

BEFORE THE
MARYLAND STATE BOARD OF CONTRACT APPEALS

Appeal of M/A-COM, INC.)

) Docket No. MSBCA 1258

Under DGS RFQ P35585)

September 23, 1985

Responsiveness - A bid that failed to conform in all material respects to the design specifications set forth in the RFQ was nonresponsive.

Responsiveness - Specification - Whether a bidder's proposed equipment for a remote microwave system was equivalent or superior to equipment and a system described in brand name or equal specifications is a matter that falls within the procuring agency's technical expertise. Where there is a difference of expert technical opinion, the Board will accept the technical judgment of the procuring agency unless clearly erroneous.

Responsiveness - Minor Irregularity - The procurement officer's determination that the bidder's exception to a warranty requirement of the RFQ was not a minor irregularity, but affected the responsiveness of its bid, was not unreasonable.

Bid Protest - Timeliness - By waiting until after bid opening to challenge the restrictiveness of brand name or equal specifications, a bidder waives its right to protest on such grounds since COMAR 21.10.02.03 A requires that such a protest be filed prior to bid opening.

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OPINION BY CHAIRMAN HARRISON

This appeal arises out of a Request for Quotation (RFQ) issued by the Department of General Services (DGS) for a complete Turnkey Remote Microwave System for Maryland Public Television (MPT) capable of making MPT network broadcasts receivable Statewide. Appellant's low bid was rejected by DGS as being nonresponsive to certain technical specifications for the products referenced in the RFQ and warranty requirements. Appellant filed a timely protest from this determination and takes this timely appeal from the DGS procurement officer's final decision denying the protest. Award of the contract was deferred pending decision of this Board on the appeal. The Board's decision was conveyed orally to the parties on September 20, 1985.

Findings of Fact

1. DGS mailed to prospective vendors on or about April 2, 1985 RFQ No. P35585 for a complete Turnkey Remote Microwave System for MPT. The original bid due date established by the RFQ was May 1, 1985.

The equipment to be purchased under this solicitation consists of components of a sophisticated remote microwave system including a custom-built microwave remote broadcast vehicle with portable equipment capable of initiating television broadcasts throughout the State. This is accomplished through remote relay at four receive sites owned by MPT in Annapolis, Owings Mills, Salisbury and Hagerstown. The solicitation employed a brand name or equal specification and included, throughout sixteen pages of general and technical specifications, the essential characteristics of the specified brand name. A majority of the specified brand name products were those of NURAD, Inc. (NURAD).

2. On April 30, 1985, Appellant filed a prebid protest with DGS which resulted from an oral interpretation which Appellant received relating to the following language contained on the front page of the RFQ:

"NOTE: All clarification requests, questions or requests for consideration of alternates to any part of the specifications must be submitted in writing a minimum of 15 days before the due date."

Approximately one week before the bid opening, Appellant received an interpretation from an employee of the DGS Purchasing Bureau indicating that bids based upon products which were equivalent or equal to the brand name specified in the specifications were subject to the above fifteen-day notice provision.

3. Upon receipt of the protest on April 30, 1985, DGS orally advised all vendors to whom the RFQ had been mailed that the bid opening scheduled for May 1, 1985 was postponed, and that no new bid opening time and date had yet been established. This was confirmed by DGS in a letter dated May 1, 1985 to all vendors who received the RFQ.

4. On May 14, 1985, DGS responded to Appellant's protest and advised all vendors that the bid opening had been rescheduled for May 29, 1985. The procurement officer's decision on Appellant's prebid protest, which was

furnished to all vendors, sustained Appellant's protest and clarified the erroneous oral interpretation which Appellant had received. The procurement officer concluded that the fifteen-day notice period required for requests for consideration of alternates was not applicable to bids based upon equivalent or equal products. The decision set forth the specific provisions of the RFQ which would be used to evaluate the responsiveness of a bid proposing use of equivalent products or equipment. The procurement officer's decision was not appealed.

5. Bids were opened on May 29, 1985 and two bids were received; one from Appellant and one from NURAD. Appellant's bid of \$380,753 was some \$83,000 less than NURAD's bid of \$463,680.

6. The procurement officer's review of the technical aspects of the bids was aided by MPT's Director of Engineering, Bruce T. Herget. Mr. Herget met with representatives of Appellant on June 5, 1985 to articulate concerns which he had concerning the responsiveness of Appellant's bid. By letter dated June 13, 1985, Appellant responded to some of the specific concerns which DGS and MPT had expressed through Mr. Herget at the June 5, 1985 meeting.

7. By letter dated June 26, 1985, DGS notified Appellant that its bid had been rejected for failure to meet certain requirements of the RFQ as determined in a written evaluation of its bid by Mr. Herget dated June 12, 1985. This letter further advised that award was being recommended to NURAD.

8. On July 1, 1985, Appellant forwarded to DGS a formal protest, challenging DGS' determination that Appellant's bid was not responsive. Appellant supplemented its protest by letter dated July 3, 1985. The DGS procurement officer denied Appellant's protest in a final decision dated July 12, 1985. In support of the determination of nonresponsiveness, the procurement officer's decision sets forth seven areas in which the Appellant's bid allegedly failed to meet the requirements of the RFQ. In addition, the procurement officer's decision addresses certain matter related to Appellant's responsibility not germane to this appeal.

9. Appellant filed a timely appeal from the procurement officer's final decision on July 30, 1985. Appellant initially requested a hearing but withdrew its request on September 6, 1985 and requested the Board to decide the appeal based upon the written record before it.

For convenience of reference, specifications material to the determination of this appeal and Appellant's responses thereto are set forth in Appendix A.

Decision

Appellant argues in its appeal (1) that the requirements of the RFQ relating to use of the equipment of a particular manufacturer or equivalent or equal equipment were restrictive of competition and designed to favor its competitor to whom award was proposed; (2) that its low bid was completely responsive to the terms of the RFQ measured by proper analysis of the functional and performance criteria of a complete "turnkey" microwave system

in terms of the equivalent equipment it proposed to use; (3) that the procurement officer erred in requiring item-by-item equivalence between Appellant's proposed equipment and that referenced in the technical specifications; and (4) that its failure to fully comply with a two-year warranty requirement for all equipment supplied should have been waived as a minor deviation not affecting the responsiveness of its bid.

Appellant's appeal concerning restrictiveness of the RFQ is based on alleged improprieties in the RFQ which were apparent before bid opening. It is required that a protest based upon alleged improprieties in a solicitation apparent before bid opening be filed prior to bid opening or the right to protest is waived. COMAR 21.10.02.03 A¹; International Business Machines Corporation, MSBCA 1071 (August 18, 1982) at p. 5; Dasi Industries, Inc., MSBCA 1112 (May 5, 1983) at pp. 8-9; American Air Filter Co., MSBCA 1199 (November 19, 1984) at p. 6; Lamco Corporation, MSBCA 1227 (February 21, 1985) at p. 10. In the instant case Appellant filed a protest prior to bid opening. Its protest was based upon its construction of language contained on the front page of the RFQ which stated:

"NOTE: All clarification requests, questions or requests for consideration of alternates to any part of the specifications must be submitted in writing a minimum of 15 days before the due date."

Appellant filed its protest because it intended to submit a bid not based upon alternates to the specifications but based upon equipment which was equal or equivalent to the brand names listed in the specifications, and it had received verbal advice from a DGS employee that the fifteen day notice period was applicable to bids based upon equal or equivalent equipment. Significantly, Appellant did not protest that the RFQ was restrictive of competition or otherwise deficient.² The procurement officer sustained Appellant's protest, extended the bid opening and advised all bidders that no prior notice was necessary from bidders intending to bid equivalent products. Additionally, the procurement officer's decision specifically addressed evaluation of a bid based upon equivalent products as follows:

"In the event you or any other bidder submits a bid based upon equivalent products, the following three provisions of the RFQ (all referred to in your letter) will be used to evaluate the responsiveness of such a bid:

- 1 - The face page language which provides that 'equivalent items will be considered but only if accompanied by specifications and/or descriptive literature.'

¹COMAR 21.10.02.03 A provides in relevant part: "Protests based upon alleged improprieties in any type of solicitation which are apparent before bid opening or the closing date for receipt of initial proposals shall be filed before bid opening or the closing date for receipt of initial proposals. . . ."

²Appellant also protested the alleged failure of the RFQ to indicate whether award would be based on the basis of lowest bid price or lowest evaluated bid price. The procurement officer's decision noted that award would be made to the responsible bidder submitting the lowest responsive bid.

- 2 - Paragraph 4 of the Instructions to Bidders which requires, among other things, that the bidder state 'the reasons(s) why the proposed equivalent will meet the specifications and not be considered an exception thereto.'
- 3 - The RFQ language contained on the unnumbered page entitled 'Additional Information to Bidders' which requires that the bidder provide justification of any substitute equipment 'in terms of reliability, economy of installation and operation, and the ability to meet all performance specifications' contained in RFQ."

This decision clearly setting forth provisions of the RFQ applicable to evaluation of equal or equivalent products or equipment was received by Appellant on May 14, 1985, fifteen days prior to the rescheduled bid opening. Therefore, if Appellant believed that the RFQ was improperly restrictive on its face or as interpreted by the procurement officer it was incumbent upon Appellant to have appealed the decision or filed another protest. It did neither and, accordingly, has waived any right it had to complain that the RFQ was improperly restrictive.

We next consider Appellant's assertion that the procurement officer erred in his determination that Appellant's bid was nonresponsive.

In his final decision, the procurement officer determined that Appellant's bid was not responsive to a number of the specifications in the RFQ. All but one of the determinations of nonresponsiveness relate to the technical specifications for the products or equipment referenced in the RFQ. Section G-1 of the general specifications provides that "[all equipment supplied shall have a minimum of two years warranty." Appellant's bid includes a specific response to each numbered paragraph of the specifications. In response to paragraph G-1 of the general specifications, Appellant's bid states:

"All equipment offered has a warranty period of two years except generator in vehicle which will be warranted for one year and the vehicle itself which will be warranted for one year or 12,000 miles, whichever comes first." (Underscoring added).

Appellant thereby excepted to the two year warranty requirement for the vehicle and the generator in the vehicle.³ The procurement officer found that this exception in and of itself rendered Appellant's proposal nonresponsive, requiring rejection of its bid.

³ Appellant does not contend that the vehicle and generator are not items of equipment covered by the warranty specification. It alleges in its appeal that the vehicle manufacturer which wrote the vehicle specifications for DGS only provides the standard one year or 12,000 mile warranty and that Appellant merely passed on the vehicle manufacturer's warranty.

In Excelsior Truck Leasing Company, Inc., MSBCA 1102 (May 6, 1983) at pp. 4-5 this Board stated:

"In competitive sealed bid procurements, Maryland law requires rejection of a bid that does not conform in all material respects to the solicitation's requirements. Md. Ann. Code, Art. 21, Section 3-101(i) (1981 Repl. Vol., 1982 Supp.); COMAR 21.06.02.02 B(2); COMAR 21.01.02.60; COMAR 21.05.02.13A. A material deviation from an IFB's requirements occurs when the price, quantity, or quality of the goods or services is affected. Quaker-Cuisine Services, MSBCA 1083 (September 7, 1982) at p. 6; compare Prestex, Inc. v. United States, 162 Ct.Cl. 620, 320 F.2d 367 (1963); 30 Comp. Gen. 179, 182-183 (1950)."

Appellant argues, however, that its exception to the warranty requirements for the vehicle and generator should be considered a minor "deviation" which does not affect the responsiveness of its bid. What constitutes a minor irregularity in bids or proposals is defined in COMAR 21.06.02.03 which provides:

"A minor irregularity is one which is merely a matter of form and not of substance or pertains to some immaterial or inconsequential defect or variation of a bid or proposal from the exact requirement of the solicitation, the correction [or] waiver of which would not be prejudicial to other bidders or offerors. The defect or variation in the bid or proposal is immaterial and inconsequential when its significance as to price, quantity, quality, or delivery is trivial or negligible when contrasted with the total cost or scope of the supplies or services being procured. The procurement officer shall either give the bidder or offeror an opportunity to cure any deficiency resulting from a minor informality or irregularity in a bid or proposal or waive the deficiency, whichever is to the advantage of the State."

A procurement officer is given discretion to determine whether an irregularity in a bid is fatal to consideration of the bid. The Board cannot disturb the procurement officer's discretion unless it finds that the procurement officer acted fraudulently or so arbitrarily as to constitute a breach of trust. Wolfe Brothers, Inc., MSBCA 1141 (June 3, 1983) and cases cited therein at pp. 6-7. The procurement officer determined that the exceptions taken by Appellant to the warranty requirements under the RFQ affected the responsiveness of Appellant's bid. If the generator and/or van were to fail in the second year, it would be apparent that the warranty exceptions taken by Appellant could have a significant impact on both the price quoted by Appellant and the reliability of the sophisticated modifications required be made to the vehicle by the technical specifications. It was not unreasonable, therefore, for the procurement officer to conclude that Appellant's exception to the RFQ's warranty requirements materially affected the price and/or quality of its submission and was not a minor irregularity.

While our determination on this ground of Appellant's appeal results in its denial, we believe that some discussion regarding Appellant's appeal of the procurement officer's determinations regarding nonresponsiveness of its response to certain of the technical specifications of the RFQ is warranted. The specifications employed by DGS under the RFQ are brand name or equal specifications. COMAR 21.04.01.02 B provides:

"Brand name or equal means a specification⁴ which uses one or more manufacturer's names or catalog numbers to describe the standard of quality, performance, and other characteristics needed to meet the users requirements, and which provides for submission of equivalent products. Salient characteristics of the brand name supply item shall be set forth in the specification."

As noted, the procurement officer's decision on Appellant's prebid protest sets forth certain provisions of the RFQ which would be applicable to evaluation of the responsiveness of a bid based on equivalent products or equipment. Additionally, evaluation was required to be (1) consistent with the statement in paragraph 4 of the Instructions to Bidders that "[a]ny manufacturers' names, trade names, brand names, information and/or catalogue numbers listed in specifications are for information and not intended to limit competition. The bidder may offer any brand which meets or exceeds the specification for any item;" (2) consistent with the implication in COMAR 21.04.01.02 that specification's neither be drawn nor interpreted in a manner that would favor a particular vendor over other vendors; and (3) be based on criteria fairly expressed in the RFQ. In summary, the responsiveness of Appellant's bid as to product or equipment equivalence was to be measured against reasonably discernible objective criteria as set forth in the RFQ with the primary focus on function and performance.

Appellant argues in this appeal, however, that the procurement officer failed to apply the appropriate evaluation procedures as set forth above in determining equivalence and the responsiveness of its bid.⁵ In its notice of appeal it states:

"A fundamental issue that arises in this matter is the meaning of the term "equivalent" as distinct from the concept "identical." The general rule in government procurements is that a bid must comply in all material aspects with a request for quotation. Material aspects are those characteristics which meet the actual needs of the procuring agency as reasonably discernable and objectively measurable from the RFQ by a technically competent person. The responsiveness of a bid must be measured against reasonably discernable objective criteria with the primary focus on function and performance. Requiring a manufacturer to match a specified brand identically, absent an actual

⁴COMAR 21.04.01.01 defines the term "specification" as ". . . a clear and accurate description of the functional characteristics, or the nature of a supply, service, maintenance, or construction item to be procured. It may include a statement of any of the user's requirements and may provide for inspection, testing, or preparation of a supply, service, maintenance, or construction item before procurement."

⁵Appellant also suggests that its bid was evaluated on the basis of certain criteria, such as compatibility for future expansion and ability of certain equipment to function if struck by lightning, not set forth in the RFQ. While evaluation based on criteria not reasonably discernible from the RFQ would be inappropriate COMAR 21.05.02.13A, the procurement officer's decision specifically alludes to Appellant's "hidden agenda" concern and makes it clear that evaluation was based only on criteria that was reasonably discernible from the RFQ's specifications. Compare: Hanover Uniform Co., Division of Sanford Shirt Co., Inc., MSBCA 1059 (April 13, 1982) at p. 5. Accordingly, we will not further address this contention.

need for such exactness (and a finding that no other approach would efficiently satisfy that need), is anticompetitive and an unreasonable restraint on trade. Maryland law not only does not authorize anti-competitive bid procedures, but specifically requires maximization of competition.

The RFQ can be approached in two ways: One way uses the concept of "identical" and finds only an item-by-item matching of the listed brand-name equipment to be acceptable. The second way looks at the RFQ as a whole taking into consideration that the needs of the State are for a complete turnkey microwave system, that the specified brand equipment is listed for information only to describe the desired functions, that equipment which is "equivalent" to listed equipment, i.e., meets the functional and performance criteria in a manner that satisfies the actual needs of the State, is perfectly acceptable, and that "design or other detailed physical descriptions" only provide information on function or performance and do not limit competition. Furthermore, this approach requires that all proposed equipment meet the actual needs of the State reliably and economically. This second approach follows a "total system" approach consistent with the basic need for a turnkey system and evaluates equipment on the basis of economy of installation and operation, reliability and the ability to meet all performance specifications. The Purchasing Bureau [procurement officer] has chosen to read the RFQ the first way. It [he] required all bids to match the RFQ specifications identically and exactly. This decision is contrary to public policy, and is irrational and unjustifiable because it arbitrarily ignores both the language of the RFQ and the mandate of law."

DGS, on the other hand, contends that the procurement officer did apply the appropriate criteria for determining equivalence and the responsiveness of Appellant's bid.⁶ We shall now examine these respective contentions.

The procurement officer found the Appellant's proposal to be nonresponsive to a number of the technical specifications. Sections 1.1 and 2.1 of the technical specifications dealing with critical equipment items at the Annapolis and Owings Mills receive sites provide:

"One (1) Nurad Model 450R2D/AP2600 Dual Band (2 and 7 GHz) SILHOUETTE Receive System equipped with 2 GHz 30 db gain LNA and 7 GHz 25 db gain LNA."

Appellant's response to Sections 1.1 and 2.1 of the technical specifications is as follows:

"One (1) M/A-COM MICROSCAN Dual Bank (2 and 7 GHz) receive system equipped with 7 GHz to 2 GHz down converter and bypassable 35 dB 2GHz LNA. Antenna is equipped with four (4) polarization settings selectable (right circular, left circular, horizontal and vertical). This product is equivalent in all other required specifications to Nurad model 450R2D/AP2600."

⁶As noted above, Appellant has waived its right to protest any alleged restrictiveness or other impropriety in the specifications as drawn by failing to protest prior to bid opening.

Sections 1.1 and 2.1 of the technical specifications reference the brand name and model number of a Dual Band receive system and require the receive system to include a 2 GHz 30 db gain low noise amplifier ("LNA") and a 7 GHz 25 db gain LNA. Appellant's response to this requirement is to provide one 2 GHz LNA and a 7 GHz to 2 GHz down converter. Appellant contends that a 2 GHz with a converter complies with the 7 GHz requirement as a result of superior design and location of the equipment such that functionally two amplifiers are provided. The procurement officer, however, determined that the specifications required two separate amplifiers and that the use of one amplifier with the down converter was an unacceptable alternate not responsive to the two amplifier requirement of the receive system called for in the specifications.

In Adden Furniture, Inc., MSBCA 1219 (January 2, 1985), the Board addressed the procurement officer's discretion when determining compliance with design specifications. We said: "The factual determination as to whether any product conforms to design specifications and thus is responsive to a solicitation primarily is a matter within the jurisdiction of the procuring activity. Compare 49 Comp. Gen. 196, 198 (1969). We will not substitute our judgment for that of the procuring agency in the absence of a clear showing that it acted unreasonably or otherwise abused its discretion in determining that a product did not comply with specifications. Id. Where there is a difference of expert technical opinion, we will accept the technical judgment of the procuring agency unless clearly erroneous. Id." Adden, supra at p. 5. The technical judgment of the procurement officer, based as it is here on input from Mr. Herget, a technically competent person, must be accepted unless found to be clearly erroneous. The procurement officer's determination that use of one 2 GHz LNA and a 7 GHz to 2 GHz down converter was neither responsive to specifications' requirement for two separate amplifiers nor achieved functional equivalency is not demonstrated by the record before us to be clearly erroneous.

From this initial determination of nonresponsiveness concerning contemplated use of a converter as an essential characteristic of Appellant's proposed system flow a number of the procurement officer's determinations of nonresponsiveness referencing sections of the technical specifications where Appellant's deviations or actual lack of response relate to its use of the converter in lieu of a separate 7 GHz LNA. For example, the elliptical waveguide assembly, a sophisticated transmission cable which is required to carry the 7 GHz signal, referenced in Sections 1.5 and 2.5 of the technical specifications, was not included in Appellant's submission, since the system it proposed did not require it. In like vein, the gas distribution manifold, nitrogen tank fitting and Andrew 7 GHz Pressure Windows referenced in Sections 1.6, 1.7, 1.8, 2.6, 2.7 and 2.8 of the technical specifications, necessary equipment for the use of the elliptical waveguide assembly, were not included by Appellant. Similarly, the receiver proposed by Appellant in response to Sections 1.9 and 2.9 does not receive at 7 GHz as required by the RFQ and does not include the specified SAW IF filter assembly. The receiver proposed by Appellant requires the 7 GHz to 2 GHz down converter to receive the 7 GHz signal.

Nevertheless, while it is apparent from the specifications that MPT desires a 2 GHz LNA and a 7 GHz LNA and associated transmission cables (elliptical waveguide and other equipment) rather than the system proposed by

Appellant, it is also apparent that the procurement officer considered Appellant's total proposed system in terms of equivalence. He thus notes in his final decision that Appellant's nonresponsiveness to the requirements of these specific specifications relates to its system wide concept use of the 7 GHz converter rather than a separate 7 GHz LNA. We, therefore, reject Appellant's assertion that the procurement officer engaged in "only an item-by-item matching of the listed brand-name equipment" to determine responsiveness.

In addition to assailing the procurement officer's methodology in analyzing its protest, Appellant also questions the technical requirements of certain of the specifications. For example, sections 1.10, 2.10, 3.6 and 4.6 of the technical specifications require a 10 MHz/17 MHz remotely selectable SAW IF filter assembly at the four receive sites. The specific characteristics for this equipment is that it function at 10 MHz and 17 MHz and be a SAW IF type filter. The filters proposed by Appellant, however, are not SAW IF type filters and do not function at 17 MHz and, therefore, do not meet two of the three characteristics referenced in the specifications. Despite absence of prebid opening protest, Appellant questions the utility of a filter that functions at 17 MHz and asserts that its proposed filter will perform equally or better than the model specified. However, the mere assertion in the proposal that its proposed equipment will perform equally or better than the model specified does not overcome the failure of its equipment to be responsive to two of the three specific characteristics referenced in the RFQ.

In like manner, Appellant failed to bid a required item pertaining to portable microwave equipment for a dual band as set forth in Section 5 of the RFQ. In response to Section 5.3 of the technical specifications requiring a 2 GHz 12-watt power amplifier, Appellant states that this item is "not required" because the required item is included in its response to Section 5.5. However, as noted in the procurement officer's decision, Section 5.3 clearly and unambiguously requires an additional 12 watt power amplifier above and beyond that which is specified to be included with the transmitter referenced in Section 5.5. Appellant argues in its notice of appeal that the equipment it proposed in response to Section 5.5 can be dismantled in less than one minute and used for the purposes associated with Section 5.3. However, this assertion does not sufficiently rebut the procurement officer's determination that this approach is an exception to the specifications not meeting the criteria for either equipment or system equivalency and, therefore, is not responsive to the requirements of the RFQ.

In summary, based on the record before it, the Board is satisfied that the procurement officer's determination of the responsiveness of Appellant's bid was in accordance with the principles set forth above and that product or equipment equivalence was in fact measured against reasonably discernible objective criteria with the primary focus on function and performance. In applying these principles, his specific determinations that the products and equipment offered by Appellant neither comply with the specifications' stated criteria nor achieve functional equivalency, individually or as to system wide performance, while challenged by Appellant, have not been shown to be clearly erroneous. Accordingly, the appeal is denied.

APPENDIX A

RFQ Specifications

1. Annapolis Receive Site

- 1.1 One (1) Nurad Model 450R2D/AP2600 Dual Band (2 and 7 GHz) SILHOUETTE Receive System equipped with 2 GHz 30 db gain LNA and 7 GHz 25 db gain LNA.
- 1.5 One (1) Andrew Model EW63 7 GHz elliptical waveguide assembly (estimate 950 ft.).
- 1.6 Two (2) Andrew 7 GHz Pressure Windows.
- 1.7 One (1) Gas Distribution Manifold.
- 1.8 One (1) Nitrogen Tank Fitting.
- 1.9 One (1) Nurad Model 45AR2 Dual Band (2 GHz and 7 GHz) frequency agile receiver (21 channels at 2 GHz, 30 channels at 7 GHz) equipped with built-in GaAs FET preamplifiers, 10 MHz SAW IF filter assembly and 4.83 MHz audio subcarrier. The 7 GHz receive section shall be a dual conversion format.
- 1.10 One (1) 10 MHz/17 MHz Remotely Selectable SAW IF filter assembly for Item 1.9.

2. Owings Mills Receive Site

- 2.1 One (1) Nurad Model 450R2D/AP2600 Dual Band (2 and 7 GHz) SILHOUETTE Receive System equipped with 2 GHz 30 db gain LNA and 7 GHz 25 db gain LNA.
- 2.5 One (1) Andrew Model EW63 7 GHz elliptical waveguide assembly (estimate 800 ft.).
- 2.6 Two (2) Andrew 7 GHz Pressure Windows.
- 2.7 One (1) Gas Distribution Manifold.
- 2.8 One (1) Nitrogen Tank Fitting.
- 2.9 One (1) Nurad Model 45AR2 Dual Band (2 GHz and 7 GHz) frequency agile receiver (21 channels at 2 GHz, 30 channels at 7 GHz) equipped with built-in GaAs FET preamplifiers, 10 MHz SAW IF filter assembly and 4.83 MHz audio subcarrier. The 7 GHz receive section shall be a dual conversion format.
- 2.10 One (1) 10 MHz/17 MHz Remotely Selectable SAW IF Filter Assembly for Item 2.9.

3. Salisbury Receive Site

3.6 One (1) 10 MHz/17 MHz Remotely Selectable SAW IF filter assembly for Item 3.5.

4. Hagerstown Receive Site

4.6 One (1) 10 MHz/17 MHz Remotely Selectable SAW IF filter assembly for Item 4.6.

5. Portable Microwave Equipment for a Dual Band

5.3 One (1) Nurad Model 20PA15 2 GHz 12-Watt Power Amplifier including PS2 Power Supply.

5.5 One (1) Nurad Model 20PT12 3-Watt/12-Watt 2 GHz frequency agile transmitter e/w two audio subcarriers.

Appellant's Response

1. Annapolis Receive Site:

1.1 One (1) M/A-COM MICROSCAN Dual Band (2 and 7 GHz) receive system equipped with 7 GHz to 2 GHz down converter and bypassable 35 dB 2 GHz LNA. Antenna is equipped with four (4) polarization settings selectable (right circular, left circular, horizontal and vertical). This product is equivalent in all other required specifications to Nurad model 450R2d/AP2600.

1.5 7 GHz signal will be downconverted to a 2 GHz signal in the MICROSCAN pedestal and fed into the LDF-50A 7/8" RF cable thus eliminating the need for costly elliptical waveguide.

1.6 Andrew 7GHz Pressure Windows are not needed due to the elimination of elliptical waveguide (see 1.5).

1.7 Gas Distribution Manifold not needed due to the elimination of elliptical waveguide (see 1.5).

1.8 Nitrogen Tank fitting not needed due to the elimination of elliptical waveguide (see 1.5).

1.9 One (1) M/A-COM MA-MRC Central Receiver, Dual Band (2 and 7 GHz) frequency agile (30 channels at 2 GHz, 42 channels at 7 GHz) equipped with built-in high dynamic range low noise amplifier front panel switchable 10 MHz, 15 MHz and 20 MHz LF. filter assembly. 4.83 MHz and 6.2 MHz subcarriers will be provided. Dual conversion is standard in both frequencies. Although different in design methods when compared to model 45AR2, the M/A-COM-MRC provided equal or better performance. Please refer to the descriptive brochure in Section 6.

- 1.10 10 MHz/15 MHz/20 MHz selectable filters are standard with MA-MRC Central Receiver. Receiver performance is equal to or better than model 45AR2.

2. Owings Mills Receive Site:

- 2.1 One (1) M/A-COM MICROSCAN Dual Band (2 and 7 GHz) receive system equipped with 7 GHz to 2 GHz down converter and bypassable 35 dB 2 GHz LNA. Antenna is equipped with four (4) polarization settings selectable (right circular, left circular, horizontal and vertical). This product is equivalent in all other required specifications to Nurad model 450R2D/AP2600.
- 2.5 7 GHz signal will be downconverted to a 2 GHz signal in the MICROSCAN pedestal and fed into the LDF-50A 7/8" RF cable thus eliminating the need for costly elliptical waveguide.
- 2.6 Andrew 7GHz Pressure Windows are not needed due to the elimination of elliptical waveguide (see 1.5).
- 2.7 Gas Distribution Manifold not needed due to the elimination of elliptical waveguide (see 1.5).
- 2.8 Nitrogen Tank fitting not needed due to the elimination of elliptical waveguide (see 1.5).
- 2.9 One (1) M/A-COM MA-MRC Central Receiver, Dual Band (2 and 7 GHz) frequency agile (30 channels at 2 GHz, 42 channels at 7 GHz) equipped with built-in high dynamic range low noise amplifier front panel switchable 10 MHz, 15 MHz and 20 MHz I.F. filter assembly. 4.83 MHz and 6.2 MHz subcarriers will be provided. Dual conversion is standard in both frequencies. Although different in design methods when compared to model 45AR2, the M/A-COM-MRC provided equal or better performance. Please refer to the descriptive brochure in Section 6.
- 2.10 10 MHz/15 MHz/20 MHz selectable filters are standard with MA-MRC Central Receiver. Receiver performance is equal to or better than model 45AR2.

3. Salisbury Receive Site:

- 3.6 10 MHz/15MHz/20MHz selectable IF filters are standard with MA-MRC Central Receiver. Receiver performance is equal to or better than Nurad Model 20AR2.

4. Hagerstown Receive Site:

- 4.6 10MHz/15MHz/20MHz selectable IF filters are standard with MA-MRC Central Receiver. Receiver performance is equal to or better than Nurad Model 20AR2.

5. Portable Microwave Equipment for a Dual Band Transmit Van

- 5.3 Not required. M/A-COM MA-2Mz 1W/12W 2 GHz transmitter includes the compact mast mounted power supply/power amplifier package and separate control unit. the MA-2MX is equivalent to Nurad 20AP15 power amplifier including PS2 power supply and model 20PT12. Refer to 5.5 and MA-2MX information brochure in Section 8.

- 5.5 One (1) M/A-COM MA-2MX 1 watt/12 watt 2 GHz frequency agile (21 channel) transmitter equipped with two (2) audio subcarriers. This model is equivalent to or better than Nurad 20PT12 and 20AP15 with PS2 power supply in all other required specifications. Refer to the MA-2MX brochure in Section 8.