

RECOMMENDATION ITU-R BO.1597

**Methodology for the calculation of the worst-case interference levels
between non-geostationary broadcasting-satellite service (sound)
systems using highly-elliptical orbit and geostationary
orbit satellite networks operating
in the band 2 630-2 655 MHz**

(Resolution 539 (WRC-2000), Question ITU-R 204/10)

(2002)

The ITU Radiocommunication Assembly,

considering

- a) that the World Radiocommunication Conference (Istanbul, 2000) (WRC-2000) established the provisions necessary to implement broadcasting-satellite service (sound) (BSS (sound)) systems using a certain type of non-geostationary (NGSO) satellite operating in the band 2 630-2 655 MHz in certain countries in Region 3, including a minimum elevation angle of not less than 40° over the service area;
- b) that satellite technology has now advanced to the stage where NGSO systems in the BSS (sound) are technically and economically feasible when operated with high elevation angles;
- c) that satellite systems in the BSS as described in *considering* a) can be used for the delivery of high-quality, spectrally-efficient BSS (sound) to portable and mobile terminals;
- d) that Resolution 539 (WRC-2000) calls upon ITU-R to develop calculation methodologies and sharing criteria to be used by administrations;
- e) that the 2 520-2 670 MHz band is allocated to the BSS (community reception) in all three Regions, the 2 535-2 655 MHz band is allocated to the BSS (sound) in some countries, and the 2 500-2 690 MHz band is allocated to the fixed-satellite service in Region 2, all of which overlap the band 2 630-2 655 MHz;
- f) that a methodology for the calculation of the worst-case interference levels between NGSO BSS (sound) systems using highly-elliptical orbits and geostationary orbit (GSO) satellite networks operating in the band 2 630-2 655 MHz would facilitate coordination,

noting

- a) that information relating to NGSO BSS (sound) systems using highly-elliptical orbits in the BSS (sound) in the band 2 630-2 655 MHz in Region 3 have been received by the Radiocommunication Bureau and are expected to be brought into use in the near future;
- b) that the type of highly-elliptical orbit NGSO satellite systems referenced in *noting* a) are characterized by the use of operational active arcs that are spatially separated from the geostationary orbit as viewed from the earth station,

recommends

1 that the methodology in Annex 1 be used by administrations for the calculation of the worst-case interference levels between NGSO BSS (sound) systems using highly-elliptical orbits and GSO satellite networks operating in the frequency band 2 630-2 655 MHz.

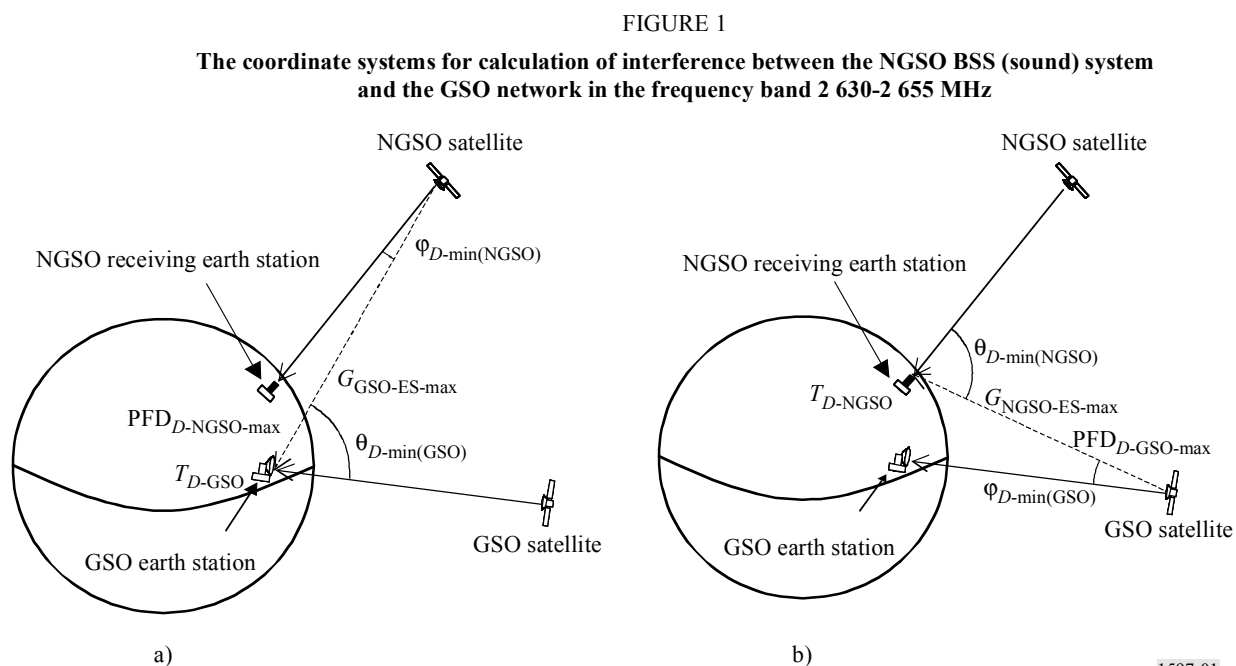
NOTE 1 – This methodology will overestimate the interference level due to the worst-case assumptions. A methodology that takes into account the time variant interference levels may become necessary to assess the interference level more precisely.

ANNEX 1

Methodology for the calculation of the worst-case interference levels between NGSO BSS (sound) systems using highly-elliptical orbits and GSO satellite networks operating in the frequency band 2 630-2 655 MHz

This Annex describes a methodology for the calculation of the worst-case interference between NGSO BSS (sound) systems and GSO satellite networks operating in the frequency band 2 630-2 655 MHz resulting from co-frequency operation.

Figure 1 shows the relevant coordinate systems. Figure 1a) shows the coordinate system for the calculation of interference from the NGSO satellite to the GSO receiving earth station. Figure 1b) shows the coordinate system for the calculation of interference from the GSO satellite to the NGSO receiving earth station.



1597-01