tsbin1.0.pdf – Binary Frequency and Data

4/1/2010

To be entered:
- Binary Encoding applies only for Touchstone 2.1 files and above - add statement

Questions - can we remove the [End] restriction? The [Noise Data] restriction?
- Binary encoding is illegal when [Noise Data] exists (which is limited to 2-ports)
- The [End] statement is removed before the binary encoding is done

- Perhaps % BINARY can just become [Binary] as a keyword? - changed
- In Touchstone 2.1 and above % BINARY is positioned as the next line
after [Network Data] - statement to be added.

The line indicating the beginning of binary frequency consists of a keyword [Binary], and a three-character string (T1, T2, and T3).

[Binary] <T1><T2><T3>

The first token, T1, indicates precision of the frequency.
The second token, T2, indicates precision of the data.

Both T1 and T2 tokens use the same characters to designate precision:

F : single precision (float) frequency and data
D : double precision frequency and data

The third token, T3, indicates byte order.

B : big-endian (most significant byte first)
L : little-endian (least significant byte first)

Example #:

% BINARY DFB

indicates double-precision frequency and float data in big-endian order.

The [Binary] line can be followed by a \n, \r or a \r\n to indicate newline. Immediately following the newline sequence is one pad 0 byte which indicates the following data is binary format numbers.

Example #:

```
[Version]  2.1
# MHZ S RI R 5.00e+001
[Number of Ports]  4
[Number of Frequencies]  1
! FREQ S11 S12 S13 S14
! S21 S22 S23 S24
! S31 S32 S33 S34
! S41 S42 S43 S44
!
[Network Data]
! Binary Encoded data [Binary]  DFB
[Binary]  DFB
1.000000e+001
 2.063717e-002 -1.480975e-002  9.540607e-001 -1.925392e-001
-2.306818e-003  7.529011e-003 -5.623072e-003 -1.259668e-003
 9.540620e-001 -1.925394e-001  2.063725e-002 -1.480983e-002
-5.622481e-003 -1.259875e-003 -2.307512e-003  7.529252e-003
-2.306700e-003  7.528990e-003 -5.622914e-003 -1.259719e-003
 2.063738e-002 -1.480973e-002  9.540608e-001 -1.925388e-001
-5.622897e-003 -1.259744e-003 -2.307649e-003  7.529295e-003
 9.540621e-001 -1.925393e-001  2.063837e-002 -1.481020e-002
[End]

[Version]  2.1
# MHZ S RI R 5.00e+001
[Number of Ports]  4
[Number of Frequencies]  1
! FREQ S11 S12 S13 S14
! S21 S22 S23 S24
! S31 S32 S33 S34
! S41 S42 S43 S44
!
[Network Data]
! Binary Encoded data [Binary]  DFB

[insert binary frequency and data in hex format for example]
```