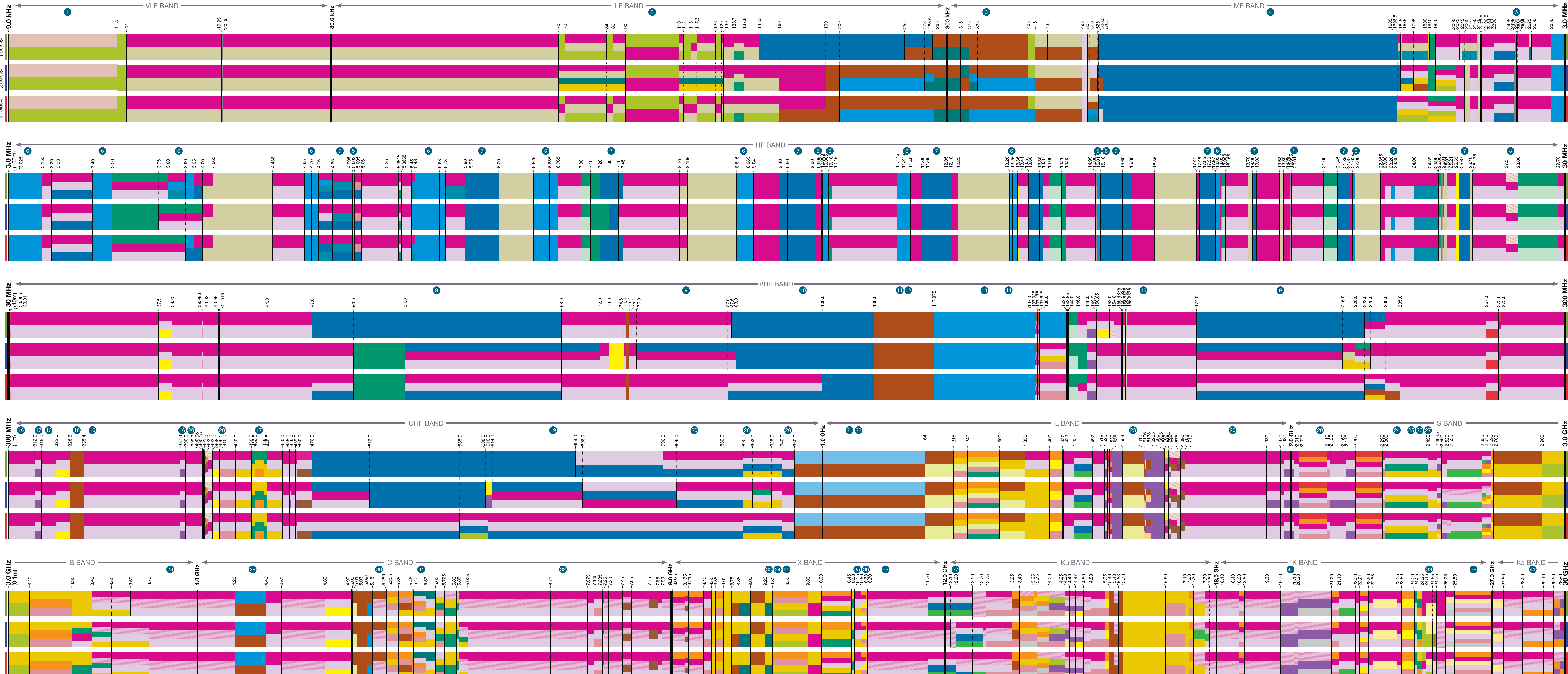


Worldwide Spectrum Allocations (Courtesy of Tektronix)



<ul style="list-style-type: none"> ■ Aeronautical Mobile ■ Aeronautical Mobile Satellite ■ Aeronautical Radionavigation ■ Amateur ■ Amateur Satellite ■ Broadcasting ■ Broadcasting Satellite ■ Earth Exploration Satellite 	<ul style="list-style-type: none"> ■ Fixed ■ Fixed Satellite ■ Inter-Satellite ■ Land Mobile ■ Land Mobile Satellite ■ Maritime Mobile ■ Maritime Mobile Satellite ■ Maritime Radionavigation 	<ul style="list-style-type: none"> ■ Meteorological Aids ■ Meteorological Satellite ■ Mobile ■ Space Operation ■ Standard Frequency & Time Signal ■ Radio Astronomy ■ Radiodetermination Satellite ■ Radiolocation ■ Radiolocation Satellite 	<p>SELECTED POINTS OF INTEREST:</p> <ul style="list-style-type: none"> 1 Underground Cable Locating Equipment 2 eLORAN 3 ADF Non-Directional Beacons (NDB) 4 AM Radio Broadcast 5 WWV Time Standard Signals 6 Major World Air Route Areas (MWARA) 7 International Shortwave Broadcasters 8 Citizen Band Radios (CB) 9 VHF Television (TV) 10 FM Radio Broadcast 11 VHF Omni-Directional Range (VOR) 12 Instrument Landing System (ILS - LOC) 13 Civil Aircraft Communications Radio 14 Emergency Locator Transponders (ELT) 15 International Maritime Channels 16 Garage Door Openers 17 Automobile Remote Keyless Entry (RKE) 18 Aircraft Landing Glide Slope (GS) 19 UHF Television (TV) 20 Bluetooth Communications Radio 21 Distance Measurement Equipment (DME) 22 Aircraft ATC Radar Transponders 23 Global Positioning System (GPS, L1) 24 Broadcast Satellite Radio Services 25 Wireless Local Area Networks 802.11b, g, n (WiFi 4), ac (WiFi 5), ax (WiFi 6) 26 Bluetooth Personal Area Networks (PAN) 27 Microwave Ovens 28 Satellite Television Broadcast 29 Aircraft Radar Altimeters 30 Wireless Local Area Networks (WLAN) 802.11a, n (WiFi 4), ac (WiFi 5), ax (WiFi 6) 31 Weather Radar - Large Aircraft 32 Point-to-Point Telecom Infrastructure 33 Weather Radar - Small Aircraft 34 Maritime Radar 35 Police Radar Speed Measurement 36 Radar Motion Detectors (Doors & Alarms) 37 Direct Broadcast Satellite 38 Inter-Satellite Frequency & Time Standard Reference 39 Automotive Radar 40 Inter-Satellite Radiolocation 41 Fixed Satellite Service: Space-to-Earth All Regions 42 Fixed Satellite Service: Earth-to-Space All Regions 	<p>*Selected Points of Interest* are based on popular applications and may not be exhaustive or applicable for all nations. This chart represents a snapshot in time of the International Telecommunications Union (ITU) worldwide spectral allocations summarized in the ITU Radio Regulations. As such, it does not completely reflect all aspects such as national and regional changes. Users should always consult their national regulatory bodies for current allocations. This chart does not differentiate between Co-PRIMARY and Secondary allocations. Allocations are listed from top to bottom in the order they appear in Table 2.106. Horizontal logarithmic scale has been exaggerated on some very narrow bands for readability.</p> <p>Source: IEC FCC Data, Table of Frequency Allocations, Code of Federal Regulations - Title 47, Section 2.106. Revised on February 3, 2021</p>
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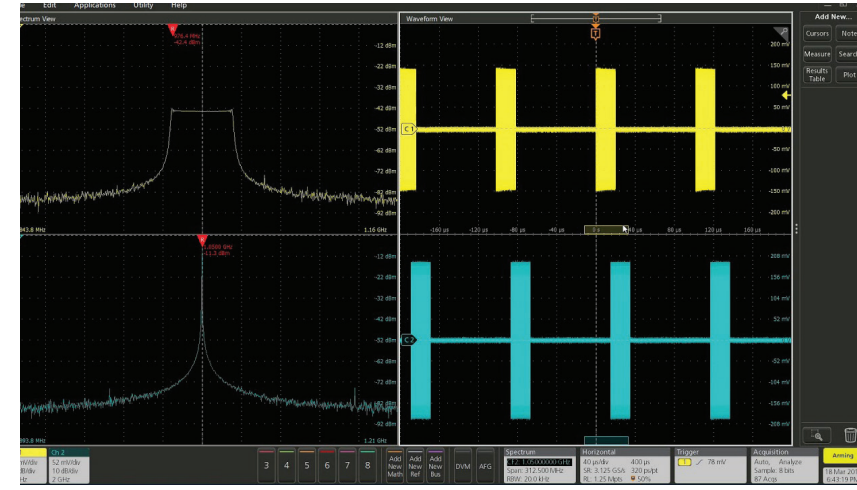
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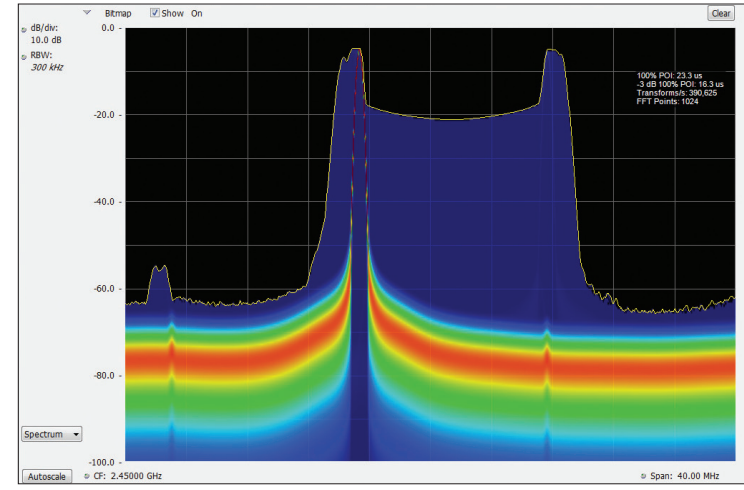


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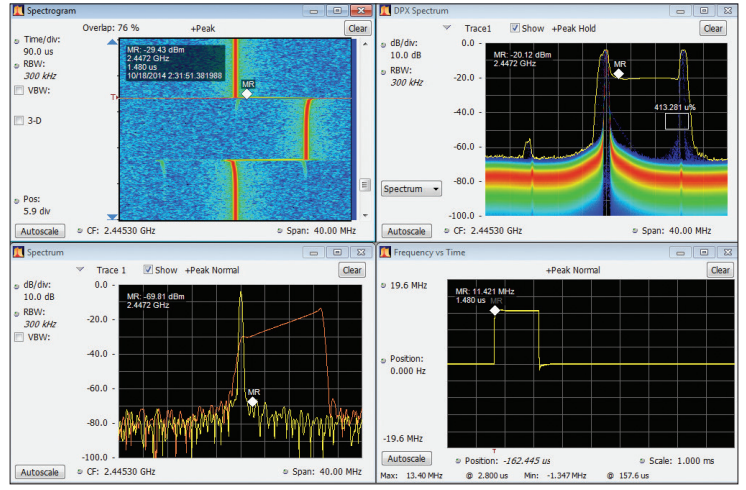
Discover more



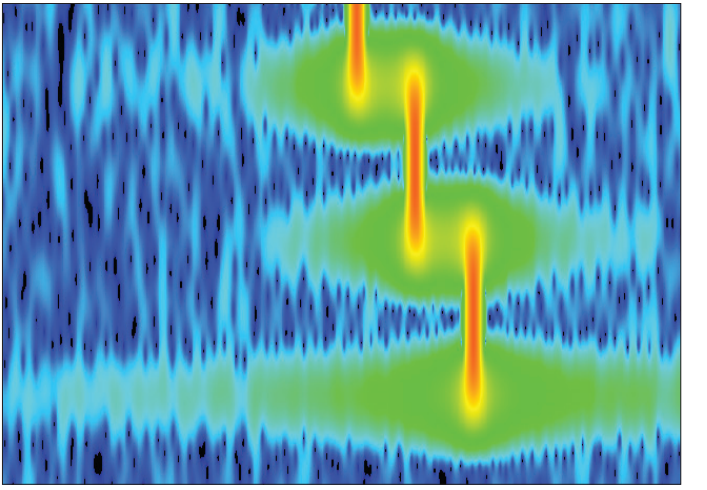
Gain deeper insight



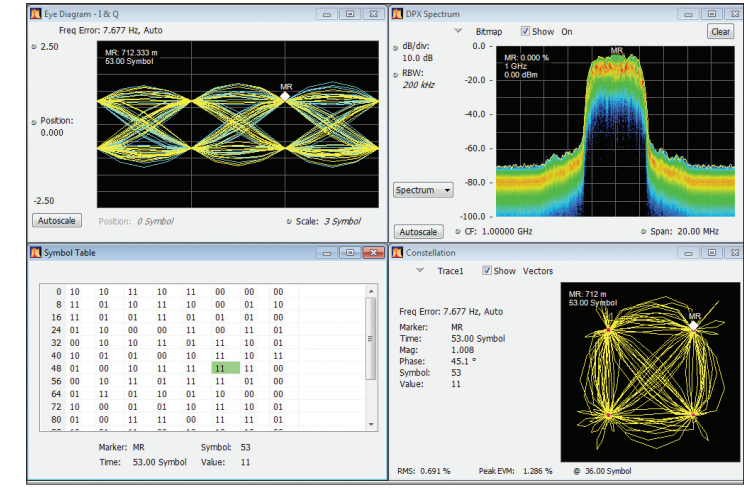
Trigger on frequency changes



Capture seamlessly into memory



Analyze multiple domains



COMMON WORLDWIDE WIRELESS TECHNOLOGIES

CELLULAR NETWORKS			
GENERATION	TECHNOLOGY	CHANNEL SPACING	COMMON FREQUENCIES
2G	IS-136T	12.5 MHz	800 MHz (US), 900 MHz (EU), 1800 MHz (AS)
	IS-136S	12.5 MHz	800 MHz (US), 900 MHz (EU), 1800 MHz (AS)
3G	UMTS-TDD	5 MHz	2100 MHz (EU), 2300 MHz (AS)
	UMTS-FDD	5 MHz	800 MHz (US), 900 MHz (EU), 1800 MHz (AS)
4G	LTE-FDD	1.4 MHz	700 MHz (US), 800 MHz (EU), 1800 MHz (AS)
	LTE-TDD	1.4 MHz	2300 MHz (AS), 2500 MHz (EU)
5G	NR-FDD	5 MHz	800 MHz (US), 900 MHz (EU), 1800 MHz (AS)
	NR-TDD	5 MHz	2400 MHz (AS), 2600 MHz (EU)

IoT / LOW POWER WIRELESS NETWORK (LP-WAN)			
TECHNOLOGY	CHANNEL SPACING	COMMON FREQUENCIES	
LoRa	125 kHz	868 MHz (EU), 915 MHz (US)	
LoRaWAN	125 kHz	868 MHz (EU), 915 MHz (US)	

LOCAL AREA NETWORKS (LAN)			
TECHNOLOGY	CHANNEL SPACING	COMMON FREQUENCIES	
WiFi - IEEE 802.11a	20 MHz	5.2, 5.8, 6.0 GHz	
WiFi - IEEE 802.11b	22 MHz	2.4 GHz	
WiFi - IEEE 802.11g	20 MHz	2.4 GHz	
WiFi - IEEE 802.11n	20 MHz	2.4 GHz, 5 GHz	
WiFi - IEEE 802.11ac	20 MHz	2.4 GHz, 5 GHz	
WiFi - IEEE 802.11ax	20 MHz	2.4 GHz, 5 GHz	

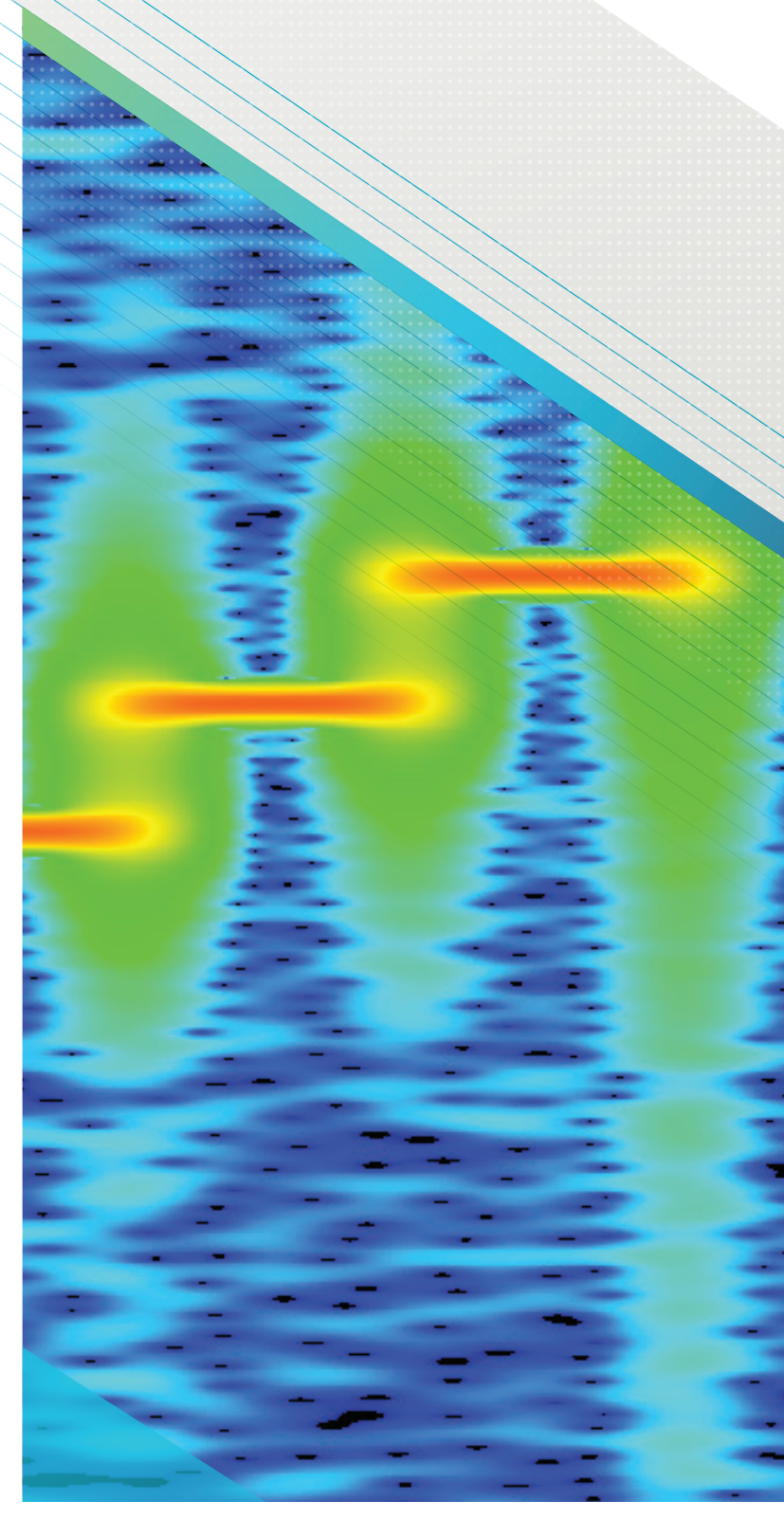
PERSONAL AREA NETWORKS (PAN)			
TECHNOLOGY	CHANNEL SPACING	COMMON FREQUENCIES	
Bluetooth 5	2 MHz	2.4 GHz	
Bluetooth 4.2 LE	2 MHz	2.4 GHz	
Bluetooth LE	2 MHz	2.4 GHz	
Bluetooth LE 2.1	2 MHz	2.4 GHz	
ZigBee - IEEE 802.15.4	2 MHz (US), 4 MHz (EU)	240 MHz (US), 790 MHz (EU)	
ZigBee - IEEE 802.15.4	2 MHz (US), 4 MHz (EU)	240 MHz (US), 790 MHz (EU)	



Worldwide Spectrum Allocations

(Courtesy of Tektronix - 2021)

POSTER



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