

The background is a solid dark blue. It features several abstract, light blue geometric elements. On the left side, there are concentric circles and arcs, some of which have small arrows indicating a clockwise direction. A large, semi-circular arc with tick marks and numbers (140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260) is visible, resembling a protractor or a scale. Other smaller circles and arcs are scattered across the upper and lower portions of the image, some with arrows pointing in different directions.

JAN ŚCIGA & KRZYSZTOF PAŁKA

HISTORIA PASMA C W POLSCE

CZYM JEST
PASMO C?


Electromagnetic spectrum			
Name	Wavelength	Frequency (Hz)	Photon energy (eV)
Gamma ray	< 0.01 nm	> 30 EHz	> 124 keV
X-ray	0.01 nm – 10 nm	30 EHz – 30 PHz	124 keV – 124 eV
Ultraviolet	10 nm – 400 nm	30 PHz – 750 THz	124 eV – 3 eV
Visible light	400 nm – 750 nm	750 THz – 400 THz	3 eV – 1.7 eV
Infrared	750 nm – 1 mm	400 THz – 300 GHz	1.7 eV – 1.24 meV
Microwave	1 mm – 1 m	300 GHz – 300 MHz	1.24 meV – 1.24 μ eV
Radio	≥ 1 m	≤ 300 MHz	≤ 1.24 μ eV

Według podziału IEEE.

Symbol pasma	Zakres częstotliwości
P	0,23–1 GHz
L	1–2 GHz
S	2–4 GHz
C	4–5,82 GHz
J	5,82–8,2 GHz
X	8,2–12 GHz
K _u	12–18 GHz
K	18–26 GHz
K _a	26–40 GHz
Q	33–50 GHz
U	40–60 GHz
V	50–75 GHz
E	60–90 GHz
W	75–110 GHz
F	90–140 GHz
D	110–170 GHz
G	140–220 GHz
Y	170–260 GHz
Z	220–325 GHz

Według podziału NATO.

Symbol pasma	Zakres częstotliwości
A	poniżej 250 MHz
B	250–500 MHz
C	500–1000 MHz
D	1–2 GHz
E	2–3 GHz
F	3–4 GHz
G	4–6 GHz
H	6–8 GHz
I	8–10 GHz
J	10–20 GHz
K	20–40 GHz
L	40–60 GHz
M	60–100 GHz
N	100–200 GHz
O	100–200 GHz



3.7 - 4.2 GHz

Większy zasięg,
ale węższe pasmo transmisji



Mniejszy zasięg,
ale szersze pasmo transmisji



ORGANY
ZARZĄDZAJĄCE
CZĘSTOTLIWOŚCIAM
I W
TELEKOMUNIKACJI

-
- Spectrum allocation
 - Spectrum assignment
 - Spectrum authorizations and/or licences
 - Spectrum monitoring
 - Interference management
 - Country representation at international fora



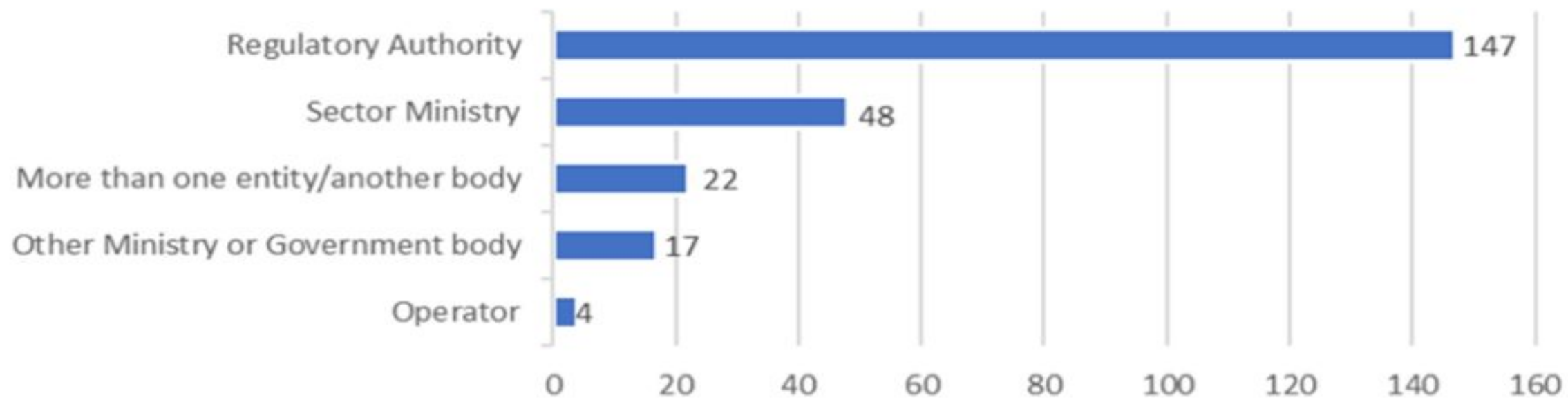
Ministries



Regulators



Spectrum
Agencies



Source: ITU

Urząd Komunikacji Elektronicznej | UKE



HISTORIA PASMA C

UNITED STATES FREQUENCY ALLOCATIONS

THE RADIO SPECTRUM

RADIO SERVICES COLOR LEGEND

AERONAUTICAL MOBILE	FIXED SATELLITE	RADIO ASTRONOMY
AERONAUTICAL MOBILE SATELLITE	LAND MOBILE	RADIO COMMUNICATION SATELLITE
AERONAUTICAL RADIO NAVIGATION	LAND MOBILE SATELLITE	RADIO LOCATION
AMATEUR	MARITIME MOBILE	RADIO LOCATION SATELLITE
AMATEUR SATELLITE	MARITIME MOBILE SATELLITE	RADIO NAVIGATION
BROADCASTING	MARITIME RADIO NAVIGATION	RADIO NAVIGATION SATELLITE
BROADCASTING SATELLITE	METEOROLOGICAL	SPACE OPERATION
EARTH OBSERVATION SATELLITE	METEOROLOGICAL SATELLITE	SPACE RESEARCH
FIXED	MOBILE	STANDARD FREQUENCY AND TIME SIGNAL
FIXED SATELLITE	MOBILE SATELLITE	STANDARD FREQUENCY AND TIME SIGNAL SATELLITE

ACTIVITY CODE

FEDERAL EXCLUSIVE

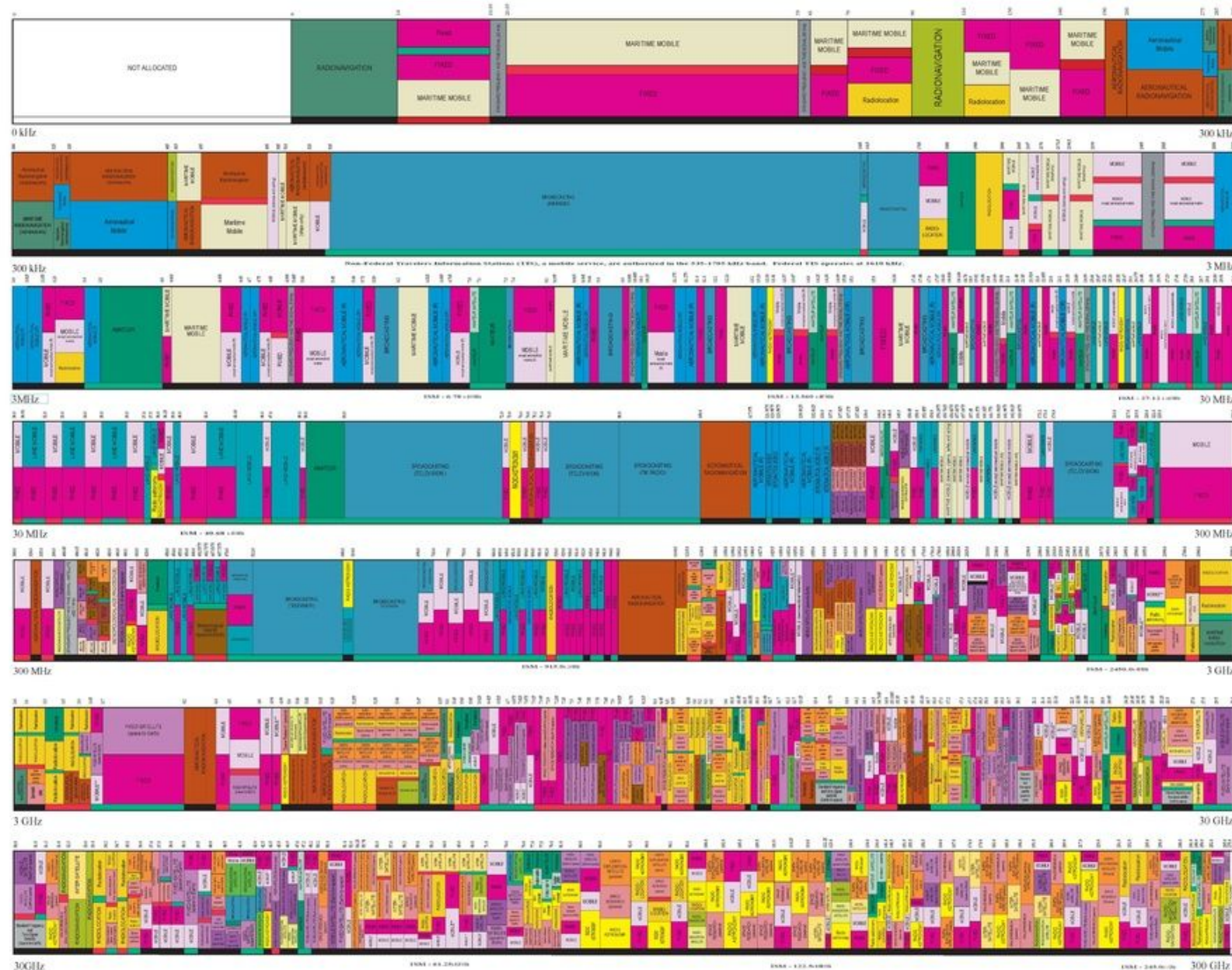
NON-FEDERAL EXCLUSIVE

ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	INTERPRETATION
Primary	F1D1	Fixed Land
Secondary	M1D1	Land Mobile

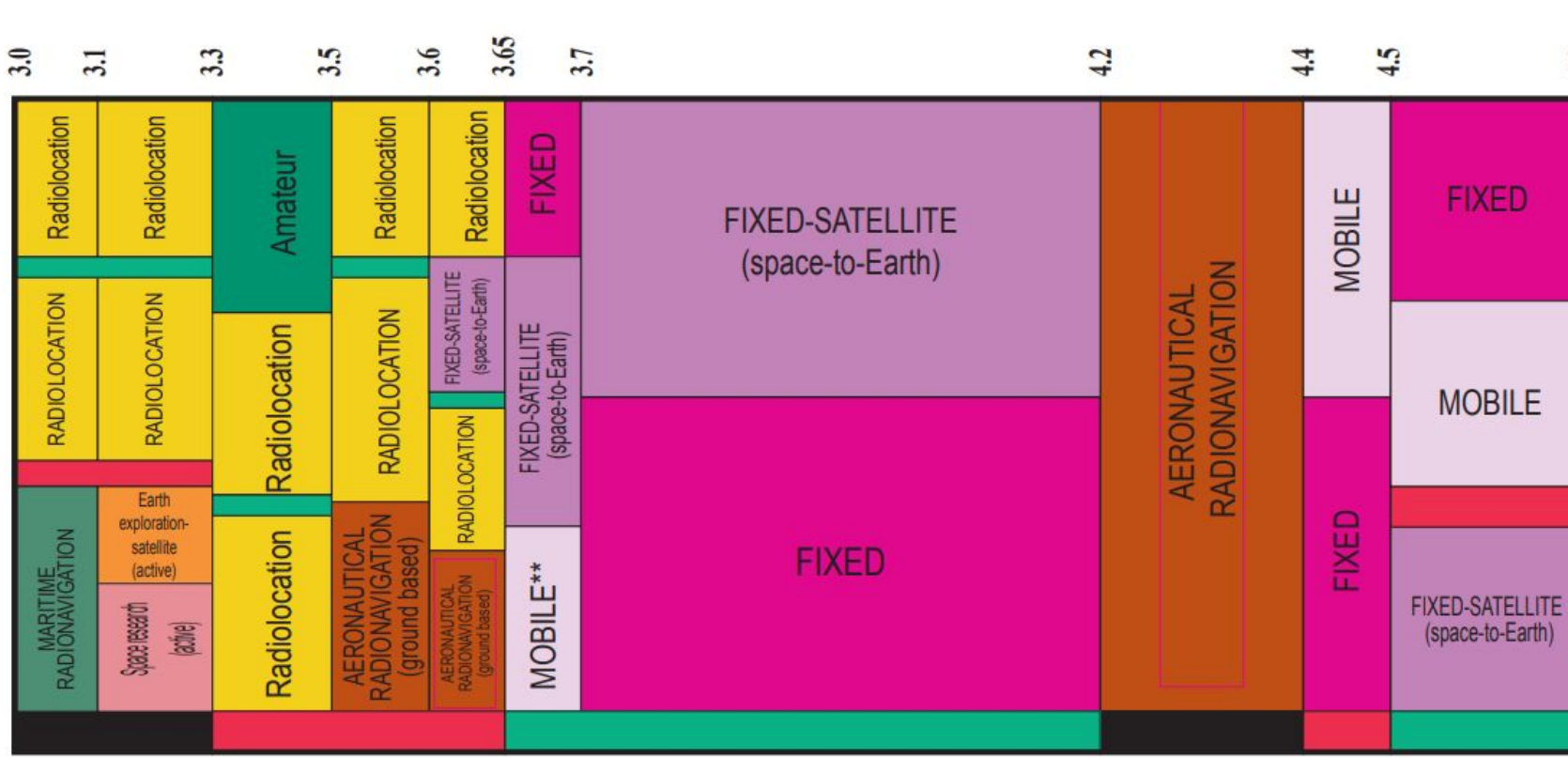
The chart is a graphic representation of the current state of the radio frequency spectrum and is not a legal document. It is intended to provide a visual summary of the current state of the radio frequency spectrum and is not a legal document. It is intended to provide a visual summary of the current state of the radio frequency spectrum and is not a legal document. It is intended to provide a visual summary of the current state of the radio frequency spectrum and is not a legal document.

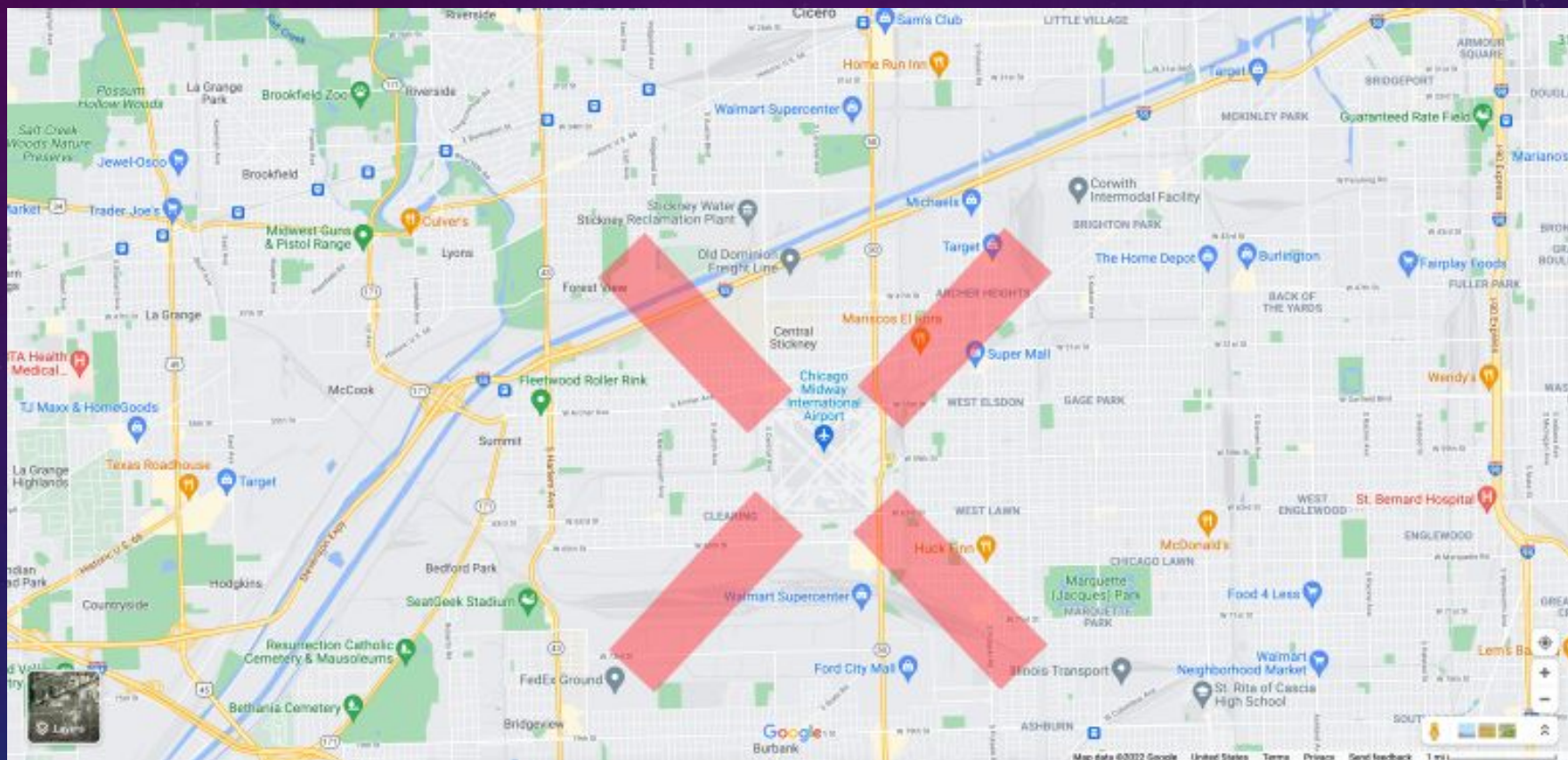
U.S. DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Office of Spectrum Management
JANUARY 2016



FOR A MORE DETAILED VIEW OF THE RADIO FREQUENCY SPECTRUM, VISIT THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA) WEBSITE AT [WWW.NTIA.GOV](http://www.ntia.gov). FOR A MORE DETAILED VIEW OF THE RADIO FREQUENCY SPECTRUM, VISIT THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA) WEBSITE AT [WWW.NTIA.GOV](http://www.ntia.gov).

3 GHz





AUKCJA W 2020 ROKU

A thin, vertical purple line is positioned to the right of the text, extending from the top of the word 'ROKU' to the top of the word 'AUKCJA'.

-
- **3400-3410 MHz** – radiolokalizacja
 - **3410-3480 MHz** – sieci prywatne
 - **3480-3800 MHz** – do dystrybucji wśród operatorów
 - A: 3480 - 3560 MHz
 - B: 3560 - 3640 MHz
 - C: 3640 - 3720 MHz
 - D: 3720 - 3800 MHz



Warunki aukcji 3,6 GHz

Przedmiot

1

- 4 x 80 MHz
- bloki nazwane
- spectrum cap: 1 rezerwacja na Grupę Kapitałową

2

Warunki uczestnictwa

- poniesione inwestycje (1 mld zł)
- dysponowanie ogólnopolskimi rezerwacjami częstotliwości

3

Typ aukcji

- SMRA
- 4 bloki

4

Zobowiązania

- 4 miesiące – 1 m-sto wojewódzkie (10 stacji)
- 2023-12-31 – 300 stacji w RP
- 2025-12-31 – 700 stacji w RP

5

Kwestie finansowe

- cena wywoławcza za 1 blok: 450 mln zł
- cena wywoławcza za 4 bloki: 1,8 mld zł
- wadium: 182 mln zł
- depozyt: 50% aktualnej oferty



ZTE中兴

Ustawa o krajowym systemie cyberbezpieczeństwa

Każdy obywatel

może zgłosić incydent cyberbezpieczeństwa do CSIRT NASK.

Widzisz:

- Podejrzaną wiadomość e-mail.
- Próbę oszustwa (np. fałszywy sklep internetowy lub bank).
- Złośliwe oprogramowanie.

Zgłoś incydent: cert@cert.pl

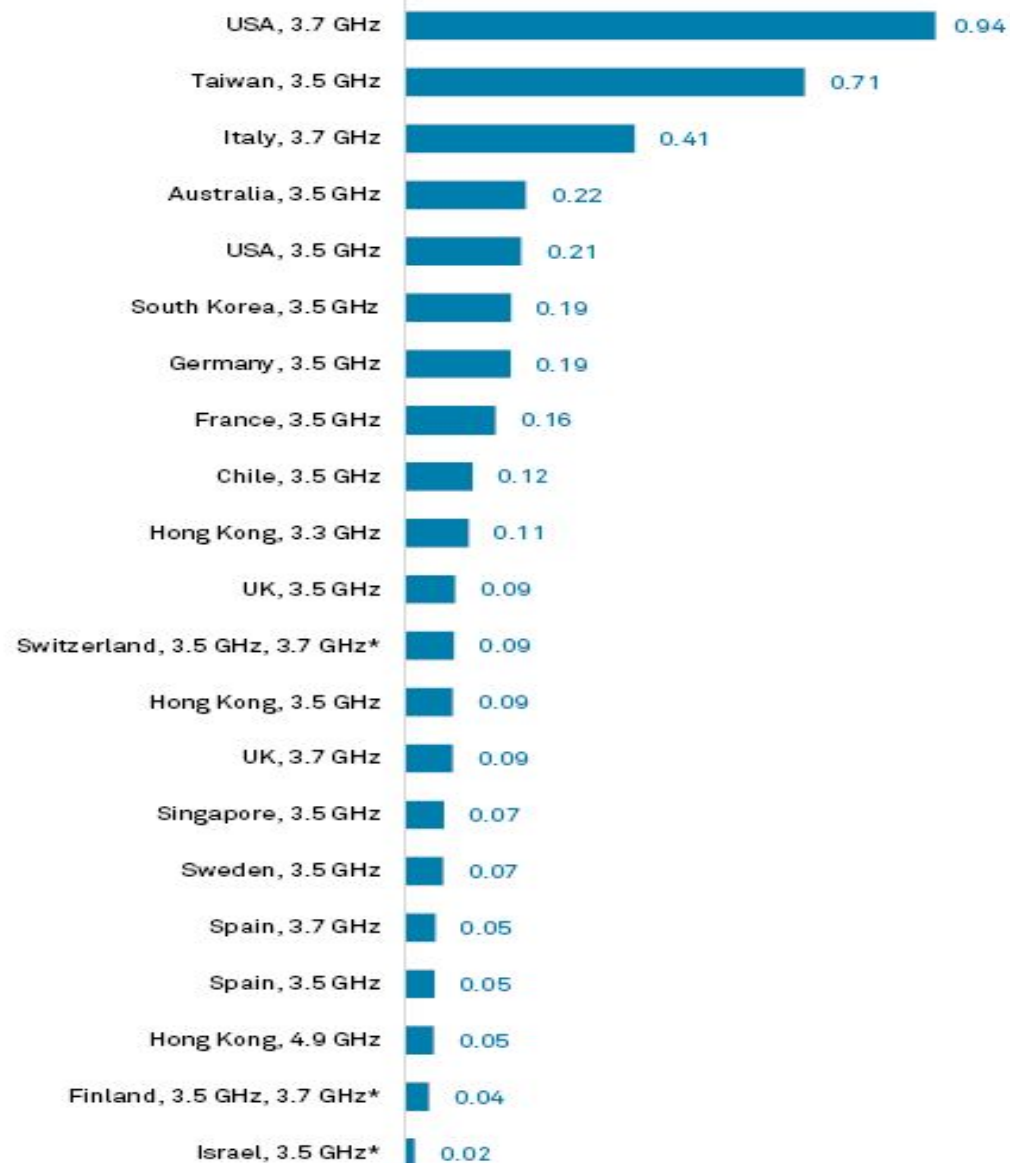


Ministerstwo
Cyfryzacji

NASK

PRZYSZŁOŚĆ

Average price per MHz/pop of select mid-band 5G auctions (\$)



Data compiled March 2021.

* Average value for all bands in the multi-band auction.

Sources: Industry data; Kagan estimates

Kagan, a media research group within the TMT offering of S&P Global Market Intelligence.

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Rank	Company Name / Key People	Classification	Bidder Entity	Net License Price	% of Total Spend
1	Verizon	Wireless Carrier	Cellco Partnership	\$45,454,843,197	56.0%
2	AT&T	Wireless Carrier	AT&T Spectrum Frontiers LLC	23,406,860,839	28.9%
3	T-Mobile	Wireless Carrier	T-Mobile License LLC	9,336,125,147	11.5%
4	U.S. Cellular	Wireless Carrier	United States Cellular Corporation	1,282,641,542	1.6%
5	Grain Management	Private Equity	NewLevel II, L.P.	1,277,395,688	1.6%
6	Jennifer Fritzsche, Ed Moise	Private Investor	Canopy Spectrum, LLC	172,021,760	0.2%
7	C Spire	Wireless Carrier	Cellular South Licenses, LLC	49,850,284	0.1%
8	Billy Mounger II	Private Investor	Widespread Wireless, LLC	48,455,001	0.1%
9	Pioneer Telephone Coop	Wireless Carrier	Pioneer Telephone Cooperative, Inc.	20,104,200	0.0%
10	Carolina West Wireless	Wireless Carrier	Carolina West Wireless, Inc.	15,780,658	0.0%
11	Nex-Tech Wireless	Wireless Carrier	Nex-Tech Wireless, L.L.C.	10,339,437	0.0%
12	Appalachian Wireless	Wireless Carrier	East Kentucky Network, LLC	7,374,390	0.0%
13	Horry Telephone Cooperative	Wireless Carrier	Horry Telephone Cooperative, Inc.	6,492,586	0.0%
14	Cellular One	Wireless Carrier	Smith Bagley, Inc.	5,640,183	0.0%
15	Tailwind Capital Partners, Riordan Family	Private Equity	Nsight Spectrum, LLC	5,424,123	0.0%
16	LICT Corporation	Wireless Carrier	LICT Wireless Broadband Company, LLC	4,267,485	0.0%
17	Pigeon Telephone, Thumb Cellular	Wireless Carrier	Agri-Valley Communications, Inc.	4,178,141	0.0%
18	Union Wireless	Wireless Carrier	Union Telephone Company	2,655,060	0.0%
19	DISH Network	Wireless Carrier	Little Bear Wireless L.L.C.	2,510,020	0.0%
20	Grand River Mutual Telephone	Wireless Carrier	Grand River Communications, Inc.	1,351,670	0.0%
21	Granite Wireless	Wireless Carrier	Granite Wireless LLC	170,510	0.0%
Total				\$81,114,481,921	100.0%

EXATEL

#Polskie5G

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