

# GLONASS Provider's View on the Outcomes of the Interoperability Workshop

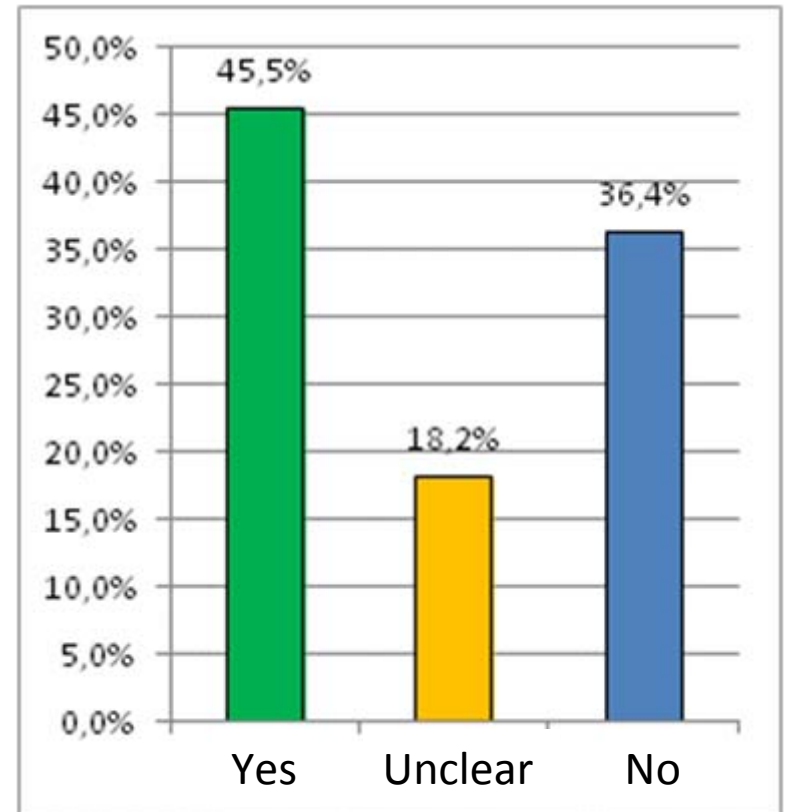
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# Signals at One Center Frequency

- Is there a need that open signals of all systems in L1 should be centered at 1575.42 MHz?

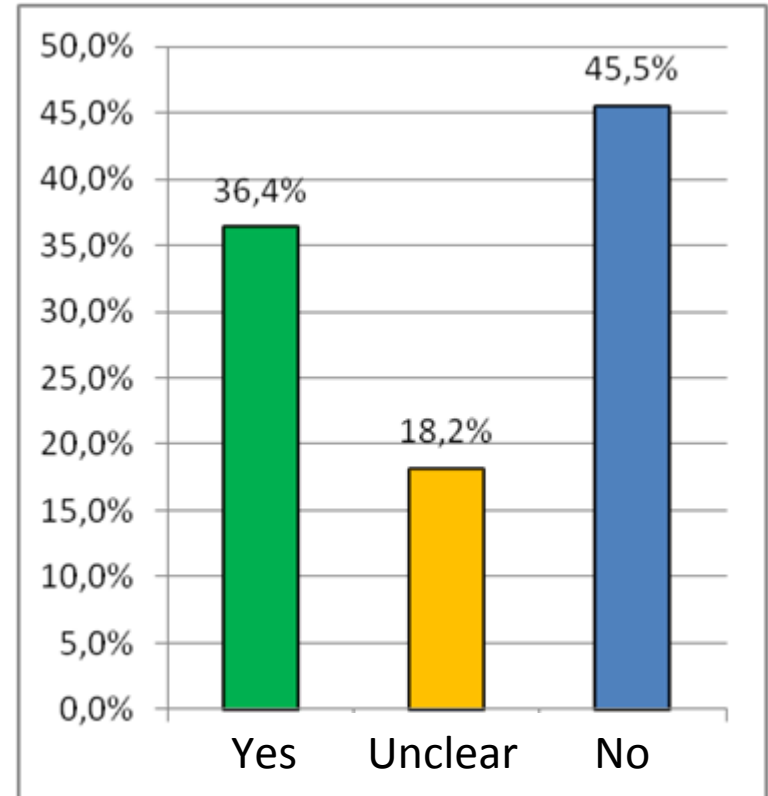


# Signals in Different L1 Frequency Bands

- Is it desirable to have signals at two center frequencies in L1, at 1575.42 and 1602 MHz?

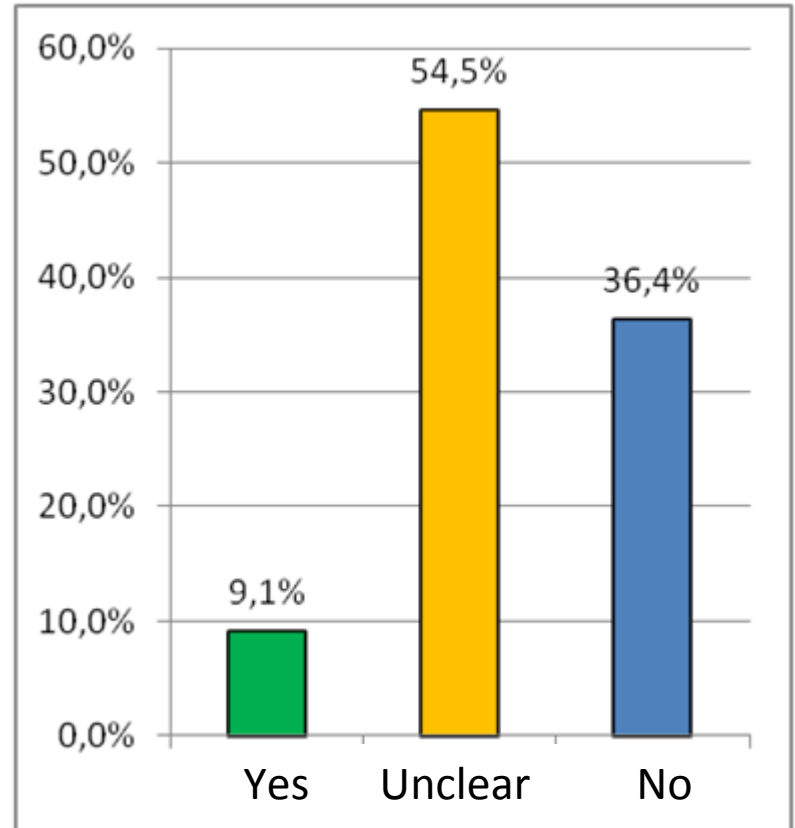
**Note:**

It comes out that it is desirable there were two groups of signals centered at two different center frequencies



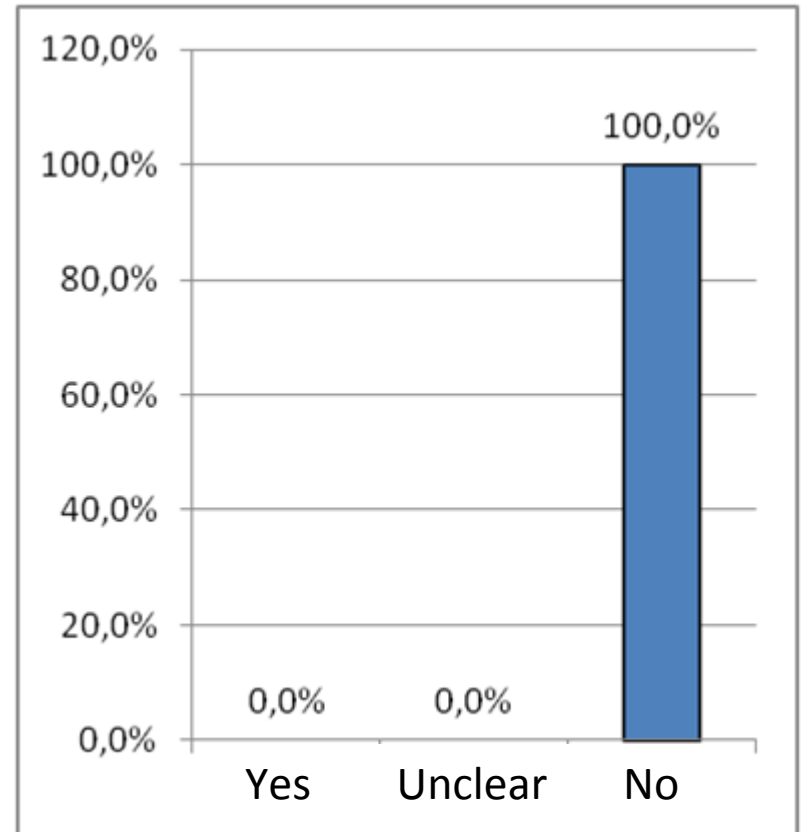
# Common Signal Spectrum

- Is common signal bandwidth important?



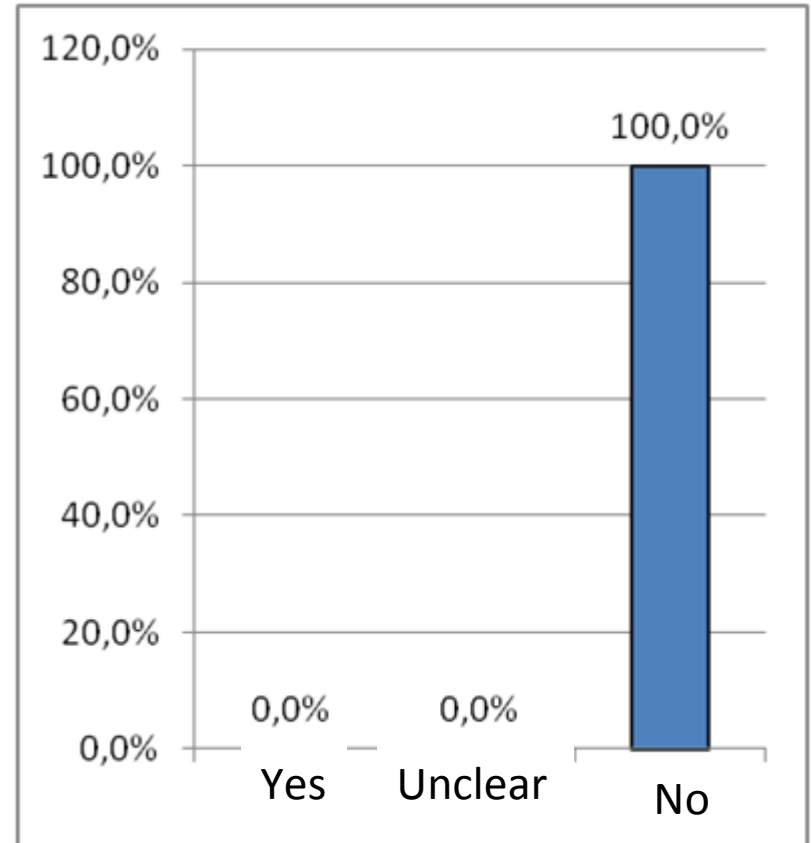
# Common Modulation

- Is common signal modulation important?



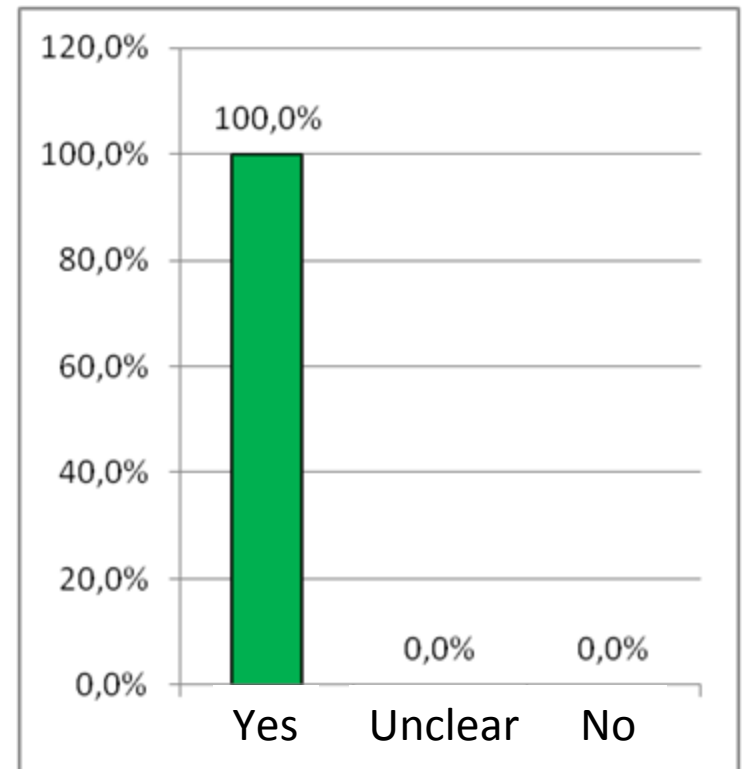
# Content of Navigation Message

- Is common content of open signals navigation message important?



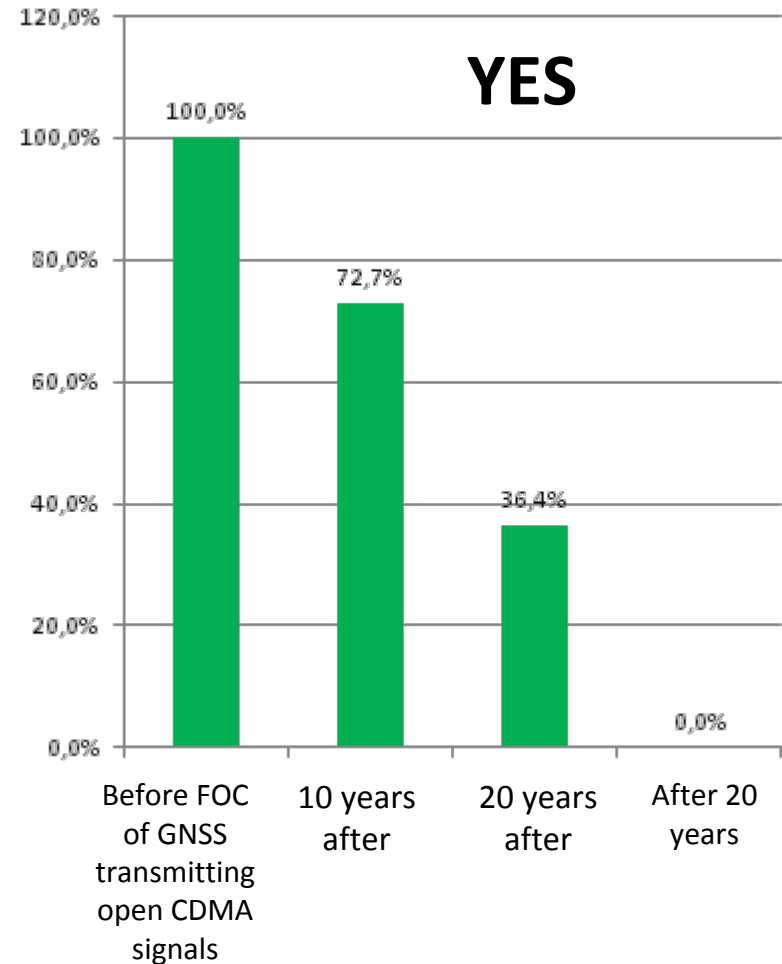
# Pilot Signal

- Is there a need to have pilot signal in addition to data component of civil signal?



# FDMA Signals

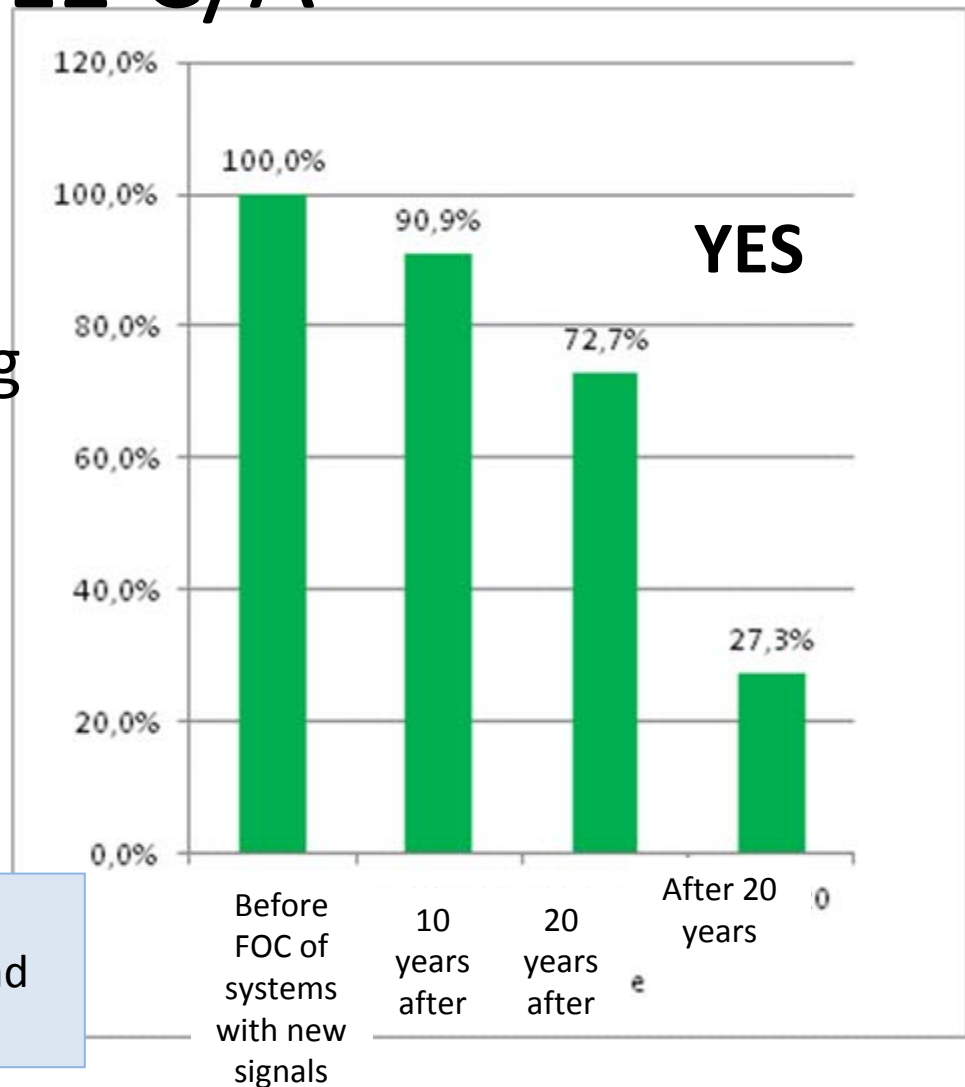
- Will open FDMA signals be used after FOC of the systems transmitting full set of CDMA signals is achieved?





# L1 C/A

- Will L1 C/A be used after FOC of the systems transmitting new open signals is achieved?



**Note:**

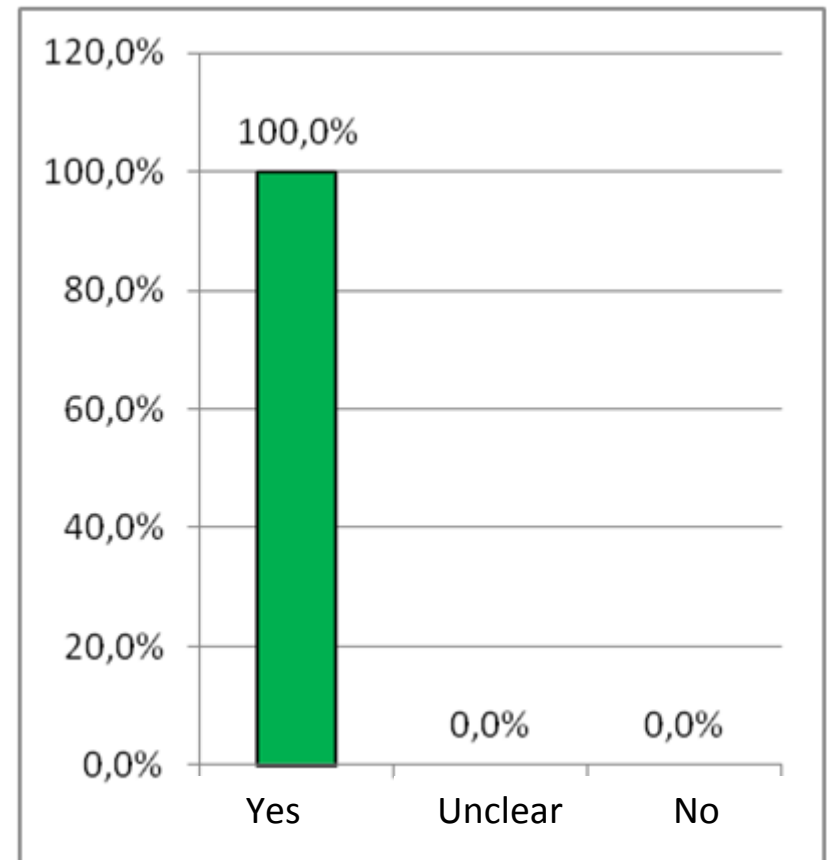
L1 C/A has narrow bandwidth and is faster to acquire!

# New signals at 1602 MHz

- Will new signals at 1602 MHz be used?

**Note:**

- Would be great if more than one GNSS transmitted civil signal at 1602 MHz
- ICAO and RTCA standards needed

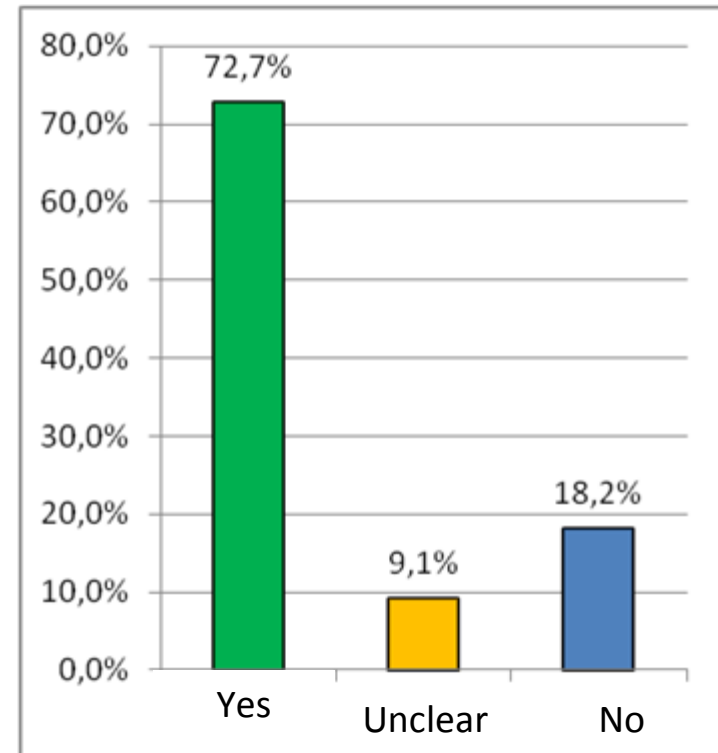


# E5b/L3 Signals

- Plans to use E5b/L3?

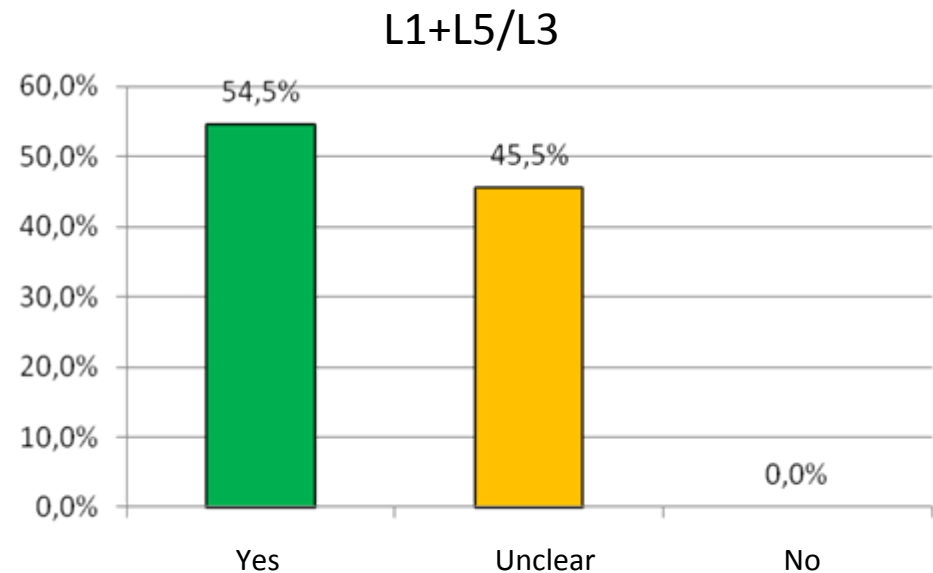
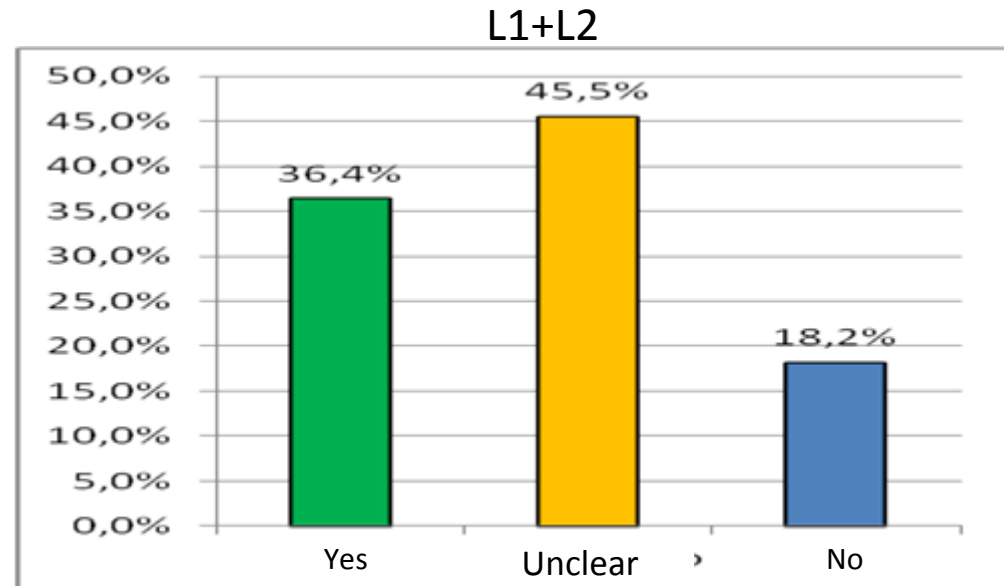
**Note:**

➤ No comes mostly from aviation



# Dual Frequency UE

- Will dual frequency UE be used?
  - L1 + L2
  - L1 + L5/L3

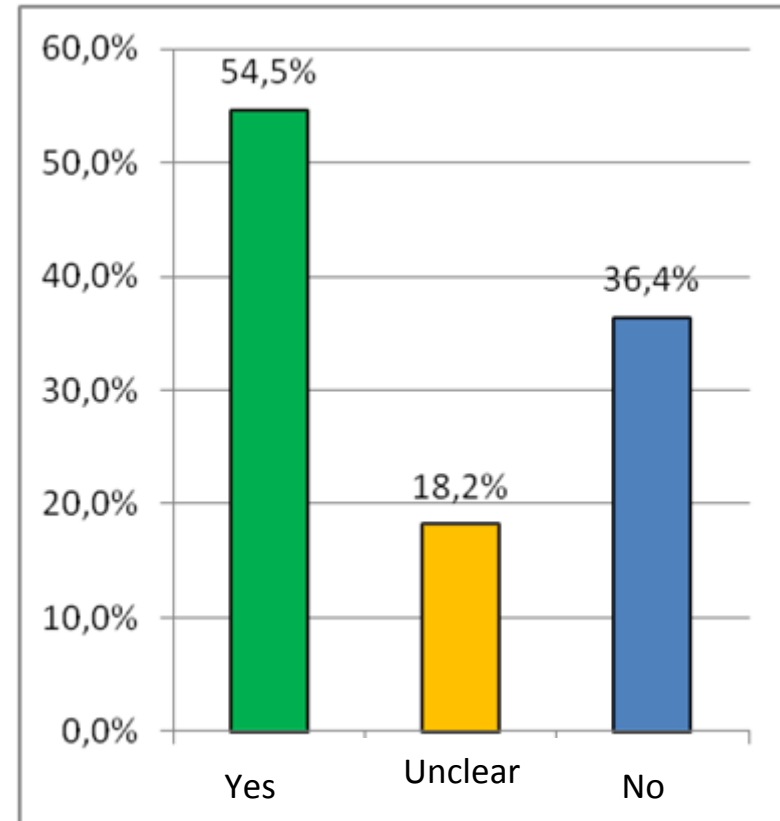


**Note:**

➤ No for L1+L2 comes from aviation UE developers

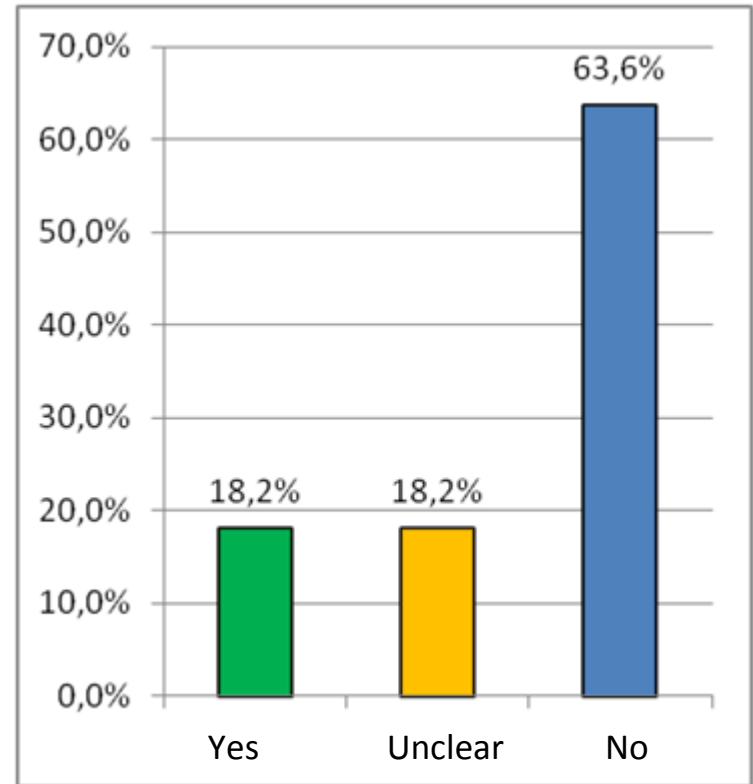
# Tri-lane capability

- Will tri-lane capability be provided in the future?



# Number of Signal Centered at One Center Frequency

- Should the number of signal centered at one center frequency be limited?

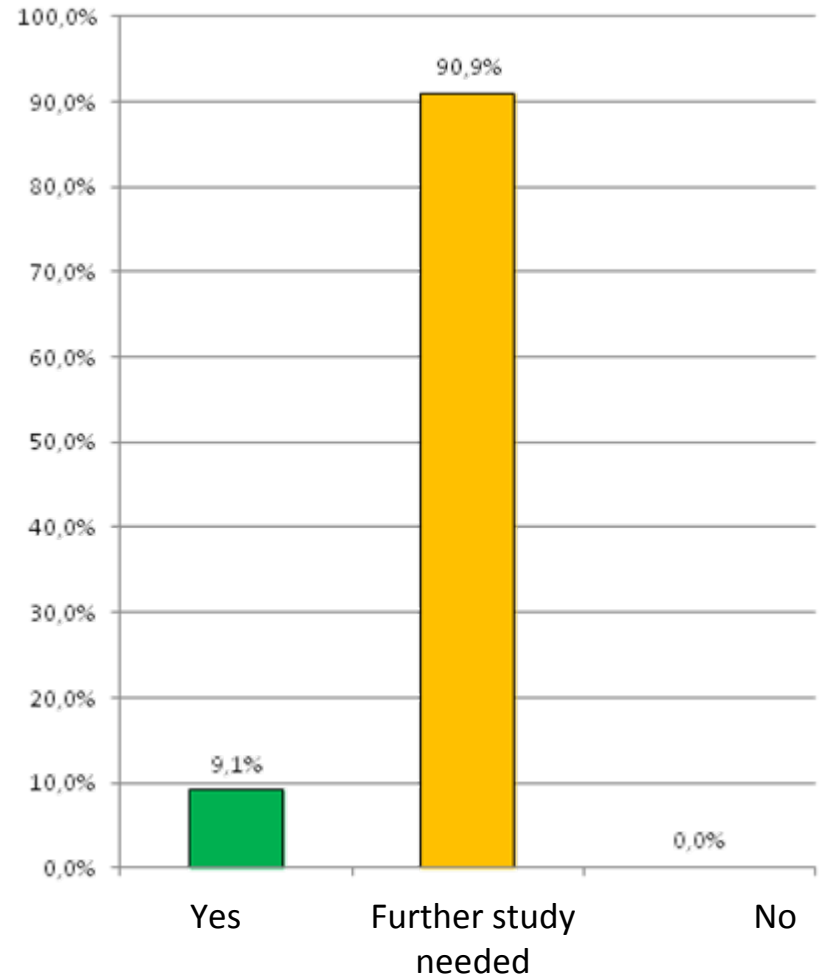


# C-band

- Should attention be paid to future signals in C-band?

**Note:**

➤ If yes, then at one common center frequency

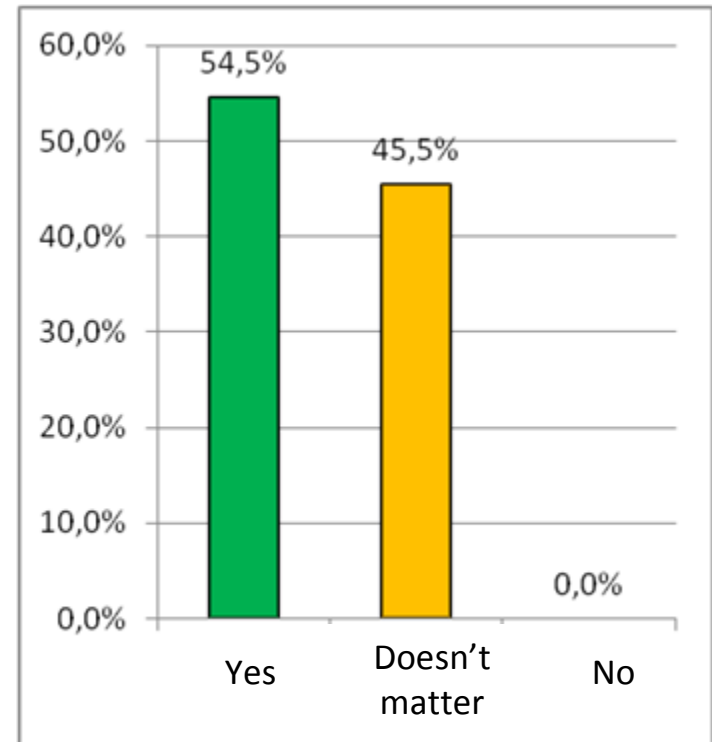


# Multipath

- Is wider transmitter bandwidth important for multipath mitigation?

**Note:**

- ... 20-60 MHz bandwidth
- AltBOC



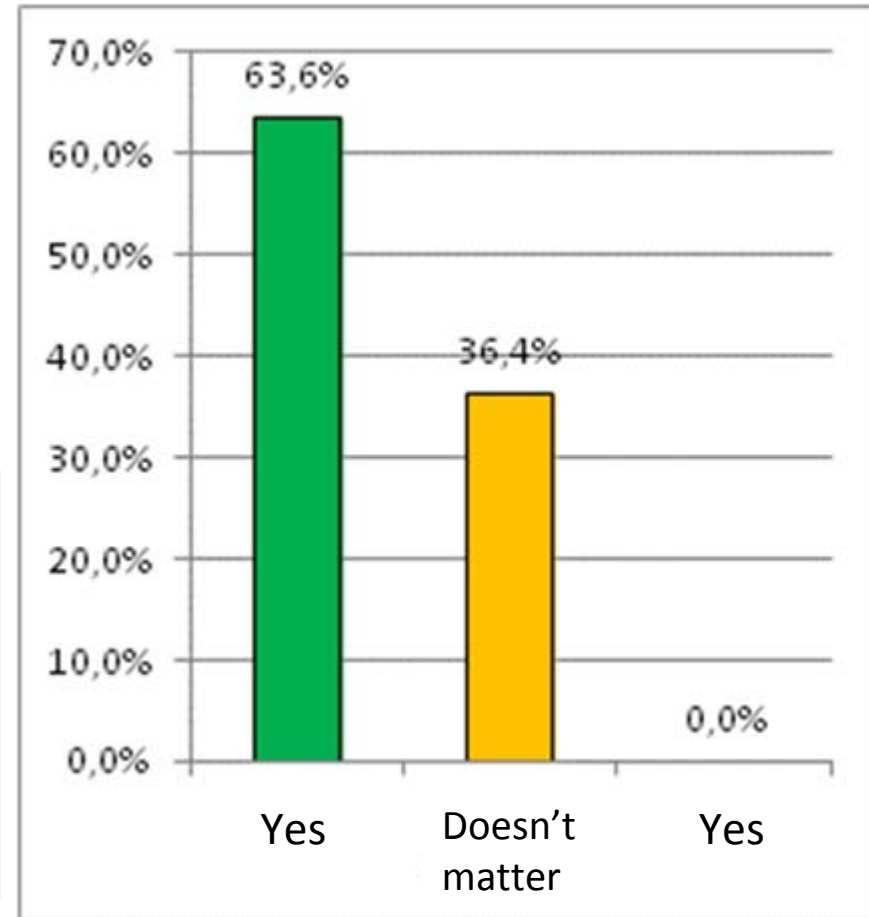


# Provider's Commitments

- Should GNSS provider issue a performance commitments document?

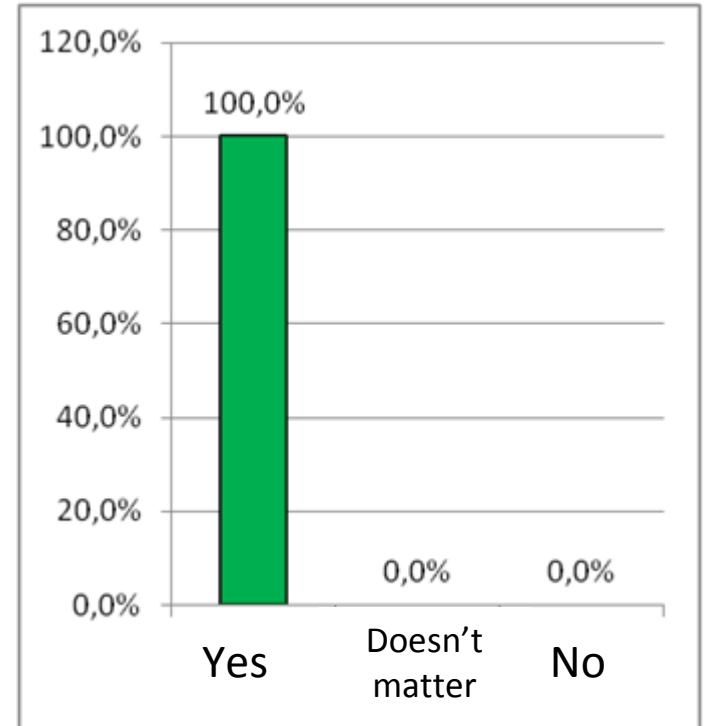
**Note:**

- Single format document for all providers
- Agreed calculation methods for performance characteristics assessment
- Even better is to have timely information on GNSS status and performance



# Spectrum Protection

- Should there be any international efforts aimed at protecting GNSS spectrum?



# Conclusions

- Keep the interoperability definition as it is now
- Interoperability on the user level already achieved now
- Outcomes of the workshop in Honolulu are not strongly obvious on some signal issues
- On some issues all manufacturers are in consensus (provider's commitments, international efforts to protect RNSS band...)
- Interoperability investigation shall be continued with more wide user and receiver community involvement
- Moore's Law supports GNSS interoperability