WHDI Wireless Video Transmission Introduction

Applied Video Solution Department
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Simply Better Connections™

Various Wireless Signal Introduction

- 60GHz

Only one protocol available

- 5GHz

WHDI & Wifi 802.11a/n used

- 2.4GHz

Wifi 802.11 b/g/n, BT, Microwave, DECT phone…etc. used

Wireless A/V transmission Technologies

	WHDI	IEEE 802.11b/g/n-WiFi	Wireless HD	Ultra-wide Band
Frequency	5GHz (5.1~5.9GHz) proprietary	2.4G (2.4~2.48G) or 5G (5.15~5.25, 5.7~5.8G)	60GHz (57-64GHz)	
PC 2 TV Application	PC independent (T+R)	PC independent (T+R) **SW required (Rx only)**	PC independent (T+R)	**Additional s/w installation required.**
Video Quality	Uncompressed	**Compressed Video**	Uncompressed	**Compressed Video**
Latency	<1ms	**~100ms**	~10ms	**~ 30ms**
Range LOS & Video format	30m 1080p Full HD w/ 3D	**30m** **1080p or less**	**10m** **1080p Full HD w/ 3D**	**~7m** **1080p or less**
Benefits	- Longer transmission distance - Good Video quality - Shorter latency	- Longer transmission distance - Cost effective (Rx only) For Miracast application	- Good Video quality - Shorter latency -Less interference	- One USB port for both power supply & video transmission
Weakness	- Cost is higher - High interference	-Latency is longer - 2.4G Extremely high Interference	-Shorter transmission distance. (Cannot through the wall) - Cost is higher	-Shorter transmission distance - Poor video quality - Latency is longer
Chipset Lead	-Amimon	-Cavium Network -Intel WiDI (Taifatec)	-Silicon Image (Sibeam)	-Wisair - Samsung

ATEN WHDI Products

BASIC SPEC:

- Support up to ***3D & 1080P@60Hz uncompressed*** video
- Support ***IR blaster*** & Local ***HDMI Loop-through***
- Wireless transmission distance up to ***30meters*** (Line of Sight)
- Operating 5.1 ~ 5.9GHz (Include non-DFS and ***DFS region***)
- Qualification: HDMI 1.4b, HDCP1.2, EDID/E-DDC1.3
- Compliance: FCC/IC/CE/TELEC

VE809

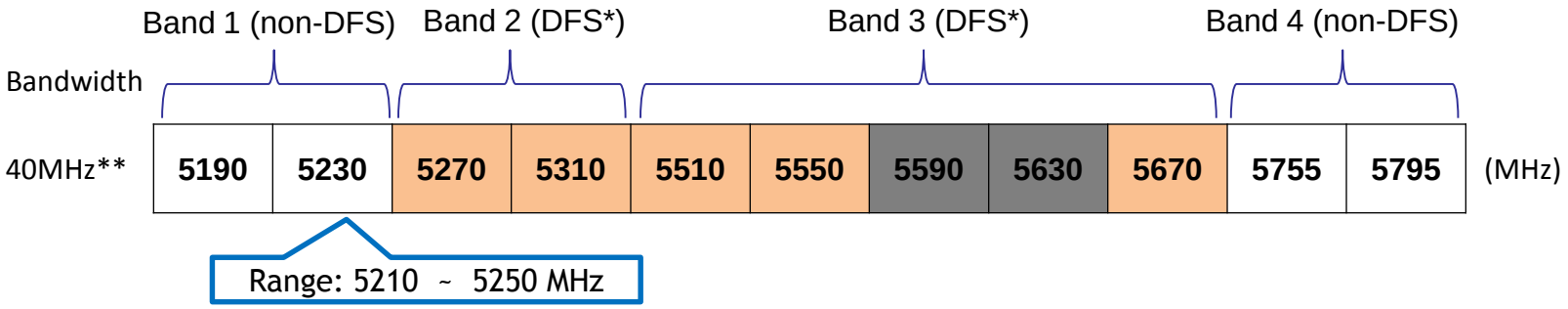
Tx:
- HDMI input*2

VE829

Tx:
- HDMI input*4
- Component input *1
- Matrix display

Rx:
- IR extender
- USB HID

5GHZ Bandwidth / Region

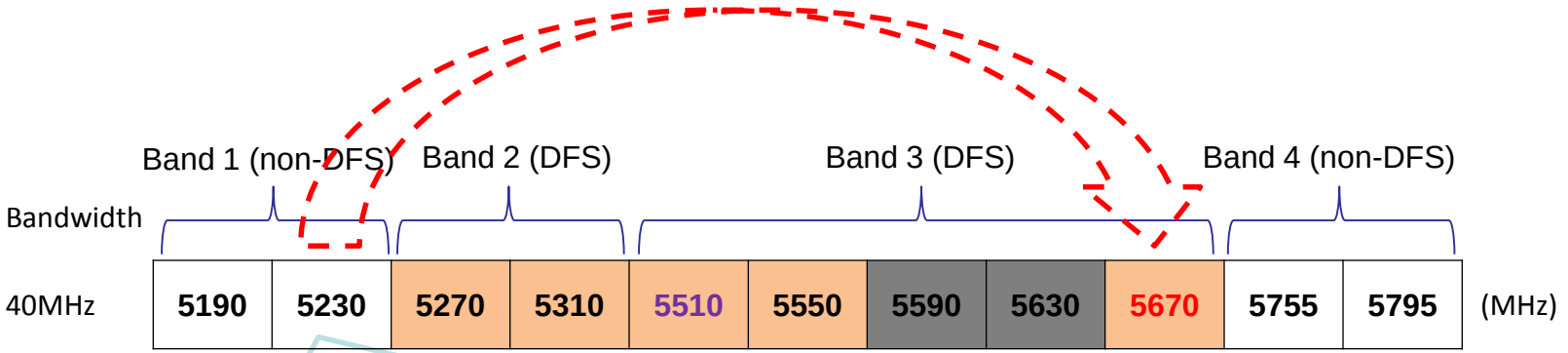


US	1	2	3	4	5	6	Reserved for Weather Channel		7	8	9
Europe	1	2	3	4	5	6			7	X	X
Taiwan	X	X	X	1	2	3			4	5	6
Japan	1	2	3	4	5	6	7	8	9	X	X
Korea	1	2	3	4	5	6	7	8	X	X	X

*DFS: Dynamic Frequency Selection

**Due to 1080p@60Hz or above that data is large, it requires 40MHz BW to deliver the full HD video. But Wifi signal used “20MHz” Bandwidth is good enough.

5GHZ WHDI Link flow -1



Step1: Linking on non-DFS region while boot up (ex. 5230MHz)

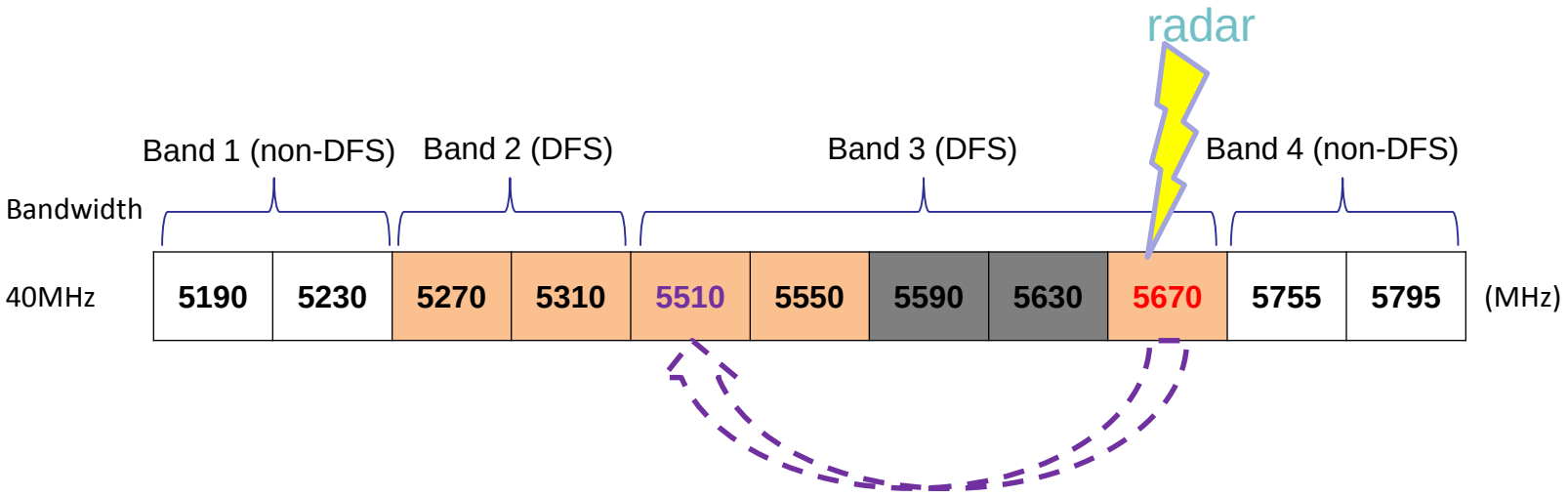
Step2: Processing CAC (Scanning the radar before initialing network on DFS region)

Step3: After CAC 60secs finished, establish the link on available DFS channel. (ex. 5670MHz)

Step4: Processing the ISM always(continue monitor radar comes or not.)

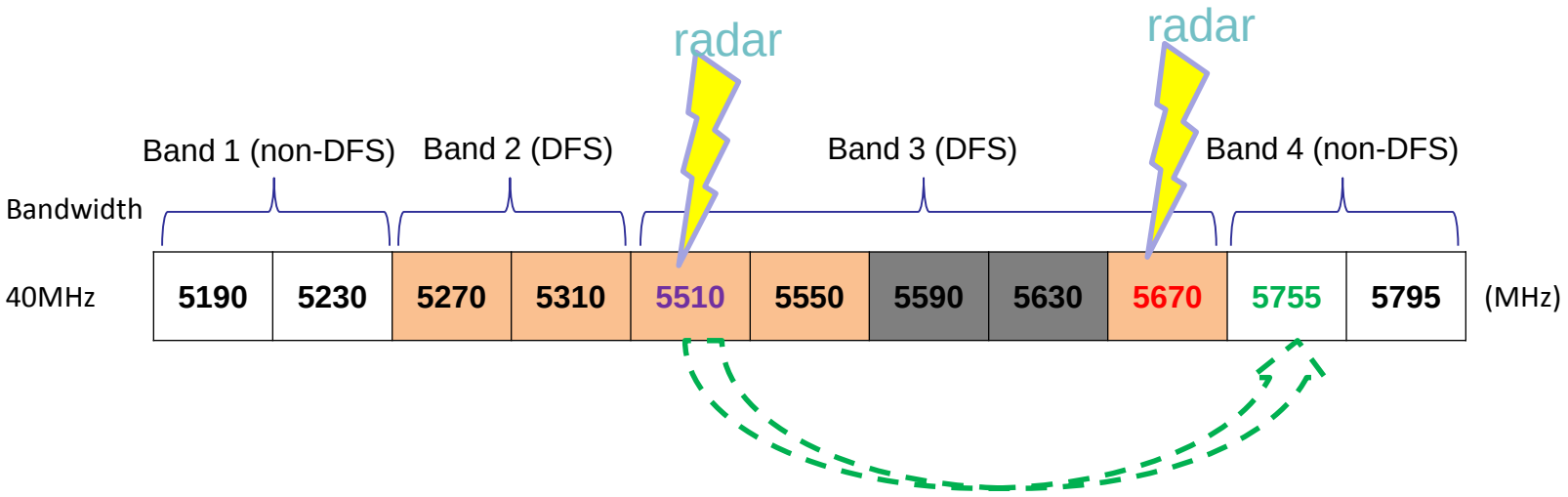
Step5: In the meantime, processing the CAC as well for DFS channel backup. (ex. 5510MHz)

5GHZ WHDI Link flow -2



Step6: While radar comes the current linked DFS channel, switch to backup DFS channel (ex. 5510MHz) immediately without any link drop.

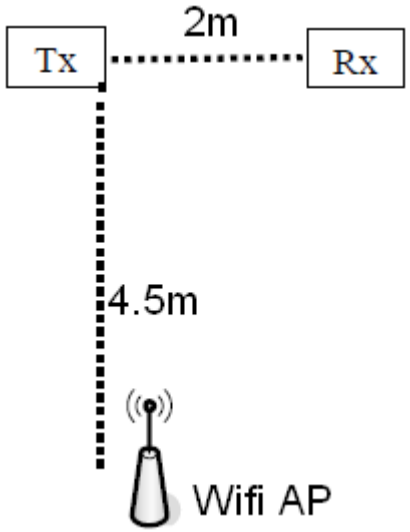
5GHZ WHDI Link flow -3



Step7: While over two radars occupied the DFS channels, switch to non-DFS channel (ex. 5755MHz) immediately without any link drop.

Wifi interference test

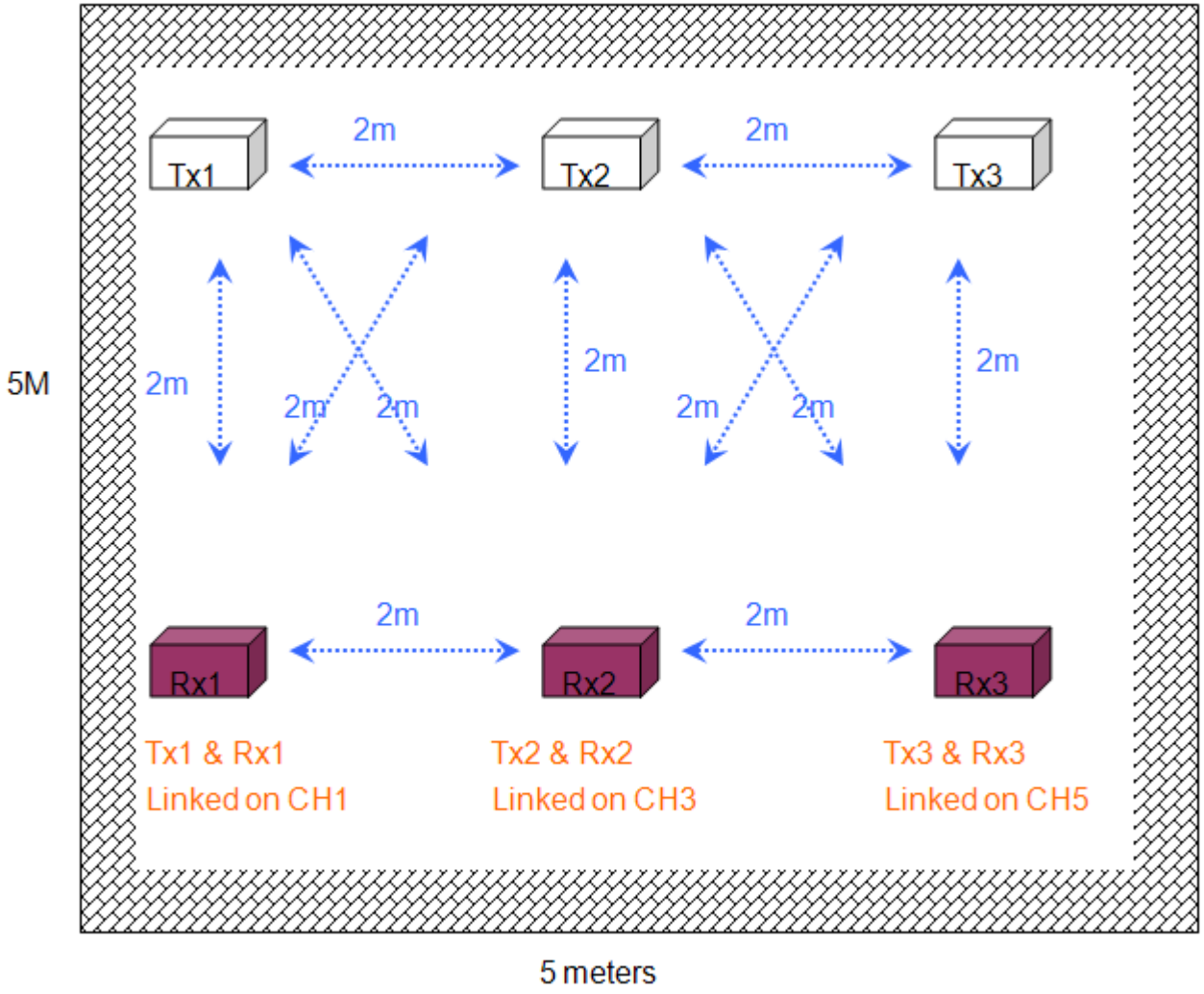
Test equipment	Test product	TX & RX distance	Interference source	Interference distance	Test result	Note
1080P VG-859	WHDI	2m w/ Low RF power	WIFI AP next freq.	4.5M	Display normally	
			WIFI AP same freq.		Audio drop 3~5secs till WHDI switch to another channel	Twice audio drop while WHDI linked on CH5 & AP fixed onCH5.
	WHDI	2m w/ Low RF power	WHDI next freq. Low RF power	7M	Audio drop 1~2secs till WHDI switch to another channel	Mosaic display randomly
			WHDI same freq. Low RF power		Link drop	



Test result:

- Wifi AP interference
  - Next freq.: no issue.
  - Same freq.: audio drop 3~5secs. till WHDI switch to another channel.
- WHDI interference
  - Next freq.: audio drop1~2secs. till WHDI switch to another channel.
  - Same freq.: Link drop; after then WHDI switch to another channel immediately.

How many sets available to setup in a area?

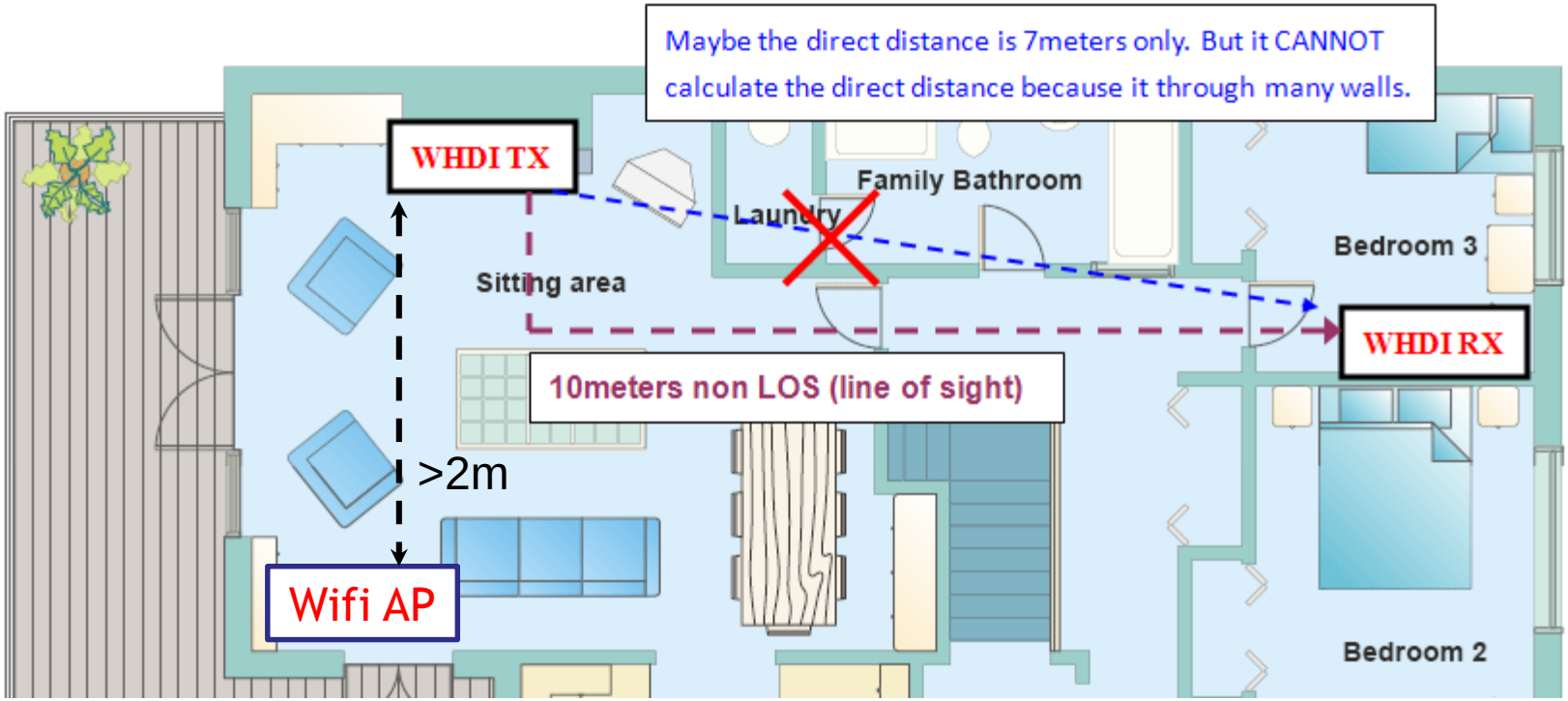


NOTE:

1. Depends on size of room. Suggest to keeps 2meters away between each Tx and Rx.

2. There's wireless interference on next channel. The best situation is linked 4~5 sets of WHDI wireless link on channel 1, 3, 5, 7, 9 separately. But as test experience, 3sets linked are stable than more.

Environment Setup Suggestion…



Thank You!