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TAIYO MUSEN CO., LTD.

March 29, 2000

Mr. Joe Dichoso
Application Processing Branch
FEDERAL COMMUNICATIONS COMMISSION
7435 Oakland Mills Road
Columbia, Maryland 21046

Subject: FCC Certification for VHF Automatic Digital Direction Finder, TD-L1620A

Correspondence Reference Number: 11339
731 Confirmation Number: EA95685
FCC ID: BAA9JKTD-L1620A

Dear Mr. Dichoso,

This letter and accompanying documentation represents our product, VHF Automatic Digital Direction Finder, TD-L1620A for FCC Certification. The purpose of this submission is to show compliance with the new rules for scanning receivers, Part 15.121.

In reply to your email of 01/05/2000

1) A new photo has been uploaded to the photo exhibit file.

2) You requested (a)"a statement that assesses the vulnerability of the scanning receiver to possible modifications and describes the design features that prevent modification of the scanning receiver to receive Cellular transmissions", and (b) "a statement that describes the design steps taken to make tuning, control and filtering circuitry inaccessible" with references to Part 15.121(a)(1) & (2).

In reply to both of the above requests, TAIYO MUSEN Co., LTD. designed the circuitry of TD-L1620A to meet the specification of TD-L1620A, that is, a high quality commercial receiver with Direction Finding functions that are limited for operation only in the frequency range between 110 MHz and 170 MHz. To use the PCBs contained within the TD-L1620A outside of this frequency range would require the reconstruction of circuit board themselves would have to be altered significantly. Especially, PCBs that are related to the receiving function, the circuit boards themselves would need to be reconstructed which with out technical skill and expertise would be *likely to render the receiver inoperative.* Furthermore, the receiving function of TD-L1620A is controlled by software in P-ROM. This software is programmed to meet the specification of TD-L1620A, that is, operating in the frequency range, 110 MHz - 170 MHz. If someone try to use this model to receive other frequency outside of 110 - 170 MHz, the software of P-ROM would have to be written and to be re-programmed. It is not possible for TD-L1620A to receive other frequencies just by simply removing substituting or by adding some parts, such

as diodes, capacitors, or resistors. The user has no access to any parts of the receiver circuitry with out using tools to gain access by disassembly and removing covers.

For these 2 features, receiving function is controlled by software in P-ROM, exclusive construction of circuit board only for TD-L1620A, it is not possible to use TD-L1620A to receive any frequency except for the frequency range declared specification, 110 MHz - 170 MHz.

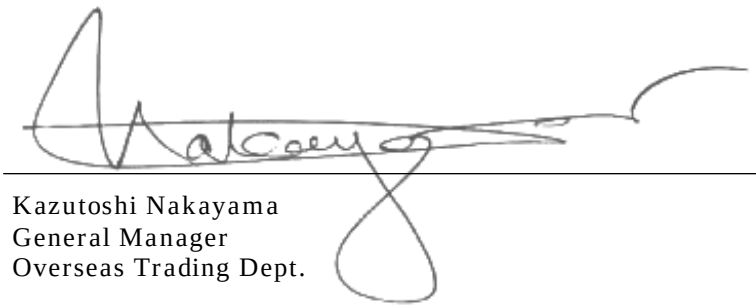
We believe that considerable engineering knowledge, not your typical user, and great deal of effort reconstructing PCBs would be required to even conceivably alter the receive frequency band to that of the Cellular frequencies under Part 22. Therefore we feel that we comply with the intentions of Part 15.121 (1) Be incapable of operating (tuning), or *readily being altered by the user* to operate, within the frequency bands allocated to the Cellular Radiotelephone Service in Part 22 of this chapter (cellular telephone bands).

2) (c) Spectrum Technology, Inc. is providing an attachment with the test procedures and results of the 38-decibel image frequency rejection ratio with this submission. The accompanying documentation describes the test setup, the test procedures, and the test results. These results clearly demonstrate that the 38-decibel requirements for image rejection have been met.

2)(d) A new label with the required Part 15.121(f) wording follows this letter.

We thank you for your consideration in this matter. We trust that the above details and the referenced exhibit will satisfy the requirements for compliance with Part 15.121 of FCC rules. Please contact Mr. Munro or me if you have any questions or require any additional information.

Best regards



Kazutoshi Nakayama
General Manager
Overseas Trading Dept.

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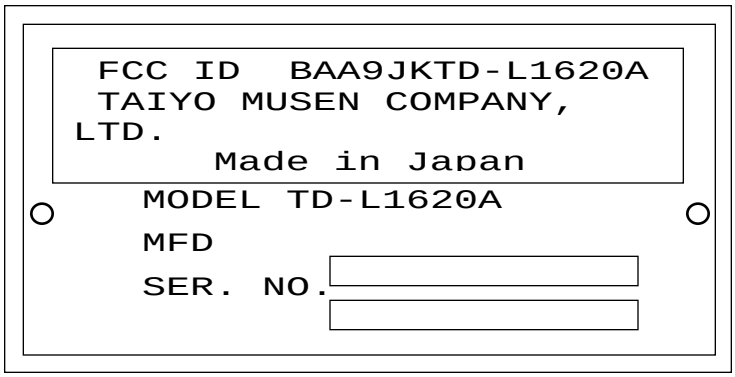

This device complies with Part 15 of the FCC rules.
Option is subject to the following conditions
(1) this device may not cause harmful interference, and
(2) this device must accept any interference

WARNING :
MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR
RADIO TELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

Cellular Image Rejection

Required by Part 15.121(b).

Measurements were made to measure the spurious image rejection for cellular frequencies of the TD-L1620A scanning receiver.

A signal generator was set up with 1 kHz modulation and +/- 3 kHz deviation and set to one of the six test frequencies. The signal generator output was fed to the receiver input at one of the test frequencies while the complete receiver frequency range was scanned. The receiver "Squelch Threshold" was measured at -5 dBuV. The signal generator output was set to 60 dBuV based on (38 dB(FCC limit)+ 27(added margin) = 65 dB

The TD-L1620A can only continuously scan increments of +/- 500kHz of the Fo entered stepping every 5 kHz over this range. The manual refers to this function as Search. The term Scan in the product manual refers to Scanning preprogrammed channels in memory. The receiver was manually programmed One channel at a time every 1 MHz from 110.00 to 170.00 MHz covering the band. At each entered frequency the receiver would scan +/- 500 kHz of the programmed center frequency in 5 kHz steps and then the next channel would be entered and the step repeated. The Hold button was depressed to lock the receiver on any spurious signal it might receive while scanning. This procedure was followed for each of the test frequencies while the receiver scanned over it's band of operation 1 MHz at a time.

A) Initial Screening

A-1) Power EUT adjusted speaker volume adjusted squelch
A-2) Set the signal generator for an in band channel mid band receiving range at 140.00 MHz
A-3 Programmed Frequency of 140.00 MHz into EUT
A-4) Measured the receiver "Squelch Threshold" at –5 dBuV
A-5) Set the signal generator for one of the six test frequencies. Set the RF output level of the signal generator to 60 dBuV. The 60 dBuV level corresponds approximately to 65 dB above the "Squelch Threshold" sensitivity measured at –5 dBuV. This would be approximately 27 dB above the FCC Limit (65-38 = 27dB).
A-6) Enable EUT and program frequencies as described above 1 MHz at a time.
A-7) List detected frequencies. ***None were detected.***
A-7) Repeat for remaining test frequencies.

Note:No Frequencies were detected however had frequencies been detected we would have proceeded as follows:

b) Measuring the Image Rejection Ratio

B-1) Based on the results of the Initial screening, both the EUT and signal generator shall be set to each frequency the receiver detected (A7 above). Connect a resistive termination to the receiver audio output and set the squelch control for open squelch.
B-2) Adjust and record the RF output level of the signal generator to obtain a 12 dB SINAD on the EUT. The signal generator output level at which the 12 dB SINAD is achieved is the receiving sensitivity of the EUT and not tight squelch sensitivity.
B-3) Adjust the frequency of the signal generator to the cellular test channel associated with signals detected in A-7. Adjust and record the RF output of the signal generator to obtain a 12 dB SINAD on the EUT.
B-4) The image Rejection Ration is obtained as the difference between steps B-2) and B-3)

Test Data

Limit: All must be 38 dB below the limit

Cellular Channel Test Frequencies In MHz	Frequency in MHz Image/Spurious detected while scanning	Image Rejection Ratio in dB
824.010	None	
836.520	None	
849.000	None	
869.010	None	
881.520	None	
894.000	None	

Block Diagram