10.4.1 Spectrum sensing characteristics

When the spectrum sensing is activated, the tab “Interfering link transmitter to victim link transmitter path” will become editable (#1 of Figure 231) and you can set the input parameters of the CR algorithm (#2). Note that the frequency of the interferer is disabled (#3). The purpose of the CR algorithm in SEAMCAT automatically calculates the number of possible channels the WSD will operate in based on the operating frequency range of the victim system and its victim link receiver bandwidth (#4).

You can not simulate “OFDMA/CDMA” as a victim and have a CR interferer. The implementation only considers generic versus generic

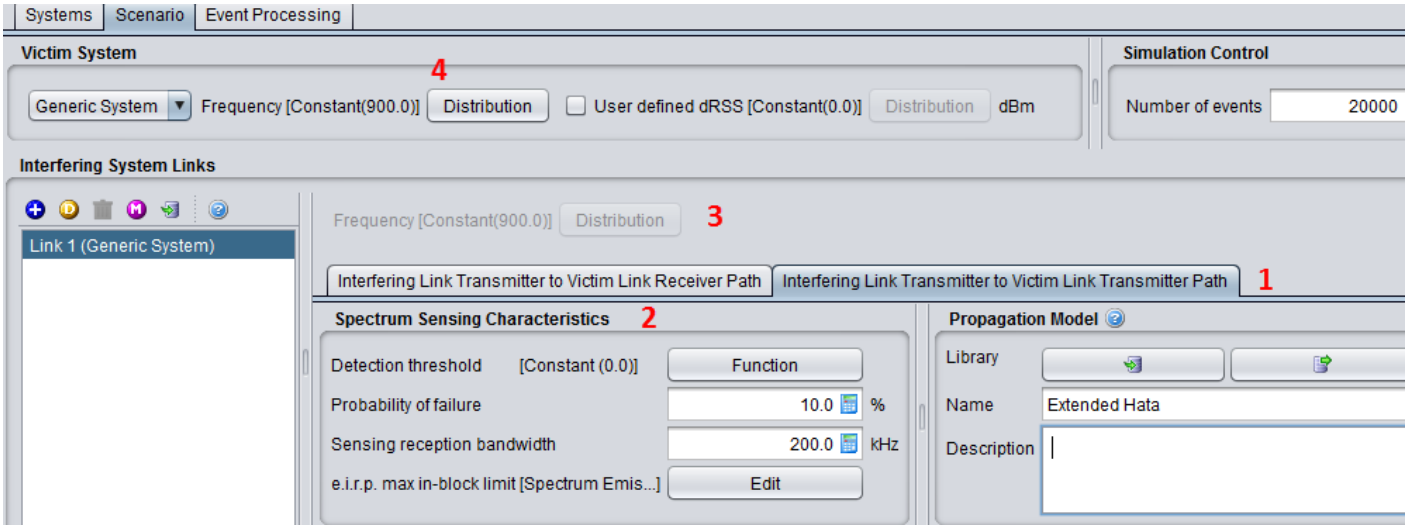

Figure 231: Example of the Cognitive Radio GUI selection - Input settings

When an interferer is set as a CR, the emission characteristics (i.e. transmitted power, emission mask and unwanted emission mask) have to be entered (see Section 6.3) and the spectrum sensing characteristics presented in Figure 232 have to be entered.

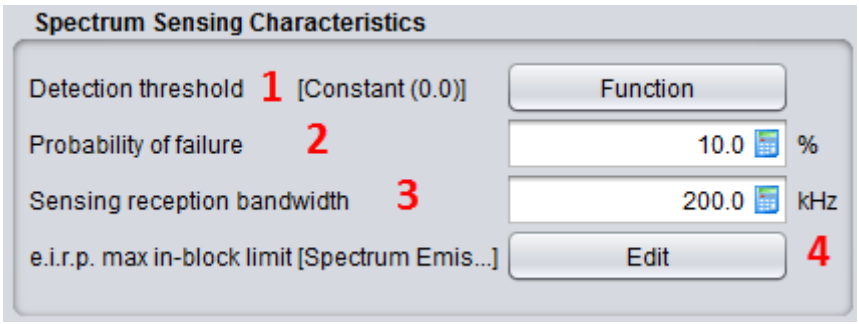

Figure 232: Setting the spectrum sensing characteristics in the Victim link transmitter to Interefering link transmitter Path

Table 48: Spectrum sensing characteristics

Description	Symbol	Type	Unit	Comments
Detection threshold:		Function (X,Y) or Scalar (offset)	dBm	Define the detection threshold for the spectrum sensing in a offset function. Either a constant value (i.e. flat over the spectrum) or as a user defined function as shown in #1 of Figure 232 illustrates the setting of the detection threshold (a) as a constant or (b) as a function. Figure 233 (c) illustrates where the offset refers to. Note the user-defined function is defined as offset with the victim frequency being the reference. The offset 0 is refered to the Victim frequency.
Probability of failure:		Scalar	%	You can select this function as shown in **#2** of Figure 232. The probability of failure is given in percentage. In the illustration below a probability of failure of 10% is entered. Positive value from 0 to 100.
Sensing reception bandwidth		Scalar	kHz	Define the bandwidth of the sensing device (i.e. ILT). It is used in the calculation of the sRSS: This is a constant value given in kHz as shown in **#3** of Figure 232.

e.i.r.p. max In-block limit		Function (X,Y) (offset)	Offset (MHz)/ Mask (dBm)/ Ref.BW (kHz)	Define the E.I.R.Pmax In-block limit to protect the victim system as an offset function where the offset 0 is refered to the selected interfering frequency. The outcome of the algorithm set the allowed power at the ILT. It has the following components [offset, Mask, Ref.BW] where Offset in MHz is equivalent to the " DTT in use at" columns, Mask in dBm is the "In-block CR $EIRP_{max}$ limit" and Ref. BW is the bandwidth of the DTT as shown in **#4** of Figure 232. Note that SEAMCAT will normalise any value entered in the table to 1 MHz and convert back to the victim bandwidth.

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