

APPLICATION FOR NEW OR MODIFIED RADIO STATION AUTHORIZATION UNDER PART 5
OF FCC RULES - EXPERIMENTAL RADIO SERVICE (OTHER THAN BROADCAST)

<p>1. Applicant's Name and Post Office address (Street address, city, state, and ZIP Code. See Instruction No. 4)</p> <p><i>Dr. T.S. Rappaport Mobile & Portable Radio Research Group, 840 University City Blvd, Virginia Tech P.O. Box West Commons, Suite 1 Blacksburg VA 24061-0350</i></p>	<p style="text-align: center;">DO NOT WRITE IN THIS BLOCK</p> <p>File No.</p> <p style="text-align: center;"><i>4721-EX-APR-95 (dup) 4808-EX-PL/95 4821 PL 95</i></p>
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<p>2(a). Application for (check only one box)</p> <p><input type="checkbox"/> New station <input checked="" type="checkbox"/> Modification of existing authorization</p>	<p>2(b). For Modification indicate below: <i>1CE2XLB</i></p> <p>File No: _____ Call Sign: KF2XST</p>
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3. Application for modification indicate whether change is an addition or replacement of (check all that apply)

FREQUENCY EMISSION POWER LOCATION

OTHER PARTICULARS (describe below or in attached EXHIBIT No. _____)

4. Particulars of Operation (see instruction below)

Frequency (state whether kHz or MHz)	POWER			EMISSION	MODULATING SIGNAL	NECESSARY BANDWIDTH (kHz)
	(B)	(C)	(D)			
820-950	10 W	100 W	Peak	See 1 & 2, Below		
1800-2500	10 W	100 W	Peak	"		
3500-4200	10 W	100 W	Peak	"		
5700-6500	10 W	100 W	Peak	"		
5800-9200	10 W	100 W	Peak	"		
17.8-18.5 GHz	10 W	100 W	Peak	"		
26-27.99 GHz	10 W	100 W	Peak	"		

- (A) List each frequency or frequency band separately. (If more space is required, attach as EXHIBIT No. _____)
- (B) Insert maximum R.F. output power at the transmitter terminals. Specify units.
- (C) Insert maximum effective radiated power from the antenna (If pulsed emission, specify peak power).
- (D) Insert "MEAN" or "PEAK" (See definitions in Part 5).
- (E) List each type of emission separately for each frequency. (See Section 2.201 of FCC Rules.)
- (F) Insert as appropriate for the type of modulation:
- (1) the maximum speed of keying in bauds;
 - (2) maximum audio modulating frequency;
 - (3) frequency deviation of carrier;
 - (4) pulse duration and repetition rate.
- For complex emissions, describe in detail in the space provided below.
- (G) Describe how the necessary bandwidth was determined in space provided below.

1. Spread spectrum, chip rate = 240 MHz max., Bandwidth = 480 MHz max (240 MHz)
2. FM: 50 kHz Bandwidth max.

5(a). Proposed location of transmitter and transmitting antenna (check only one box)

FIXED/BASE MOBILE BASE AND MOBILE

5(b). If permanently located at a fixed location, give below:

State _____ County _____ City or Town _____

Number and street (or other indication of location) _____

5(d). If mobile, describe the exact area of operation

Virginia Tech Campus
Pointe West Commons (MPRG Office/Labs)
Rosslyn, VA area, Roanoke, VA area
Washington DC area.

5(c). Enter geographical coordinates exact to the nearest second

North Latitude _____ West Longitude _____
0 " 0 "

5(e). Enter geographical coordinates of the approximate center of proposed area of operation (mobile applications)

North Latitude _____ West Longitude _____
37° 37' 48" 80° 26' 24"

(Lat)/Long For VA Tech Campus and PWC

6. Is a directional antenna (other than radar) used?

If "YES", give the following information: YES NO

(a) Width of beam in degrees at the half-power point _____ SEE EXHIBIT No. 1

(b) Orientation in horizontal plane _____ (c) Orientation in vertical plane _____

7. Is this authorization to be used for fulfilling the requirement of a government contract with an agency of the United States Government?

YES NO

If "YES", attach as EXHIBIT No. _____ a narrative statement describing the government project, agency and contact number. *(see attached)*

8. Is this authorization to be used for the exclusive purpose of developing radio equipment for export to be employed by stations under the jurisdiction of a foreign government?

YES NO

If "YES", attach as EXHIBIT No. _____ the following information: Provide the contract number and the name of the foreign government concerned.

9. Is this authorization to be used for providing communications essential to a research project? (The radio communication is not the objective of the research project).

YES NO

If "YES", attach as EXHIBIT No. _____ a narrative statement providing the following information:

- (a) A description of the nature of the research project being conducted.
- (b) A showing that the communications facilities requested are necessary for the research project involved.
- (c) A showing that existing communications facilities are inadequate.

10. If all the answers to Items 7, 8, and 9, are "NO", attach as EXHIBIT No. _____ a narrative statement describing in detail the following:

- (a) The complete program of research and experimentation proposed including description of equipment and theory of operation.
- (b) The specific objectives sought to be accomplished.
- (c) How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion, or utilization of the radio art, or is along line not already investigated.

11(a). Give an estimate of the length of time that will be required to complete the program of experimentation proposed in this application. *2 years*

(b) If less than 2 years, give the length of time in months that the authorization requested in this application will be required.

12. Would a Commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact?

YES NO

If you answer "YES", submit an Environmental Assessment required by Section 1.1311.

13. List below transmitting equipment to be installed (if experimental, so state):

MANUFACTURER	TYPE	NO. OF UNITS
HP 8303DA	Synthesizer	} Spread Spectrum system
FUJITSU	10W Power Amp	
HP 83L03DA	FM System	

14. Is the equipment listed in Item 13 capable of station identification pursuant to Section 5.152? YES NO
15. Will the antenna extend more than 6 meters above the ground, or if mounted on an existing building, will it extend more than 6 meters above the building, or will the proposed antenna be mounted on an existing structure other than a building? YES NO
- If "YES", give the following (see instruction 9):
- (a) Overall height above ground to tip of antenna is _____ meters.
- (b) Elevation of ground at antenna site above mean sea level is _____ meters.
- (c) Distance to nearest aircraft landing area is _____ kilometers.
- (d) List any natural formations of existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft and thereby minimize the aeronautical hazard of the antenna.
- (e) Submit as EXHIBIT No. _____ a vertical profile sketch of total structure including supporting building, if any, giving heights in meters above ground for all significant features. Clearly indicate existing portion, noting particulars of aviation obstruction lighting already available.

16. Applicant is: (check only one box)

INDIVIDUAL ASSOCIATION PARTNERSHIP CORPORATION

OTHER (describe below)

Research University - Virginia Tech

17. Is applicant a foreign government or a representative of a foreign government? YES NO
18. Has applicant or any party to this application had any FCC station license or permit revoked or had any application for permit, license or renewal denied by this Commission? YES NO
- If "YES", attach as EXHIBIT No. _____ a statement giving call sign of license or permit revoked and relate circumstances.

19. Will applicant be owner and operator of the station? YES NO

20. Give name, title, and telephone number (include area code) of person who can best handle inquiries pertaining to this application.

Dr. T.S. Ranaivohant, Professor (703) 231-2971

21. APPLICANT ANTI-DRUG ABUSE CERTIFICATION:

By checking "YES", the applicant certifies that, in the case of an individual applicant, he or she is not subject to denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti- Drug Abuse Act of 1988, 21 U.S.C. 862, or, in the case of a non- individual applicant (e.g., corporation, partnership, or other unincorporated association), no party to the applicant is subject to a denial of federal benefits, that includes FCC benefits, pursuant to that section. For the definition of "party" for these purposes, see 47 CFR 1.2002(b). YES NO

22. List below all exhibits in numerical sequence and the item number of form requiring the exhibit identified.

EXHIBIT NUMBER	ITEM NO. OF FORM	EXHIBIT NUMBER	ITEM NO. OF FORM	EXHIBIT NUMBER	ITEM NO. OF FORM
1	8				

23. CERTIFICATION:

Attention: Read this certification carefully before signing this application.

THE APPLICANT CERTIFIES THAT:

- (a) Copies of FCC Rule Parts 2 and 5 are on hand; and
- (b) Adequate financial appropriations have been made to carry on the program of experimentation which will be conducted by qualified personnel; and
- (c) All operations will be on an experimental basis in accordance with Part 5 and other applicable rules, and will be conducted in such a manner and at such a time as to preclude harmful interference to any authorized station; and
- (d) Grant of the authorization requested herein will not be construed as a finding on the part of the Commission:
 - (1) that the frequencies and other technical parameters specified in the authorization are the best suited for the proposed program of experimentation, and
 - (2) that the applicant will be authorized to operate on any basis other than experimental, and
 - (3) that the Commission is obligated by the results of the experimental program to make provision in its rules including its table of frequency allocations for applicant's type of operation on a regularly licensed basis.

APPLICANT CERTIFIES FURTHER THAT:

- (e) All the statements in the application and attached exhibits are true, complete and correct to the best of the applicant's knowledge; and
- (f) The applicant is willing to finance and conduct the experimental program with full knowledge and understanding of the above limitations; and
- (g) The applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the USA.

Signed and dated this 10th day of April, 19 95

Name of Applicant Dr. T.S. Rappaport
(must correspond with name given on page 1)

By Theodore S Rappaport [Signature]
(print) (signature)

Title Professor

Check appropriate classification:

- Individual applicant Member of applicant partnership
- Authorized employee Office of applicant corporation or association

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18 Section 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, Section 312(a)(1), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

NOTIFICATION TO INDIVIDUALS UNDER PRIVACY ACT OF 1974 AND THE PAPERWORK REDUCTION ACT OF 1980

Information requested through this form is authorized by the Communications Act of 1934, as amended, and specifically by Section 308 therein. The information will be used by Federal Communications Commission staff to determine eligibility for issuing authorizations in the use of the frequency spectrum and to effect the provisions of regulatory responsibilities rendered the Commission by the Act. Information requested by this form will be available to the public unless otherwise requested pursuant to 47 CFR 0.459 of the FCC Rules and Regulations. Your response is required to obtain this authorization.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.