Claims

1. A scanning nonlinear junction detection method, used to detect electronic apparatus containing nonlinear junctions, comprising following steps:

S1. dividing a detection region into multiple sub-regions, transmitting, by a transmission unit, signals to all the sub-regions one by one;

S2. receiving, by a reception unit, signals fed back from the sub-regions, obtaining amplitude of harmonic components measured from all the sub-regions according to the signals fed back; if a harmonic component of a certain sub-region exceeds a preset value, determining that a nonlinear junction is present in the sub-region.;

the transmission unit is an antenna array including multiple transmission antennas, the transmission antennas are arranged in multiple rows and multiple columns.

2. The scanning nonlinear junction detection method according to claim 1, characterized in that in step S1, the sub-regions are arranged in m rows and n columns, where $m>1$, $n>1$.

3. The scanning nonlinear junction detection method according to claim 2, characterized in that an effective space angle of the transmission unit includes a horizontal angle θ, a pitch angle φ; a space angle coordinate range of the detection region is ($-0.5n*\theta$ to $0.5n*\theta$, $-0.5m*\varphi$ to

$0.5m*\varphi$).

4. The scanning nonlinear junction detection method according to claim 3, characterized in that a space angle coordinate range of each of the sub-regions is [$a*\theta$ to $(a+1)*\theta$, $(b+1)*\varphi$ to $b*\varphi$], where $-0.5n \leq a \leq 0.5n-1$, $-m/2 \leq b \leq 0.5m-1$.

5. The scanning nonlinear junction detection method according to any one of claims 1-4, characterized in that in step S1, wherein relationships between electrical signal phases of the transmission antennas are controlled to change a beam angle of the transmission unit, so the transmission unit scans the sub-regions one by one.

6. The scanning nonlinear junction detection method according to claim 5, characterized in that a main lobe direction when the transmission unit scans each of the sub-regions directs to a center point of each of the sub-regions.

7. The scanning nonlinear junction detection method according to claim 1, further comprising step S3: setting the sub-region in which the nonlinear junction is located as a new detection region, and repeating steps S1 and S2, until a precise position of the nonlinear junction is found.

8. A scanning nonlinear junction detection device, using the scanning nonlinear junction detection method of any one of claims 1-7, comprising: a transmission unit used to transmit detection signals to all

sub-regions of a detection region, a reception unit used to receive signals fed back from the sub-regions, a detection signal control unit used to control detection signals from the transmission unit, a reception data processing unit used to obtain amplitude of harmonic components obtained from the sub-regions according to the signals fed back, and a control and display unit used to control and display operating conditions and results of the detection signal control unit and the reception data processing unit.

9. The scanning nonlinear junction detection device according to claim 8, characterized in that the transmission unit comprises multiple transmission antennas which are arranged in multiple rows and multiple columns.