

could operate efficiently and effectively in the bands above 3 GHz.⁷³ Moreover, CTI fails to note that, under the transition plan prescribed in the NPRM,⁷⁴ all new 2 GHz microwave users have secondary status at this time. Such status is unacceptable to these users and greatly inhibits the development of microwave networks throughout the United States. Thus, evaluating the rules proposed by ANS at this time is essential and not premature.

Although various parties disagree with what ANS proposes, CTI stands alone in alleging that these proposals would result in ineffective service. And with good reason. CTI fails to submit any data supporting its vision of Armageddon.⁷⁵

ANS' proposal is carefully designed to ensure that common carriers and private op-fixed users will operate, on a co-primary basis, on the same bands without experiencing any degradation of service. More importantly, with ANS' channelization plan, spectrum efficiency will be optimized.

⁷³ In proposing the "blanket" waiver approach in the NPRM, the Commission relied upon data, that adequate capacity exists in the higher bands under current rules, compiled by its Office of Engineering and Technology ("OET"). See Creating New Technology Bands for Emerging Telecommunications Technology, Office of Engineering and Technology, OET/TS 91-1 (December 1991) ("OET Study"). CTI criticizes ANS for paying "lip service" to the OET Study by proposing rules that are unnecessary because of OET's finding that adequate capacity exists. CTI at 6-7. However, as ANS demonstrates in its Comments on the NPRM, the OET Study is materially flawed and OET's findings regarding available capacity are thus unacceptable. See ANS Comments (ET Docket No. 92-9) at 16-23.

⁷⁴ See NPRM, 7 FCC Rcd at 1545; Public Notice (mimeo no. 23115, released May 14, 1992).

⁷⁵ CTI hedges its bets by stating that "[w]ere the ANS proposal to be supported by actual licensees of these 2 GHz channels there might be some merit to further consideration of ANS' proposal." CTI at 2 n.3. Such support has, in fact, been expressed by several such licensees. See footnote 9, supra.

CTI's claims of potential service degradation are undermined by the record of this proceeding. Common carriers,⁷⁶ private op-fixed users,⁷⁷ frequency coordinators,⁷⁸ and industry standards experts⁷⁹ uniformly conclude that ANS' proposals provide a prudent and feasible blueprint for displaced 2 GHz user operation in the higher bands.

Furthermore, CTI's specific criticisms of ANS' Petition are equally unavailing:

First, CTI incorrectly predicts that ANS' plan would create a nightmare of interference and other technical problems and would trigger an avalanche of competing applications requiring time-consuming processing by the Commission.⁸⁰ CTI fails to identify the specific technical problems predicted. This is not surprising because Comsearch, the commercial organization responsible for performing the frequency coordination tasks CTI is afraid will be adversely affected, supports ANS' proposals.⁸¹

Second CTI incorrectly alleges that ANS fails to reference any rules establishing efficient utilization of common carrier microwave spectrum, as required under Section

⁷⁶ Centel at 4.

⁷⁷ API at 11; UTC at 1-3; MRC at 2.

⁷⁸ Comsearch at 4-5.

⁷⁹ TIA at 2.

⁸⁰ CTI at 2-3, 9.

⁸¹ Comsearch at 2. The spectre of conflicting applications will not materialize. Processing of applications for paths in the bands above 3 GHz filed by private op-fixed and by common carrier users will be accomplished by conventional frequency coordination criteria. CTI alleges that ANS fails to prove that such frequency coordination of co-primary users on the higher bands could work. CTI at 12-13. CTI's allegation is refuted by Comsearch's support for ANS' frequency coordination proposal. Comsearch at 2.

21.710(c) of the Commission's Rules.⁸² Limitations on path lengths and channel loading prescribed under Section 21.701(c) are fully addressed in the ANS Petition.⁸³

Third, CTI claims that adoption of ANS' proposal would produce harmonic interference conditions, terrain scatter and frequency congestion that would be extremely difficult and expensive to overcome.⁸⁴ CTI fails to produce any evidence supporting this claim. Nor is there any record evidence suggesting that these problems might occur. ANS is unaware of any aspect of its proposal which would affect harmonic interference to or from any microwave system.

Fourth, CTI claims ANS' proposal would render useless the data base employed by common carrier frequency coordination.⁸⁵ This criticism is totally without merit. As Comsearch notes, the appropriate data base currently exists. ANS merely proposes changing the class of eligible users which may be added to this existing data base. Such additions would be made based upon the process currently used for new applicants. Additional costs for expanding the data base to include displaced users would be incremental.

Fifth, CTI fears that adoption of ANS' proposals would compromise significantly its standard of system reliability. CTI claims that it contractually guarantees to provide its customers 99.98%, or less than one hour, of outage annually.⁸⁶ ANS is puzzled by this

⁸² CTI at 3.

⁸³ Petition, Attachment 1 at Sections 4.5, 4.7.1 and 4.7.2.

⁸⁴ CTI at 10.

⁸⁵ CTI at 8.

⁸⁶ CTI at 9-10.

criticism. CTI suggests that one hour of system outage per year is an acceptable standard of performance. However, CTI, in its comments, also suggests that fiber communication technology is an acceptable substitute for microwave.⁸⁷ Private fiber optic systems (lacking diversity loops) have typical outage times of several hours per month.⁸⁸

B. CRITICISM OF ANS' PROPOSED 4 GHZ BAND REALLOCATION IS PREMATURE

Without question, ANS' most controversial proposal is reallocating the 3.7 to 4.2 GHz band. This band is allocated for common carrier fixed and fixed-satellite (space-to-earth or downlink) use. It primarily is used by licensed satellite and unlicensed receive-only earth stations. Fixed microwave operators use this band on a co-primary basis with earth station users. Unfortunately, coordination with earth station users largely has been ineffective.

ANS proposes reallocation of this 4 GHz band because it is an essential element in ensuring that relocated 2 GHz users would have sufficient compatible spectrum for their operation in the higher bands. The 4 GHz band most closely approximates the propagation and other technical attributes of the 2 GHz band. ANS is not alone in this assessment. For the same reasons, OET identifies the 4 GHz band as a primary candidate for housing displaced 2 GHz users.⁸⁹ Several parties to this proceeding also favor ANS' proposed reallocation.⁹⁰

⁸⁷ CTI at 6-7.

⁸⁸ The record of the NPRM and the UTC Petition impeaches CTI's reliance upon fiber technology. A strong consensus in these proceedings argue against reliance upon fiber technology because of its associated cost and reliability problems.

⁸⁹ OET Study at 18, 28, 35.

⁹⁰ API at 10; Comsearch at 3-4; TIA at 4; Harris at 6-7.

To optimize efficient use of this 4 GHz band by microwave users, ANS proposes its rechannelization so that private op-fixed and common carriers could use it on a co-primary basis. Currently, this band is used only by high-capacity common carrier systems. Upon adoption of ANS' rechannelization plan, low, medium and high capacity systems could use this band concurrently.⁹¹

Specific preferred channel pairs and go-return channels are proposed by ANS. Over a 15-year transition period, 40 MHz at each band edge would be allocated on a primary basis for point-to-point microwave operation and on a secondary basis for satellite operation. This reallocation would promote favorable frequency coordination between the fixed microwave and earth station users on this band.⁹²

This proposed reallocation disturbs incumbent 4 GHz satellite carriers and users ("Domsats"). These Domsats fear that ANS' proposed rechannelization of the 4 GHz band would harm their operations:

Alcatel's proposal to make 16% of the current C band capacity available only on a secondary basis would effectively render 4 of the 24 transponders on a typical C band satellite unusable for many purposes. This would adversely affect the industry in a number of ways. First, it would restrict the ability of current C band satellite operators to expand their satellite networks as their business expands. Second, it would impede the development of new services that otherwise might occur in an environment in which sufficient spectrum is available. Third, it would limit the variety of video programming that can be delivered via C band to home dishes as an alternative to cable television.

⁹¹ Petition at 18-19.

⁹² Petition at 18-19.

* * * * *

Alcatel simply has not demonstrated (and cannot demonstrate) that the demand for C band capacity will abate. Moreover, it is simply not explained why the needs of displaced microwave users could not be met by co-primary use of the 4 GHz band with satellite operators.⁹³

Legitimate concerns are raised and must be resolved.⁹⁴ Yet, these concerns are not supported by extensive evidence that the 4 GHz reallocation would, in fact, cause the problems predicted to occur. Thus, it would be premature to eliminate the 4 GHz reallocation option without first providing all sides the opportunity to submit data supporting their position in a formal rulemaking proceeding.

ANS shares the Domsats' concerns. Unlike the Commission's cavalier attitude towards the potentially displaced 2 GHz users, ANS does not propose rechannelization of the 4 GHz band lightly.

In making this proposal, ANS recognizes that compromise will be necessary. Once the Commission taps the first domino and reallocates the 2 GHz band, users in other bands, including the 4 GHz band, cannot be shielded from making comparable and reasonable sacrifices.

As detailed in Attachment 1, ANS is confident that existing technology and market trends will support its reallocation of the 4 GHz band without causing the "little shop of

⁹³ **Statement in Opposition of Hughes Communications Galaxy, Inc. ("HCG") at 5-6 (footnotes omitted). See also Opposition of GE American Communications, Inc. ("GE Americom") at 2-4; GTE at 8-12; Statement of Home Box Office ("HBO") at 7-11.**

⁹⁴ **For example, GTE and GE Americom are concerned about possible lost investment in their embedded equipment. GTE at 8; GE Americom at 2-3. HBO claims that the proposed reallocation would degrade its video distribution services. HBO at 9-10. GE Americom and GTE question whether the existing transponder configuration could accommodate the proposed rechannelization or, if not, whether viable alternatives exist. GE Americom at 5-6; GTE at 10-12.**

horrors" envisioned by the opponents of this proposal. Adequate capacity for satellite carriers currently exists in other bands. See Attachment 2. Implementation of regulatory incentives and advanced technologies will increase available spectrum even more. See Attachment 1. Indeed, given the long-term process that such reallocation would take to complete and given the limited amount of spectrum that would have to be surrendered, the "sacrifice" that existing 4 GHz users might have to make pales in comparison to the potential loss of reliable service that existing 2 GHz users would suffer if they are migrated off their existing frequency band.

CONCLUSION

Any action that the Commission takes in response to its NPRM and to this Petition must be anchored by the public interest. It is surprising that, in its efforts to ensure that the public reaps the benefits of new telecommunications technologies, the Commission has lost its moorings and has proposed the "blanket" waiver as the answer for displaced 2 GHz users. This assumption is untenable and must be remedied before any irreversible damage to public safety, utility and other essential services occurs.

Grant of ANS' Petition is in the public interest. It is a prescription for correcting the Commission's oversight regarding 2 GHz user operation in the higher bands. ANS "pave[s] the way for a successful migration of potentially displaced 2 GHz users" because its proposals address "many of the unresolved" legitimate concerns over the practicality of

evicted 2 GHz users operating on the bands above 3 GHz.⁹⁵

In the instant Petition, ANS addresses very practical and useful measures for ensuring that there will be appropriate and adequate replacement spectrum, with equivalent reliability, for licensees who may be displaced from 2 GHz by the proposed allocation for emerging technologies. On balance, API finds that the Petition is well-conceived.

To the extent that the Commission has publicly discussed the reaccommodation of displaced users at all, the discussion to date has not been particularly refined or useful. In API's view, ANS's Petition elevates the reaccommodation discussion to an appropriate and necessary level of sophistication. API therefore urges the Commission to proceed to rule making on the concepts proposed in ANS's Petition.

Further, API does not believe it is appropriate for the Commission to take further action to allocate spectrum for emerging technologies until, at a minimum, the question of exactly how displaced users will be accommodated is resolved. ANS' Petition is a step in this direction and should be promptly addressed by the Commission.⁹⁶

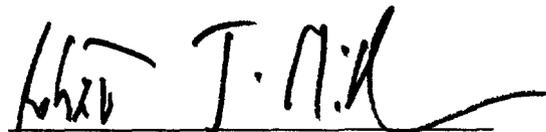
⁹⁵ Comsearch at 5.

⁹⁶ API at 11.

The Commission has promised to do whatever it takes and to compile all data necessary for determining if the proposed 2 GHz reallocation would serve the public interest.⁹⁷ Failure to grant the Petition will breach this promise.

Respectfully submitted,

ALCATEL NETWORK SYSTEMS, INC.



Robert J. Miller
Gardere & Wynne, L.L.P.
A Registered Limited Liability
Partnership
1601 Elm Street, Suite 3000
Dallas, Texas 75201

Its Attorney

July 16, 1992

110609.03-67269/2

⁹⁷ See letter dated April 20, 1992, from the Commissioners to Senator Ernest F. Hollings. See also News Release (released July 16, 1992) describing the Commissioners' intentions regarding the proposed 2 GHz reallocation for broadband PCS.

ATTACHMENT 1

Comments Regarding the ANS Petition for Rule Making

Comments of the following organizations regarding the ANS petition for rule making are summarized:

Organization (abbreviation)	Overall Position Regarding the Petition
Association of American Railroads (AAR)	Pro
American Personal Communications (APC)	Pro
American Petroleum Institute (API)	Pro
Centel Corporation (CC)	Pro
COMSEARCH (COM)	Pro
Communications Transmission, Inc. (CTI)	Con
GE American Comm., Inc. (GEA)	Con (4 GHz only)
General Telephone Company (GTE)	Con (4 GHz only)
Home Box Office (HBO)	Con (4 GHz only)
Harris-Farinon (HFD)	Pro
Hughes Comm. Galaxy (HCG)	Con (4&6 GHz only)
Large Public Power Council (LPPC)	Pro
MCI (MCI)	Pro
Microwave Radio Corporation (MRC)	Pro
National Spectrum Managers Association (NSMA)	No Position
Pacific Telesis Group (PTG)	Both
Spatial Communications, Inc. (SCI)	Both
Telecommunications Industry Association (TIA)	Pro
Utilities Telecommunications Council (UTC)	Pro

General Comments:

The comments of the nineteen respondents are excerpted on the following pages. The bulk of the respondents made significant comments of interest to the telecommunications community at large. Some of the operational company comments were predictable. Proponents of the Emerging Technologies wished to press full speed ahead. Common carriers were unwilling to give up their exclusive high density bands. The satellite users were especially strident in their emotional defense of their virtually exclusive use of 4 GHz.

The 4 GHz portion of the proposal is offered because the 4 GHz band is the most logical technical choice for use by displaced 2 GHz users. The satellite earth stations have severely limited the use of the band by point to point microwave users. Substantial allocations - thousands of MHz - are available for use by satellite systems. Although C-band has been used extensively, and will continue to be used, according to the commenting parties, extensive use of the Ku-band has been made over the past ten years. Use of this band, as well as of the Ka-band, will be made by satellite service providers in the future. In considering additional bands for use by fixed microwave users, the Commission should consider using a portion of the 4 GHz band, as ample spectrum is available for use by the satellite community and a transition of ten to fifteen years would allow for designing and implementing space segment which could utilize additional bands, if necessary. Thus, the Commission should not look at the fixed satellite industry in a snapshot fashion. Just as it is considering transition of fixed microwave users, the Commission can consider a reasonable transition plan for satellite service providers.

With regard to the points made by several parties (such as GTE) concerning the use of advanced technology to increase the capacity and reduce interference to fixed microwave systems, the Commission should also explore the use of advanced technology by the domestic satellite industry. In the mid-1980s, the Commission adopted a policy of reduced orbital spacing which vastly increased frequency reuse in 4/6 GHz and 12/14 GHz bands. The satellite industry played a key role in developing the technical standards (including antenna performance requirements) which enabled this increase in overall spectrum use and, consequently, capacity available to operate, resulting in more service to users of satellite services. The Commission should address current innovations in the video and satellite industries, including video compression and improved antenna

performance, which can further increase the capacity of systems. Within the increased capacity available through such mechanisms (especially through video compression), both operators and the public are unlikely to be deprived of available video services.

The Commission should develop policies which encourage migration of services to higher frequency bands where unused bandwidth is available. In the case of domestic satellite service, some loss of capacity in the C-band could encourage consideration of providing, in particular, direct-to-home video service (as Hughes refers to in its filing) in the DBS bands, which provide the appropriate power flux density limits for service to small antennas. In addition, in the Ka-band, no power flux density limits exist, providing for an opportunity to implement service with very high power transponders which could provide video and other services to very small aperture terminals.

The satellite industry is concerned about potentially losing 16% (80 MHz) of their spectrum below 10 GHz. Note that the 2 GHz private users are being forced to lose 18% (80 MHz) of their spectrum below 10 GHz. This comes after this same group lost 49% (500 MHz) of its spectrum below 13 GHz a decade ago. The chart on the next page displays that 39% of the satellite transponders are for dedicated entertainment video and 42% are for occasional video. Could not some of this 81% of satellite transponder spectrum dedicated to entertainment and occasional use video be compressed, moved to other frequencies, reorganized or otherwise managed? The substance of the comments filed by the satellite interests is that they do not want to consider losing any spectrum capacity. This is understandable. However, in view of the need for the Commission to find a place for relocation of fixed microwave users (supported by GTE and others), every reasonable option should be investigated. This is especially compelling since the potential 2 GHz users provide essential public services.

Transponder	Satellite 2		Subcom F2		Galaxy 2		North American C-Band Satellites			Galaxy 3		Telstar 301		Galaxy 6		Satellite 4	
	69 Deg W	72 Deg W	82 Deg W	85 Deg W	74 Deg W	82 Deg W	Telstar 302	87 Deg W	87 Deg W	63.5 Deg W	85 Deg W	85 Deg W	89 Deg W	90 Deg W	90 Deg W	101 Deg W	
1	O	V	O	O	O	O	O	V	V	V	O	O			O	O	
2	O	V	V	O	O	V	V	V	V	V	V	V			O	O	
3	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
4	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
5	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
6	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
7	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
8	O	O	O	O	O	V	V	V	V	V	O	O			O	O	
9	O	O	O	O	O	V	V	V	V	V	O	O			O	O	
10	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
11	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
12	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
13	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
14	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
15	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
16	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
17	V	O	O	O	O	V	V	V	V	V	O	O			O	O	
18	O	O	O	O	O	V	V	V	V	V	O	O			O	O	
19	O	O	O	O	O	V	V	V	V	V	O	O			O	O	
20	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
21	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
22	O	V	V	O	O	V	V	V	V	V	O	O			O	O	
23	V	O	V	O	O	V	V	V	V	V	O	O			O	O	
24	O	O	V	O	O	V	V	V	V	V	O	O			O	O	

O - Occasional Value
 V - Dedicated Value
 Blank - Other Use

Source: Orbital Information and World Institute Almanac

Transponder	Satellite 1		Subcom F1		Galaxy 1		North American C-Band Satellites			Galaxy 5		Telstar 301		Galaxy 6		Satellite 4	
	111.1 Deg W	118.5 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W	120 Deg W				
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	

Highlights of Industry Comments:

Note: (X/Y) refers to commenter's page and paragraph

Association of American Railroads (AAR)

AAR Comment (2/2): "AAR is in general agreement with the thrust of Alcatel's Petition."

ANS Comment: ANS concurs.

AAR Comment (2/3): "AAR is in complete agreement ... with Alcatel's view of the incompatibility of the higher bands for use in private fixed microwave operations and the chaos that will result if the Commission follows its present course:"

ANS Comment: ANS concurs.

AAR Comment (2/4): "ARR also agrees with Alcatel regarding the shortcomings of the Commission's staff study ..."

ANS Comment: ANS concurs.

AAR Comment (3/2;4/1): "... AAR continues to believe that proper deployment of federal spectrum can obviate the need for a forced migration of railroads, electric utilities and others to higher frequencies ..."

ANS Comment: ANS agrees this is a possibility. However, progress to date is not encouraging. Emerging Technology proponents are pressing for a speedy solution. Federal spectrum will not come quickly.

AAR Comment (4/3): "ARR's other reservations about Alcatel's proposal pertain principally to the technical details regarding channel bandwidth and numbers of channels in particular bands."

ANS Comment: ANS will be pleased to address particular technical details during the requested NPRM process.

American Personal Communications (APC)

APC Comment (1/2): "APC does not agree with the entirety of Alcatel's substantive proposals ..."

ANS Comment: no comment

APC Comment (1/4): "APC supports Alcatel's rechannelization proposals for the 3.7-4.2, 5.925-6.425, 6.525-6.875, and 10.7-11.7 GHz bands to the extent that they are acceptable to the microwave community."

ANS Comment: ANS concurs.

APC Comment (1/4): "... Alcatel's channelization plan for the 3.7-4.2 GHz band appears reasonable..."

ANS Comment: ANS concurs.

APC Comment (1/4;2/2): "Alcatel's proposals for reallocating the 3.6-3.7 and 10.55-10.68 GHz band ... appear entirely unnecessary ..."

ANS Comment: Notwithstanding the OET study, ANS is quite concerned about adequate spectrum in bands already heavily used. These are two underutilized bands which would be helpful in addressing this concern.

APC Comment (2/1): "... APC supports the consideration of Alcatel's petition in a manner that does not obstruct or delay ER Docket 92-9."

ANS Comment: ANS appreciates the support. However, we do not agree with proceeding with 92-9 without also addressing the issues raised in our petition.

American Petroleum Institute (API)

API Comment (SUMMARY/2,3): "API finds that the rule changes proposed by Alcatel Network Systems, Inc. (ANS) would provide a useful range of options for microwave system licensees. API agrees with ANS that the band 3600-3700 MHz should be made available to accommodate the needs of users who would otherwise use frequencies in the band 1850-2200 MHz. API is also supportive of ANS' concept for rechannelizing the frequency bands below 11700 MHz to accommodate low and medium density requirements. Accordingly, API urges the Commission to precede to rule making on the concepts proposed in ANS' Petition."

ANS Comment: ANS concurs.

API Comment (4/1): "... the Commission should not reallocate the 2 GHz spectrum for new technologies."

ANS Comment: ANS has expressed grave concern about this proposal. As the chart on the next page shows, antennas will unquestionably be more expensive in the higher bands. We are concerned about the financial hardship this will place on the private users. However, ultimately only the FCC can determine the public interest in this manner.

API Comment (4/2): "... 6 GHz will not be an adequate or reliable substitute for 2 GHz paths."

ANS Comment: The higher the frequency, the more unreliable the band becomes from a propagation perspective. The reduction in reliability is not linear with frequency increase so reliability is subjective. Unquestionably, 4 GHz would be a superior choice if it could be made practical. That emphasizes the need to readdress the satellite coordination and the 3.6 to 3.7 GHz band availability issues.



Antenna System Comparison - Single Polarized

<u>Frequency</u>	<u>2.1-2.2 GHz</u>		<u>3.7-4.2 GHz</u>	<u>5.9-6.4 GHz</u>
Antenna Type	Std	Grid	Ultra Hi Perf.	Hi Perf.
Andrew Ant #	P8F-21C	GP8F-21A	UHX8-37H	HP8-59E
Dia (Ft)	8	8	8	8
FCC Cat	A	A	A	A
Gain (dBi)	32.5	32.2	37.4	41.5
BW (Deg)	3.8	4.0	2.4	1.4
F/B Ratio (dB)	40	39	66	66
List Price	\$2,810	\$2,880	\$12,370	\$8,665

<u>Transmission Line</u>	<u>7/8" Coax</u>	<u>Elpt W/G</u>	<u>Elpt W/G</u>
Type	LDF5P-50	EW37	EW52
Andrew #	LDF5P-50	EW37	EW52
Attn (dB/100')	2.0	0.9	1.2
List Price (\$/100 Ft)	\$685	\$2,180	\$1,760
Conn #	L45F	137DE	152DE
List Price (ea)	\$135	\$490	\$440

Typical System (1 ant, 150 ft transmission line, 2 connectors)

List	\$4,108	\$4,178	\$16,620	\$12,185
Gain (dB)	29.5	29.2	36.0	39.7
20 Log F Delta (dB)	0	0	-5.3	-9.1
Total Ant Sys Gain Delta (dB)	0	-0.6	7.7	11.3

API Comment (4/3;5/1): "... the effort to provide suitable replacement spectrum, with appropriate channelization, for displaced users represents an especially urgent and compelling need. Accordingly, API believes that the measures proposed by ANS should be elevated to a priority commensurate with that assigned to the emerging technologies proceeding."

ANS Comment: ANS concurs.

API Comment (5/3;6/1): "API continues to adhere to the view that the band 1850-2200 MHz is best suited for terrestrial fixed microwave services, as currently allocated. While API maintains this view, it nevertheless recognized that private microwave licensees may be forced to other frequency bands. Accordingly, API is supportive of both the underlying intent and specific measures proposed in ANS' Petition."

ANS Comment: ANS concurs.

API Comment (7/2): "... the sharing of microwave frequencies between common carrier and private radio services represents an approach which deserves further exploration."

ANS Comment: ANS concurs.

API Comment (8/1): "It is imperative that frequency bands below 6 GHz be made available to accommodate the long distance requirements of private operational-fixed microwave licensees."

ANS Comment: ANS concurs if this can be made practical. It is not at this time.

API Comments (9/2): "API is supportive of ANS' concept for rechannelizing the frequency bands below 11700 MHz to accommodate both low and medium density requirements."

ANS Comment: ANS concurs.

API Comments (10/1,2): "... API endorses ANS' recommended approach toward rechannelization of the band edges at 3700-3740 MHz and 4160-4200 MHz. The 4 GHz

band is potentially useful for reaccommodating displaced 2 GHz systems because the propagation characteristics of the two bands are very similar. ... the rechannelization ... represents a very modest proposal ..."

ANS Comment: ANS concurs.

API Comments (11/1): "On balance, API finds that the Petition is well-conceived."

ANS Comment: ANS concurs.

Centel Corporation (CC)

CC Comment (1/1): "... Centel generally supports Alcatel's proposal ..."

ANS Comment: ANS concurs.

CC Comment (3/1): "Centel concurs with Alcatel that meaningful evaluation of the Commission's emerging technologies proposal requires consideration of the feasibility of relocating 2 GHz users to frequencies above 3 GHz. Such feasibility, however, cannot adequately be assessed until technical and operational rules governing the relocated entities in these higher frequency bands are articulated and adopted."

ANS Comment: ANS concurs.

CC Comment (4/1,2): "Centel supports Alcatel's Petition as providing an appropriate framework for promptly and effectively pursuing this [operational rules revision] goal. Alcatel has attempted to use its practical knowledge of the existing operations of microwave licensees to develop a set of proposals that reflects real world needs. For this reason, Centel is in general agreement with the nature of the suggested rule modifications."

ANS Comment: ANS concurs.

CC Comment (5/1): "...there appears to be no reason why the relocation bands should not be made available to both private licensees and common carriers."

ANS Comment: ANS concurs.

CC Comment (5/2): "Although the requested rulemaking would clearly facilitate the relocation of existing 2 GHz licensees, this action should not deter the Commission from thoroughly examining means of sharing the 2 GHz band between new technology providers and existing users."

ANS Comment: ANS concurs. However, based on evidence to date, ANS does not believe sharing is practical from an interference point of view.

CC Comment (6/1,2): "... Centel urges the Commission to adopt Alcatel's petition. ... Alcatel has proposed an important first step ..."

ANS Comment: ANS concurs.

COMSEARCH (COM)

COM Comment(1/2): "Comsearch has been coordinating frequencies and engineering microwave paths, earth stations and mobile systems for over 15 years. ... Our experience in both the Operational Fixed (OF) and Common Carrier (CC) microwave bands makes us uniquely qualified to comment on the ANS Petition."

ANS Comment: ANS concurs.

COM Comment(2/2): "Comsearch applauds ANS' efforts at formulating specific technical and operational rules to facilitate the movement of displaced 2 GHz users. As stated in our previous response to 92-9 we encouraged the Commission to dissolve entirely the distinction between OF and CC for the purpose of band allocation and to initiate a rechannelization of fixed microwave bands above 3 GHz to support narrowband and wideband operation. We also pointed out the need to address within the industry the prompt development of associated interference criteria and coordination procedures. ANS' proposal addresses each of these issues."

ANS Comment: ANS concurs.

COM Comment (2/3;3/2): "ANS' Petition ... addresses spectral efficiency and shows a sensitivity to displaced users needs ... While ... it does not adequately address the impact on incumbent users in the bands to be rechannelized. For example, the ANS Proposal appears to overlook that a significant number of users in the 4, 6, and 11 GHz Common Carrier bands employ analog FM and video systems. ... additional study is warranted to determine the full effect of introducing new channel plans into the existing environment."

ANS Comment: ANS concurs. ANS recognizes the large number of existing analog microwave systems. Analog technology is mature. As TIA noted, current coordination procedures currently exist for both Part 21 and Part 94 analog applications. Most new point to point microwave systems are digital. We believe that is where the greatest need will be felt. We strongly support any efforts necessary to allow the existing (and new) analog users to operate properly in this evolving digital environment.

COM Comment (3/2): "... this proposal will be unpopular with earth station operators ... The Commission should recognize, however, that given the current difficulty of coordinating shared usage of spectrum with earth station operators (as outlined in the ANS Petition), the 4 GHz band is generally not a viable substitute for the reallocated 2 GHz spectrum. This is especially true for narrowband users where the time and expense of coordinating 4 GHz frequency usage is highly impractical. ... a similar interference situation exists [in the 11 GHz Common Carrier band] and needs to be addressed."

ANS Comment: ANS concurs. Our experience, however, is that 11 GHz paths are significantly easier to coordinate than are the 4 GHz paths. The 4 GHz band is far more critical than 11 GHz.

COM Comment (4/2): "... we support the notion that prior coordination ... should be required for all bands."

ANS Comment: ANS concurs.

COM Comment (4/3;5/2): "In concept, Comsearch supports ANS' proposed rule changes ... the ANS Petition addresses many of the unresolved issues of 92-9. ANS has paved the way for a successful migration of potentially displaced 2 GHz users. ... we feel the

petition has sufficient merit to warrant its introduction as Notice of Proposed Rulemaking."

ANS Comment: ANS concurs.

Communications Transmission, Inc. (CTI)

CTI Comment (SUMMARY/2): "The ANS petition is premature in that it seeks to establish rules applicable to the situation where 2 GHz microwave licensees are forced to migrate to higher frequency channels. However, such migration is not even contemplated by the FCC for at least a decade and even then 2 GHz licensee's could retain secondary status. "

ANS Comment: CTI fails to note that all new 2 GHz microwave users are secondary status at this time. Such status is generally unacceptable and requires the use of a band where (co-)primary status is available. Existing 2 GHz users may choose or find it necessary to move to other bands as emerging technology moves into 2 GHz. Most of the possible bands can not accommodate these potential users without rule changes. Therefore, the need is now.

CTI Comment (SUMMARY/2): "ANS proposed rules would through both (1) subchanneling and (2) eliminating the fence separating common carrier and private radio users create the very "balkanized and thus dysfunctional set of standards" the ANS petition states it seeks to avoid."

ANS Comment: CTI fails to support this claim.

CTI Comment (SUMMARY/2): "The [ANS proposed] rules would create a heavy burden on both applicants and the FCC. "

ANS Comment: CTI fails to support this claim. Note that Comsearch, the commercial organization responsible for performing the tasks CTI mentions, went on record supporting the ANS position in this matter.

CTI Comment (SUMMARY/2): "The rules would create a nightmare of interference and other technical problems."

ANS Comment: ANS is confused as to what "other technical problems" CTI envisions. ANS recommends to CTI a careful reading of the Comsearch comments. CTI fails to support their claim as stated.

CTI Comment (2/2): "ANS ... - a major manufacturer of microwave radio equipment - ... has an obvious private interest in maximizing the number of microwave radios sold. ... the issue before the FCC is not whether ANS' private interest should be fostered, but rather would ANS' proposal promote the public interest."

ANS Comment: ANS clearly has an interest in the sale of microwave radios. However, as the largest manufacturer of microwave equipment world wide, we do not need to take such a self-serving approach as CTI infers. We have structured the subject proposal in such a way as to address industry issues, not foster our company position. CTI has failed to mention even one issue ANS has proposed which would benefit ANS over any other manufacturer.

CTI Comment (2/5): "If there were to be filed no meaningful supportive comments filed (sic) by 2 GHz users then that fact alone would support summary rejection of ANS' petition."

ANS Comment: ANS concurs.

CTI Comment (3/2): "... nowhere in ANS' petition is there to be found any reference to the rules prescribing efficient utilization of the common carrier microwave spectrum set forth in 47 C.F.R. 21.710 (c)."

ANS Comment: To the contrary, 47 C.F.R. 21.710 (c), "Limitations on path lengths and channel loading," is addressed in paragraph 4.5, pages 54 and 55, paragraph 4.7.1, page 63, and paragraph 4.7.2, page 65, of the ANS proposal.

CTI Comment (3/2): "Thus, ANS' rechannalization proposal will pit as potential comparative hearing adversaries common carrier applicants who must show maximum