

hopping modulation to comply with the UWB definition and bandwidth requirements, provided the measurements are averaged over a 10 millisecond period. Siemens VDO also requested that vehicular radar systems be permitted to comply with the RMS average emission limits based on averaging over a 10 millisecond time period. The Commission agrees that public comment should be obtained on Siemens VDO's proposal. This proposal is limited solely to vehicle radar systems operating in the 22–29 GHz band. Further, no changes are proposed to the emission limits applied to UWB vehicular radar systems. Rather, we are proposing new measurement techniques that may accommodate frequency hopping systems as UWB vehicular radars. We propose to permit frequency hopping systems to operate under the provisions for UWB vehicular radar systems provided the minimum UWB bandwidth is achieved in no greater than 10 milliseconds and the transmitter complies with all other technical standards for UWB operation in the 22–29 GHz band. Compliance with the average emission limit would be based on measurement using a one megahertz resolution bandwidth (RBW), a video bandwidth equal to or greater than the RBW, an RMS detector function, and a maximum 10 millisecond averaging time. The peak measurement would be required to be performed as currently specified in the rules using a peak hold detector and shall be performed over a sufficiently long period that the peak levels being measured cease increasing.

4. Comments are requested on whether the higher instantaneous power delivered by a frequency hopping system would cause harmful interference to these systems. Comments also are requested on the proposed measurement procedures. For example, should the peak measurement be performed with the hopping sequence stopped; should a different averaging time be employed; should the averaging time be based on the number of hops and the dwell time of the hops; and should a maximum time be specified within which all hopping channels must be used? Comments also are sought on the measurement procedure that would be used to demonstrate compliance with the UWB bandwidth limit. Siemens requests that the bandwidth be measured based on two different possible procedures described in the appendix to its petition. Both of the procedures suggested by Siemens are performed with the frequency hopping system active. However, we are concerned that those procedures may

not indicate the actual bandwidth employed by the system and the corresponding distribution of RF energy, depending on various technical parameters of the actual hopping system, *e.g.*, the distribution of the hopping channels, the dwell times for the hops, the number of hopping channels, the separation of the channels, the bandwidth of a single hopping channel, the number of hops in a specified time period, etc. Thus, we propose that the bandwidth be measured by first measuring the -10 dB bandwidth of a single hopping channel based on use of a peak hold detector and a 1 MHz resolution bandwidth, determining how many non-overlapping hops occur within a 10 millisecond period and multiplying the two values. Comments are requested on this proposed measurement procedure as well as the procedures described by the petitioner. Comments also are requested on any interference concerns that arise from this new modulation type or its method of measurement. The comments should address specific interference concerns such as possible interference to Amateur Radio Service operations, including amateur satellite systems, to EESS operation, and to police radar operations and should include a technical justification. Comments are requested on whether the compliance measurement procedure proposed by the petitioner is applicable only to systems that are similar to its vehicular radar system or if they are applicable to vehicular radar systems in general. Do the various system parameters need to be limited to a specific range of values for the measurements to be meaningful? If so, what is the range of parameters over which the limits are to be applied? Can a general measurement procedure be developed that is applicable for a full range of system parameters? If so, what is this measurement procedure? The measurement procedure proposed by the petitioner involves a power measurement over a 10 millisecond averaging time period. Comments are requested as to whether these time averaged measurements should be made using a spectrum analyzer in a swept frequency mode or should the spectrum analyzer be stepped across the frequency band of interest in discrete steps with a defined dwell time at each step. Comments also are requested on the adequacy of the measurement results for the purpose of quantifying the impact to systems that could receive interference from the frequency hopping vehicular radar systems. Comments also are requested on any limits that should be applied to the number of hopping

channels, the maximum occupancy time permitted for a hopping channel during any full hopping sequence, the maximum time it takes to complete a full hopping sequence, and any other pertinent technical characteristics.

5. *Proposed changes to the non-UWB standards to accommodate wideband Part 15 transmitters.* The peak emission limit specified in 47 CFR 15.35(b) was established based on the operation of narrowband transmission systems and may unfairly penalize some wideband operations. A limit similar to that adopted in the R&O for UWB systems is proposed to eliminate the bias under the part 15 regulations towards narrowband operation. Under the UWB regulations, the EIRP limit on peak emissions is 0 dBm based on the use of a 50 MHz resolution bandwidth (RBW). A lower RBW may be employed, down to as low as 1 MHz, provided the peak limit is similarly reduced to the level $20 \log(\text{RBW}/50)$ dBm EIRP, where RBW is the resolution bandwidth in megahertz. UWB systems also must operate with a -10 dB fractional bandwidth of at least 0.2 or have a -10 dB bandwidth of at least 500 MHz, whichever is less. Below 2.5 GHz, the fractional bandwidth is dominant and above 2.5 GHz the 500 MHz bandwidth limit dominates. Because we appear to be dealing primarily with systems operating above 2.5 GHz, we will employ the 500 MHz minimum UWB bandwidth as a guideline for simplicity. Thus, the maximum resolution bandwidth that is used to measure peak limit for UWB emitters is one-tenth of the minimum UWB bandwidth. Accordingly, it appears that a peak limit, equivalent to the UWB standards, can be established for conventional part 15 devices based on a limit of $20 \log(\text{RBW}/50)$ dBm EIRP where RBW is the resolution bandwidth of the measurement instrument in megahertz and where RBW must not be greater than one-tenth of the -10 dB bandwidth of the emission being measured.

6. We propose to amend 47 CFR 15.35(b) to clarify the existing requirements as requested by MSSSI, and to provide an alternative standard for peak emission limits for wideband Part 15 transmission systems. The specific proposed changes to this rule paragraph are shown in the rules section at the end of this summary. Comments are requested on this proposal. Comments also are requested on the alternative proposal presented by MSSSI, namely should the rules be amended to permit devices operating above 1000 MHz under the part 15 general emission standards in 47 CFR 15.209 to comply with a peak emission limit of 5000 uV/