



The BACW's Bidding Commission hereby present questions made by companies with their respective answers.

REMARK: The questions presented in this "Questions and Answers" shall be numbered as they are received by the Bidding Commission and may not match the numbering provided by the companies.

Therefore, the Bidding Commission has answered previous questions on November 6, 2017, November 8, 2017, November 10, 2017, November 13, 2017, and November 17, 2017. They are published on BACW's website.

Question 26 - *In case of participation as a consortium, does the leading company need to be Brazilian? If yes, can be considered as previous experience the installation of a Geo antenna 13m ?*

Answer: No, the leading company does not need to be Brazilian. The leading company must comply with item 7.4 of the Basic Project:

*"7.4. The participation of a consortium of companies is permitted, in accordance to article 33, of Law 8666/93, since it is an object of high complexity and dimensions, **being a condition of leadership of the company responsible for the consortium, that it has a technical capacity, confirmed by certification, in the supply or integration of the solution contained in the object of this Basic Project.**"*

Regarding the consortium leader, previous experiences of installing Geo antennas will not be accepted, as item 7.4 states that the previous experience shall be "in the supply or integration of the solution contained in the **object of this Basic Project**".

Also, there is no requirement for the foreign company to be represented by a Brazilian company in the bid. For contractual purposes, as stated in item 6.1.8 of the Contract draft, the CONTRACTOR "shall constitute a public representative in Brazil with express powers to receive citations and respond administratively and judicially[...]". **This public representative in Brazil (can be a law firm, a subsidiary, a technical firm, or any other company) is a legal requirement only to avoid abroad citations, that takes too long to be delivered and/or answered. The legal document, that constitutes the public representative in Brazil, must be presented at the signing of the contract and shall be issued in Brazil and/or be valid before Brazilian Government.**

Question 27 - *If a company has a subsidiary in Brazil, the HQ's previous experience (according with item 15 – of Annex I) can be considered valid for its subsidiary?*

Answer: That depends. In jurisprudence for the years 2012 and 2013, the Federal Audit Court (TCU) has recognized that there may be an actual transfer of technical-operational capacity among companies that have been merged, demerged or merged. Therefore, the TCU understands that technical operational capacity certificates may remain valid and usable for bidding qualification, provided that it is proven that the technical capacity has in fact been transferred to the new company.

So, to the previous experience be considered valid for its subsidiary, the HQ must prove that the technical capacity has, in fact, been transferred.

As answered in the previous question, there is no requirement for the leading consortium company be Brazilian as there is no requirement for the foreign company to be represented by a Brazilian company



in the bid. For contractual purposes, as stated in item 6.1.8 of the Contract draft, the CONTRACTOR "shall constitute a public representative in Brazil with express powers to receive citations and respond administratively and judicially[...]". This public representative in Brazil (can be a law firm, a subsidiary, a technical firm, or any other company) is a legal requirement only to avoid abroad citations, that takes too long to be delivered and/or answered. **The legal document, that constitutes the public representative in Brazil, must be presented at the signing of the contract and shall be issued in Brazil and/or be valid before Brazilian Government.**

Question 28 - We would like to have clarification about the requirement 2.31.1 of the ANNEX I TO THE BASIC PROJECT of IFB 173576 [MULTI-SATELLITE TRACKING ANTENNAS]: "2.31.1 Shall provide receptors and demodulators capable of simultaneously receiving, at least, 5 (five) channels (both on the X-band and the K-band)." It may be interpreted in two ways: 1. The total number of required receivers and demodulators (for X and Ka band reception) is 5 (five). Simultaneous X and Ka band signals from one satellite will share these 5 channels. 2. For another understanding, the system shall have 10 (ten) channels, 5 (five) for X-band, and 5 (five) for K-band. Please Clarify.

Answer: As stated in the "CLARIFICATIONS TO THE BASIC PROJECT 1/2017-AMZSAR",C that was published along with the Basic Project (IFB 173576 - Annex I - Basic Project 1.4.2 English - Complete.pdf):

"In the Annex I to the Basic Project version 1.4.2:

3. In sections 2.31, 2.31.1 and 2.31.2, the word "channels" refers to the communication channels of the satellite with the station, that is, to each of the transmission carriers that the satellite has.

4. Item 2.31 (and its sub-items) shall be read in conjunction with items 2.32, 2.33 and 2.35:

a. Thus, sub-item 2.31.1 states that at least 5 channels must be simultaneously demodulated. This requirement supports, for example, the CBERS-4 satellite, which has 5 simultaneous carriers, and the solution must support the reception, demodulation and storage of all 5 carriers simultaneously. The carriers may be in a single polarization or distributed in the two polarizations.

b. In section 2.32, the two independent inputs of IF must allow to process two polarizations simultaneously by receiver, allowing independent adjustments for each carrier (frequency, bandwidth, polarization, etc.).

c. In item 2.33, the number of independent demodulators per receiver must be programmable from 2 to 4. Thus, for each IF, one or two demodulators can be used, depending on whether it requires more or less demodulation capacity.

d. In item 2.35, data acquisition rate of 1Gbps per channel (carrier) must be supported. As provided in items 2.31, 2.31.1, 2.31.2, 2.32, 2.33 and 2.35, it is CONCLUDED that:

I. The solution shall allow to simultaneously receive, demodulate, process and store at least 5 carriers, with a data acquisition rate of 1Gbps per carrier, totaling 5 Gbps of total acquisition rate.

II. The 5 carriers can be in the same polarization or distributed in the two polarizations, and they must be processed simultaneously in the sameway.

III. Each receiver can have 2 to 4 demodulators. The set of receivers must supply five (5) demodulators per polarization, in order to meet the requirement of simultaneous processing of 5 (five) carriers of 1Gbps each.



IV. The supplier must dimension the receivers required for this requirement, depending on the capacity and configuration of those included in the proposal.

V. The proposals shall be disqualified:

- i. that ignore the limit of 4 simultaneous demodulations per receiver;
- ii. that do not consider, in the set of receivers, the simultaneous reception, demodulation and storage of 5 carriers of 1Gbps each, whether in a single polarization or distributed in two polarizations;
- iii. that do not consider 1:1 redundancy of the receivers.

There is no requirement to simultaneously receive, from the same satellite, the X- and Kband channels, so each satellite pass will downstream in X- or K-band, not both. There should be noted that the solution shall support the simultaneous decoding/reception/processing in S-band and data band (X- or K-band).”

Question 29 - We would also like to request for an extension of two weeks (i.e. by 11th December 2017) for the submission of the qualification documents and Price Proposal, in order to submit a competitive response considering the requirements laid out in the tender.

Answer: At this point, this solicitation cannot be postponed.

Question 30 - What is the minimum no. of demodulators per IF input of the data receiver which is required?

Answer: As stated in item 2.32 and 2.33 of the ANNEX I TO THE BASIC PROJECT 1/2017-AMZSAR: 2.32. Number of independent IF signal inputs: 2 (two). 2.33. Number of independent demodulators per receiver: from 2 (two) to 4 (four). So, the number of demodulators per IF input on one considered data receiver shall be from 1(one) to 2(two). Also, should be noted what is stated in the "CLARIFICATIONS TO THE BASIC PROJECT 1/2017- AMZSAR",C that was published along with the Basic Project (IFB 173576 - Annex I - Basic Project 1.4.2 English - Complete.pdf):

In the Annex I to the Basic Project version 1.4.2:

[...]

As provided in items 2.31, 2.31.1, 2.31.2, 2.32, 2.33 and 2.35, it is CONCLUDED that:

- I. The solution shall allow to simultaneously receive, demodulate, process and store at least 5 carriers, with a data acquisition rate of 1Gbps per carrier, totaling 5 Gbps of total acquisition rate.*
- II. The 5 carriers can be in the same polarization or distributed in the two polarizations, and they must be processed simultaneously in the same way.*
- III. Each receiver can have 2 to 4 demodulators. The set of receivers must supply five (5) demodulators per polarization, in order to meet the requirement of simultaneous processing of 5 (five) carriers of 1Gbps each.**

IV. The supplier must dimension the receivers required for this requirement, depending on the capacity and configuration of those included in the proposal.

V. The proposals shall be disqualified:

- i. that ignore the limit of 4 simultaneous demodulations per receiver;*
- ii. that do not consider, in the set of receivers, the simultaneous reception, demodulation and storage of 5 carriers of 1Gbps each, whether in a single polarization or distributed in two polarizations;*



iii. that do not consider 1:1 redundancy of the receivers.

So, there shall be 1(one) hot standby receiver for each active one (1:1 redundancy).

Also, the CONTRACTOR shall consider that the solution must be capable of receiving 5 simultaneous channels than can be distributed in each polarization. So, depending on the receiver configuration, there shall be provided:

- a. receivers with two IF ports (one for LHCP and one for RHCP) and 1 demodulator per IF: 5 active receivers and more 5 hot standby receivers; or
- b. receivers with two IF ports (one for LHCP and one for RHCP) and 2 demodulators per IF: 3 active receivers and more 3 hot standby receivers.

Question 31 - Whether data receivers are required in both X-band & K-band? OR, one set of receivers can be used interchangeably for X-band & K-band?

Answer: There is no requirement to simultaneously receive, from the same satellite, the X- and K-band channels, so each satellite pass will downstream in X- or K-band, not both. That said, the receivers can be used interchangeably for X-band & K-band.

Question 32 - Whether decoder for any forward Error Correction Code is required in data receiver? If so, what type of decoder(s) is (are) required?

Answer: All FEC codes needed to support decoding the analog signal, from the satellites listed, must be provided by the CONTRACTOR, as stated in items 1.1.2 to 1.1.3.2.1 of the ANNEX I TO THE BASIC PROJECT 1/2017-AMZSAR:

1.1.2. For the X-band, **all these satellites should be supported:** CBERS-4, COSMO-SkyMed, Kompsat-5, Landsat-8, RadarSat-2, Alos-3, Gaofen-3, ResourceSat-2, RISAT-1, Sentinel-1, Sentinel-2, TanDEM-X, EROS-B and TerraSAR-X.

1.1.2.1. **The CONTRACTOR shall provide any necessary equipment, software or license for the demodulation of the analog signal from all satellites listed.**

1.1.2.2. The CONTRACTOR shall obtain the necessary information (frequency, bandwidth, **MODCOD**, etc.) with the operators of the satellites informed.

1.1.2.3. For FAT and SAT, the CONTRACTOR must configure the antenna to track one of the missions listed in 1.1.2, save the raw file resulting from the pass and presenting it to the PURCHASER.

1.1.2.3.1. The PURCHASER shall arrange for the scheduling of the satellite with the satellite provider and inform the CONTRACTOR, at least 15 (fifteen) days in advance, for the proper configuration of the system for the FAT and SAT.

1.1.2.3.2. The PURCHASER will validate the raw file, directly and/or processing it, in the latter case, generating the corresponding Single Look Complex - SLC file.

1.1.3. For the band-K, the downlink signal should reach the demodulators.

1.1.3.1. It should be possible to demodulate the K-band received signal, using the satellite ICD information, if the basic demodulation settings (**MODCOD**) are compatible with those of the satellites listed in item 1.1.2.

1.1.3.2. For FAT and SAT, a simulated transmission shall be used or, if available, a satellite downlink in K-band (LEO or GEO) shall be used.

1.1.3.2.1. **If the basic demodulation settings (MODCOD) are compatible with those of the satellites listed in item 1.1.2, the CONTRACTOR shall record the raw file resulting from the pass, presenting it to the PURCHASER.**



Question 33 - Please confirm that the data can be considered as uncoded for 1 Gbps 8PSK data at 400 MSPS symbol rate.

Answer: Yes, It is confirmed.

Question 34 - What are the specifications of TT&C processor / modem?

Answer: As stated in items 1.2 and 1.2.1 of the ANNEX I TO THE BASIC PROJECT 1/2017-AMZSAR:

1.1.2. For the X-band, all these satellites should be supported: CBERS-4, COSMO-SkyMed, Kompsat-5, Landsat-8, RadarSat-2, Alos-3, Gaofen-3, ResourceSat-2, RISAT-1, Sentinel-1, Sentinel-2, TanDEM-X, EROS-B and TerraSAR-X.

[...]

1.2. Shall be capable of reception and transmission of analog signals in S-band (TT & C capability) for all the satellites listed in item 1.1.2, with auto-track functionality.

1.2.1. The CONTRACTOR shall provide any equipment (such as modems for TT & C), software or license required for the demodulation of the analogue signal from all satellites listed.

The TT&C processor/modem must be capable to support (modulation and demodulation) all satellites listed in item 1.1.2. This requirement includes the MODCOD+FEC licenses, processing capabilities, and any other requirement to perfectly communicate with all satellites listed. Once the PURCHASER connects its data encoder (provided by the satellite operator) to the solution, the TT&C modems must send and receive the streams and allow perfect communication.

Question 35 - What is required to be done with TTC processor output (bit synchronized output)?

Answer: If it's the telemetry and commands IP packets, it shall reach the 10GbE data switch and be available to the PURCHASER for testing purposes only, at the SAT and FAT. If it's the serial data/clock, and it's needed for auto tracking, Time and Frequency or the Monitoring and Control systems, it shall be delivered to them, otherwise it must be available to the PURCHASER for testing purposes only, at the SAT and FAT.

Question 36 - Will Purchaser have the data encoder to be given as TTC processor input for telecommand?

Answer: Yes, the PURCHASER will have the data encoder (provided by the satellite operator) to be given as TT&C processor input.

Question 37 - Please explain the redundancy philosophy for down converters. – Whether 2 nos. of down converters are required for each of LHCP & RHCP signals? OR, 1 no. for each of LHCP & RHCP signals and one common unit for hot redundancy?

Question 38 - Please explain the redundancy philosophy for up converters. – Whether 2 nos. of up converters are required for each of LHCP & RHCP signals? OR, 1 no. for each of LHCP & RHCP signals and one common unit for hot redundancy?



Answer: The downconverters and upconverters (either for X- or K-band) should be sized and installed in 1+1 configuration. That said, there shall be one hot standby unit for each active unit. The number of downconverters depends on whether they are multiband downconverters (capable of converting X-, S- and/or K-band at the same time) or single band downconverters. In any case, there shall be noted that there is no requirement to demodulate, at the same time, the X- and Kband signals, since one satellite pass will downstream in X- or K-band, not both. But there is a requirement to support simultaneous S-band and data band (X- or K-band) demodulation, reception and processing.

Question 39 - Please confirm whether the data matrix switch is to be connected to the data receiver output or not?

Answer: The data matrix switch is to be connected to the data receiver input, allowing to direct the downstream to be demodulated/decoded/processed by a specific set of receivers. The result from the receivers (raw digital file) shall be stored and available through the network (a 10GbE switch must be provided) as stated in items 2.31.2 to 2.31.3.1 of the ANNEX I TO THE BASIC PROJECT 1/2017-AMZSAR:

2.31.2. Shall be provided a SAS Storage 3.0 or higher, of at least 5 TB (available), in RAID5 for temporary storage of the processed digital stream (raw digital data) of each of the transmission channels of the satellite.

2.31.2.1. Access to the files shall be made available to the local network, by FTP, NFS and CIFS protocols, using dual 10GbE network interface (2 x 10GbE).

2.31.3. Equipments that communicates through ethernet ports shall be interconnected by 10GbE (or higher) switches.

2.31.3.1. 8 (eight) free and fully configured 10GbE ports must be available to connect the solution to the PURCHASER's local network.

Notwithstanding, In accordance with the Invitation For Bid 173576/CABW/2017 item 25.1 *“Any doubts arising from the provisions of this Invitation for Bid may be the subject of consultation, in writing, to the **Bidding Commission** in charge of this bidding process, up to 48 hours before the delivery of the proposals.*

Based on that, the BACW's Bidding Commission reinforces that questions shall be submitted to con@cabw.org and no agents outside BACW should be copied in the e-mail. Thus, only answers published in BACW's website are considered official and part of the solicitation file.

Furthermore, the Brazilian Aeronautical Commission appreciates the question, and stands available to clarify and explain any doubts or concerns in order to increase the BID quality. Any questions or concerns must be submitted to con@cabw.org

Note: This information has been made available at BACW website in the publishing for the related Bidding Process.
<http://www.cabwnews.com/index.php/solicitations.html>