

```

Xi = Si:Ei:Mi // Mi(22:0)
Ye = 1/sqrt(Xi) = Se:Ee:Me // Me(22:0)

Se = 0;
if(Ei == 0) // +/-zero or Denorm input
{
    Ee = 255; // Generate infinity
    Me = 0;
    LVF = 1;
}
else if((Si == 0) & (Ei == 255)) // positive NaN or Infinity input
{
    Ee = 0; // Generate zero
    Me = 0;
    LUF = 1;
}
else if(Si == 1) // negative input, but not -zero or -Denorm
{
    Ee = 0; // Generate zero
    Me = 0;
    LVF = 1;
}
else
{
    Me(15:0) = 0;
    if(Ei == even)
    {
        Ee = 190 - (Ei >> 1);
        Me(22:16) = ROMtableEven[Mi(22:16)];
    }
    else // Ei == odd
    {
        if(Mi(22:16) == 0)
        {
            Ee = 190 - (Ei >> 1);
            Me(22:16) = 0;
        }
        else
        {
            Ee = 189 - (Ei >> 1);
            Me(22:16) = ROMtableOdd[Mi(22:16)];
        }
    }
}
}
}

```

Notes: The EISQRTF32 operation will not generate a -ve, De-Norm or NaN value.

EISQRTF32 Table: Ei == even

| Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 0x00 | 0x35 | 0x20 | 0x22 | 0x40 | 0x14 | 0x60 | 0x09 |
| 0x01 | 0x34 | 0x21 | 0x21 | 0x41 | 0x13 | 0x61 | 0x09 |
| 0x02 | 0x34 | 0x22 | 0x21 | 0x42 | 0x13 | 0x62 | 0x08 |
| 0x03 | 0x33 | 0x23 | 0x20 | 0x43 | 0x13 | 0x63 | 0x08 |
| 0x04 | 0x32 | 0x24 | 0x20 | 0x44 | 0x12 | 0x64 | 0x08 |
| 0x05 | 0x32 | 0x25 | 0x1F | 0x45 | 0x12 | 0x65 | 0x07 |
| 0x06 | 0x31 | 0x26 | 0x1F | 0x46 | 0x12 | 0x66 | 0x07 |
| 0x07 | 0x30 | 0x27 | 0x1E | 0x47 | 0x11 | 0x67 | 0x07 |
| 0x08 | 0x30 | 0x28 | 0x1E | 0x48 | 0x11 | 0x68 | 0x06 |
| 0x09 | 0x2F | 0x29 | 0x1E | 0x49 | 0x10 | 0x69 | 0x06 |
| 0x0A | 0x2E | 0x2A | 0x1D | 0x4A | 0x10 | 0x6A | 0x06 |
| 0x0B | 0x2E | 0x2B | 0x1D | 0x4B | 0x10 | 0x6B | 0x06 |
| 0x0C | 0x2D | 0x2C | 0x1C | 0x4C | 0x0F | 0x6C | 0x05 |
| 0x0D | 0x2C | 0x2D | 0x1C | 0x4D | 0x0F | 0x6D | 0x05 |
| 0x0E | 0x2C | 0x2E | 0x1B | 0x4E | 0x0F | 0x6E | 0x05 |
| 0x0F | 0x2B | 0x2F | 0x1B | 0x4F | 0x0E | 0x6F | 0x04 |
| 0x10 | 0x2B | 0x30 | 0x1A | 0x50 | 0x0E | 0x70 | 0x04 |
| 0x11 | 0x2A | 0x31 | 0x1A | 0x51 | 0x0E | 0x71 | 0x04 |
| 0x12 | 0x29 | 0x32 | 0x1A | 0x52 | 0x0D | 0x72 | 0x04 |
| 0x13 | 0x29 | 0x33 | 0x19 | 0x53 | 0x0D | 0x73 | 0x03 |
| 0x14 | 0x28 | 0x34 | 0x19 | 0x54 | 0x0D | 0x74 | 0x03 |
| 0x15 | 0x28 | 0x35 | 0x18 | 0x55 | 0x0C | 0x75 | 0x03 |
| 0x16 | 0x27 | 0x36 | 0x18 | 0x56 | 0x0C | 0x76 | 0x03 |
| 0x17 | 0x27 | 0x37 | 0x17 | 0x57 | 0x0C | 0x77 | 0x02 |
| 0x18 | 0x26 | 0x38 | 0x17 | 0x58 | 0x0B | 0x78 | 0x02 |
| 0x19 | 0x26 | 0x39 | 0x17 | 0x59 | 0x0B | 0x79 | 0x02 |
| 0x1A | 0x25 | 0x3A | 0x16 | 0x5A | 0x0B | 0x7A | 0x02 |
| 0x1B | 0x24 | 0x3B | 0x16 | 0x5B | 0x0A | 0x7B | 0x01 |
| 0x1C | 0x24 | 0x3C | 0x15 | 0x5C | 0x0A | 0x7C | 0x01 |
| 0x1D | 0x23 | 0x3D | 0x15 | 0x5D | 0x0A | 0x7D | 0x01 |
| 0x1E | 0x23 | 0x3E | 0x15 | 0x5E | 0x09 | 0x7E | 0x01 |
| 0x1F | 0x22 | 0x3F | 0x14 | 0x5F | 0x09 | 0x7F | 0x00 |

EISQRTF32 Table: Ei == odd

| Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) | Mi(22:16) | Me(22:16) |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 0x00 | 0x7F | 0x20 | 0x65 | 0x40 | 0x51 | 0x60 | 0x42 |
| 0x01 | 0x7F | 0x21 | 0x64 | 0x41 | 0x50 | 0x61 | 0x41 |
| 0x02 | 0x7E | 0x22 | 0x64 | 0x42 | 0x50 | 0x62 | 0x41 |
| 0x03 | 0x7D | 0x23 | 0x63 | 0x43 | 0x4F | 0x63 | 0x40 |
| 0x04 | 0x7C | 0x24 | 0x62 | 0x44 | 0x4F | 0x64 | 0x40 |
| 0x05 | 0x7B | 0x25 | 0x61 | 0x45 | 0x4E | 0x65 | 0x3F |
| 0x06 | 0x7A | 0x26 | 0x61 | 0x46 | 0x4E | 0x66 | 0x3F |
| 0x07 | 0x79 | 0x27 | 0x60 | 0x47 | 0x4D | 0x67 | 0x3F |
| 0x08 | 0x78 | 0x28 | 0x5F | 0x48 | 0x4D | 0x68 | 0x3E |
| 0x09 | 0x77 | 0x29 | 0x5F | 0x49 | 0x4C | 0x69 | 0x3E |
| 0x0A | 0x77 | 0x2A | 0x5E | 0x4A | 0x4C | 0x6A | 0x3D |
| 0x0B | 0x76 | 0x2B | 0x5D | 0x4B | 0x4B | 0x6B | 0x3D |
| 0x0C | 0x75 | 0x2C | 0x5D | 0x4C | 0x4B | 0x6C | 0x3D |
| 0x0D | 0x74 | 0x2D | 0x5C | 0x4D | 0x4A | 0x6D | 0x3C |
| 0x0E | 0x73 | 0x2E | 0x5C | 0x4E | 0x4A | 0x6E | 0x3C |
| 0x0F | 0x72 | 0x2F | 0x5B | 0x4F | 0x49 | 0x6F | 0x3B |
| 0x10 | 0x71 | 0x30 | 0x5A | 0x50 | 0x49 | 0x70 | 0x3B |
| 0x11 | 0x71 | 0x31 | 0x5A | 0x51 | 0x48 | 0x71 | 0x3B |
| 0x12 | 0x70 | 0x32 | 0x59 | 0x52 | 0x48 | 0x72 | 0x3A |
| 0x13 | 0x6F | 0x33 | 0x58 | 0x53 | 0x47 | 0x73 | 0x3A |
| 0x14 | 0x6E | 0x34 | 0x58 | 0x54 | 0x47 | 0x74 | 0x39 |
| 0x15 | 0x6D | 0x35 | 0x57 | 0x55 | 0x46 | 0x75 | 0x39 |
| 0x16 | 0x6C | 0x36 | 0x57 | 0x56 | 0x46 | 0x76 | 0x39 |
| 0x17 | 0x6C | 0x37 | 0x56 | 0x57 | 0x46 | 0x77 | 0x38 |
| 0x18 | 0x6B | 0x38 | 0x56 | 0x58 | 0x45 | 0x78 | 0x38 |
| 0x19 | 0x6A | 0x39 | 0x55 | 0x59 | 0x45 | 0x79 | 0x38 |
| 0x1A | 0x69 | 0x3A | 0x54 | 0x5A | 0x44 | 0x7A | 0x37 |
| 0x1B | 0x69 | 0x3B | 0x54 | 0x5B | 0x44 | 0x7B | 0x37 |
| 0x1C | 0x68 | 0x3C | 0x53 | 0x5C | 0x43 | 0x7C | 0x36 |
| 0x1D | 0x67 | 0x3D | 0x53 | 0x5D | 0x43 | 0x7D | 0x36 |
| 0x1E | 0x66 | 0x3E | 0x52 | 0x5E | 0x42 | 0x7E | 0x36 |
| 0x1F | 0x66 | 0x3F | 0x52 | 0x5F | 0x42 | 0x7F | 0x35 |