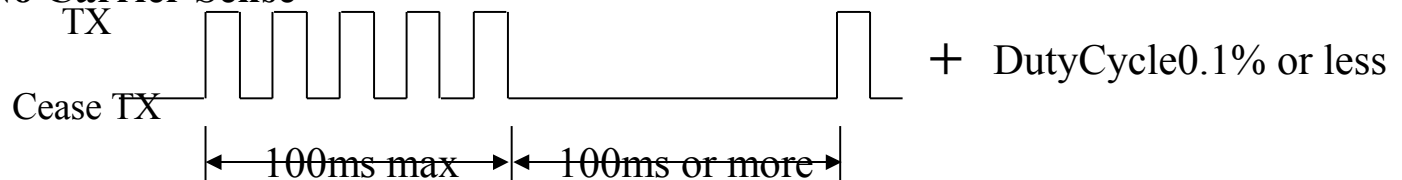
<Carrier Sense 10ms>



<Carrier Sense 128us>



<No Carrier Sense>



Discussion ?

References

IEEE Doc 15-07-0789-00-004d-japanese-950mhz-regulation(2)

IEEE Doc 15-07-0788-00-004d-japanese-950mhz-regulation

IEEE Doc 15-07-0712-00-wng0-Supplement-Commonality-Enhancement-for-Sub-GHz-WPAN

IEEE Doc 15-07-0621-03-wng0-Commonality-Enhancement-for-Sub-GHz-WPAN

*Proposed Consultation document of 950MHz frequency band usage for public comment Solicitation
by MIC in Japan*