

| Start Decimal | Length Decimal | End Decimal | Start Hex | End Hex | Description                     | Notes   | Pinning   |
|---------------|----------------|-------------|-----------|---------|---------------------------------|---|-----------|
| 0             | 16             | 15          | 0000      | 000F    | Memory 0                        | See Icom T90A 16 Byte Memory Layout   | Pin: 0000 |
| 16            | 7984           | 7999        | 0010      | 1F3F    | Memory 1 – 499                  |   |           |
| 8000          | 32             | 8031        | 1F40      | 1F5F    | Scan Edge 00 A & B              | See Icom T90A 16 Byte Memory Layout   | Pin: 1F40 |
| 8032          | 768            | 8799        | 1F60      | 225F    | Scan Edge 01-24 A & B           |   |           |
| 8800          | 2              | 8801        | 2260      | 2261    | Memory 0 Bank Settings          | See Icom 2 Byte Bank Setting  |           |
| 8802          | 998            | 9799        | 2262      | 2647    | Memory 1 – 499 Bank Settings    |   | Pin: 2260 |
| 9800          | 120            | 9919        | 2648      | 26BF    | Unknown                         | Unused bank data?   |           |
| 9920          | 16             | 9935        | 26C0      | 26CF    | VFO A Band 00                   | See Icom T90A 16 Byte Memory Layout   | Pin: 26C0 |
| 9936          | 144            | 10079       | 26D0      | 275F    | VFO A Band 01 – 09              |   |           |
| 10080         | 16             | 10095       | 2760      | 276F    | VFO B Band 00                   | See Icom T90A 16 Byte Memory Layout   | Pin: 2760 |
| 10096         | 144            | 10239       | 2770      | 27FF    | VFO B Band 01 – 09              |   |           |
| 10240         | 16             | 10255       | 2800      | 280F    | Call Channel 00                 | See Icom T90A 16 Byte Memory Layout   | Pin: 2800 |
| 10256         | 64             | 10319       | 2810      | 284F    | Call Channel 01 – 04            |   |           |
| 10320         | 8              | 10327       | 2850      | 2857    | Television Channel 0            | See Icom T90A 16 Byte Memory Layout   | Pin: 2850 |
| 10328         | 536            | 10863       | 2858      | 2A6F    | Television Channel 1 – 67       |   |           |
| 10864         | 35             | 10898       | 2A70      | 2A92    | Unknown                         |   |           |
| 10899         | 2              | 10900       | 2A93      | 2A94    | Currently Select Memory Channel | 2 byte little endian (reversed)   |           |
| 10901         | 10             | 10910       | 2A95      | 2A9E    | Unknown                         |   |           |
| 10911         | 1              | 10911       | 2A9F      | 2A9F    | Squelch Level                   | 0x00=Open, 0x01=Auto, 0x02=Level 1, 0x03=Level 2, 0x04=Level 3, 0x05=Level 4, 0x06=Level 5, 0x07=Level 6, 0x08=Level 7, 0x09=Level 8, 0x0A=Level 9  |           |
| 10912         | 16             | 10927       | 2AA0      | 2AAF    | DTMF Auto Dial D0               | 0x00='0', 0x01='1', 0x02='2', 0x03='3', 0x04='4', 0x05='5', 0x06='6', 0x07='7', 0x08='8', 0x09='9', 0x0A='A', 0x0B='B', 0x0C='C', 0x0D='D', 0x0E='E', 0x0F='F', 0x0FF=Padding   | Pin: 2AA0 |
| 10928         | 144            | 11071       | 2AB0      | 2B3F    | DTMF Auto Dial D1-D9            |   |           |
| 11072         | 1              | 11072       | 2B40      | 2B40    | Television Channel 0 Skip       | 0x00=No Skip, 0x01=Not Programmed, 0x02=Skip  | Pin: 2B40 |
| 11073         | 67             | 11139       | 2B41      | 2B83    | Television Channel 1-67 Skip    |   |           |
| 11140         | 128            | 11267       | 2B84      | 2C03    | Unknown                         |   |           |
| 11268         | 1              | 11268       | 2C04      | 2C04    | Scan Resume                     | 0x00=0s, 0x01=1s, 0x02=2s, 0x03=3s, 0x04=4s, 0x05=5s, 0x06=Hold   |           |
| 11269         | 1              | 11269       | 2C05      | 2C05    | Pause Scan                      | 0x00=2 Sec, 0x01=4 Sec, 0x02=6 Sec, 0x03=8 Sec, 0x04=10 Sec, 0x05=12 Sec, 0x06=14 Sec, 0x07=16 Sec, 0x08=18 Sec, 0x09=20 Sec, 0x0A=Hold   |           |
| 11270         | 1              | 11270       | 2C06      | 2C06    | Unknown                         |   |           |
| 11271         | 1              | 11271       | 2C07      | 2C07    | Beep Audio                      | Volume=0x00, 0x01=0, ..., 0x20=31   |           |
| 11272         | 1              | 11272       | 2C08      | 2C08    | Operation Beep                  | 0x00=Off, 0x01=On   |           |
| 11273         | 1              | 11273       | 2C09      | 2C09    | LCD Back Light                  | 0x00=Off, 0x01=On, 0x02=Auto  |           |
| 11274         | 1              | 11274       | 2C0A      | 2C0A    | Busy LED                        | 0x00=Off, 0x01=On   |           |
| 11275         | 1              | 11275       | 2C0B      | 2C0B    | Auto Power-OFF                  | 0x00=Off, 0x01=30 min, 0x02=60 min, 0x03=90 min, 0x04=120 min   |           |
| 11276         | 1              | 11276       | 2C0C      | 2C0C    | Power Save                      | 0x00=Off, 0x01=1:1, 0x02=1:4, 0x03=1:8, 0x04=1:16, 0x05=Auto  |           |
| 11277         | 1              | 11277       | 2C0D      | 2C0D    | Monitor                         | 0x00=Push, 0x01=Hold  |           |
| 11278         | 1              | 11278       | 2C0E      | 2C0E    | Dial Speedup                    | 0x00=Off, 0x01=On   |           |
| 11279         | 1              | 11279       | 2C0F      | 2C0F    | Unknown                         |   |           |
| 11280         | 1              | 11280       | 2C10      | 2C10    | Auto Repeater                   | 0x00=Off, 0x01=Duplex Only, 0x02=Duplex & Tone  |           |
| 11281         | 1              | 11281       | 2C11      | 2C11    | DTMF Autodial Speed             | 0x00=100ms, 0x01=200ms, 0x02=300ms, 0x03=400ms  |           |
| 11282         | 1              | 11282       | 2C12      | 2C12    | HM-75A Function                 | 0x00=Simple, 0x01=Normal 1, 0x02=Normal 2   |           |
| 11283         | 1              | 11283       | 2C13      | 2C13    | WX Alert                        | 0x00=Off, 0x01=On   |           |
| 11284         | 1              | 11284       | 2C14      | 2C14    | Expand 1                        | 0x00=Off, 0x01=On   |           |
| 11285         | 1              | 11285       | 2C15      | 2C15    | Scan Stop Beep                  | 0x00=Off, 0x01=On   |           |
| 11286         | 1              | 11286       | 2C16      | 2C16    | Scan Stop Light                 | 0x00=Off, 0x01=On   |           |
| 11287         | 1              | 11287       | 2C17      | 2C17    | Unknown                         |   |           |
| 11288         | 1              | 11288       | 2C18      | 2C18    | Light Position                  | 0x00=LCD, 0x01=KEY, 0x02=ALL  |           |
| 11289         | 1              | 11289       | 2C19      | 2C19    | Back Light Color                | 0x00=Green, 0x01=Orange, 0x02=Red   |           |
| 11290         | 1              | 11290       | 2C1A      | 2C1A    | Unknown                         |   |           |
| 11291         | 1              | 11291       | 2C1B      | 2C1B    | Band Edge Beep                  | 0x00=Off, 0x01=On   |           |
| 11292         | 1              | 11292       | 2C1C      | 2C1C    | Auto Power-ON                   | 0x00=Off, (0:30 * n)  |           |
| 11293         | 1              | 11293       | 2C1D      | 2C1D    | Key Lock                        | 0x00=Normal, 0x01=No SQL, 0x02=No Vol, 0x03=ALL   |           |
| 11294         | 1              | 11294       | 2C1E      | 2C1E    | PTT Lock                        | 0x00=Off, 0x01=On   |           |
| 11295         | 1              | 11295       | 2C1F      | 2C1F    | LCD Contrast                    | 0x00=1, 0x01=2, 0x02=3, 0x03=4  |           |
| 11296         | 1              | 11296       | 2C20      | 2C20    | Opening Message                 | 0x00=Off, 0x01=On   |           |
| 11297         | 1              | 11297       | 2C21      | 2C21    | Expand 2                        | 0x00=Off, 0x01=On   |           |
| 11298         | 1              | 11298       | 2C22      | 2C22    | Unknown                         |   |           |
| 11299         | 1              | 11299       | 2C23      | 2C23    | Busy Lock Out                   | 0x00=Off, 0x01=On   |           |
| 11300         | 1              | 11300       | 2C24      | 2C24    | Time Out Timer                  | 0x00=Off, 0x01=1min, 0x02=3min, 0x03=5min, 0x04=10min   |           |
| 11301         | 1              | 11301       | 2C25      | 2C25    | Unknown                         |   |           |
| 11302         | 1              | 11302       | 2C26      | 2C26    | Active Band                     | 0x01=All, 0x00=Single   |           |
| 11303         | 1              | 11303       | 2C27      | 2C27    | FM Narrow                       | 0x00=Off, 0x01=On   |           |
| 11304         | 1              | 11304       | 2C28      | 2C28    | Morse Code Synthesizer          | 0x00=Off, 0x01=On   |           |
| 11305         | 1              | 11305       | 2C29      | 2C29    | Key Speed                       | 0x00=10 WPM, 0x01=15 WPM, 0x02=20 WPM, 0x03=25 WPM  |           |
| 11306         | 22             | 11327       | 2C2A      | 2C3F    | Unknown                         |   |           |
| 11328         | 6              | 11333       | 2C40      | 2C45    | Opening Message Text            | ASCII Text – Space Padded ( 0x20 )  |           |
| 11334         | 186            | 11519       | 2C46      | 2CFF    | Unknown                         | Filled with constant 0xFF   |           |
| 11520         | 1              | 11520       | 2D00      | 2D00    | Current Tune Step               | 3-0: (5k, 6.25k, 8.33k, 9k, 10k, 12.5k, 15k, 20k, 25k, 30k, 50k, 100k, 200k)  |           |
| 11521         | 4              | 11524       | 2D01      | 2D04    | Unknown                         |   |           |
| 11525         | 1              | 11525       | 2D05      | 2D05    | Selected Band                   | Bands are numbered 0(0x00) thru 9(0x09)   |           |
| 11526         | 2              | 11527       | 2D06      | 2D07    | Unknown                         |   |           |
| 11528         | 1              | 11528       | 2D08      | 2D08    | Memory Name                     | Bit 0: Memory Display: Ch=0, Bank=1<br>Bit 1: Memory Name: Off=0, On=1<br>Bit 2: Dial Select: Normal=0, Volume=1<br>Bit 3: Power: High=0, Low=1<br>Bit 4: Selected VFO: A=0, B=1<br>Bit 5: RF Attenuator: Off=0, On=1<br>Bit 6: ?<br>Bit 7: ? | Pin: 2D08 |
| 11529         | 2              | 11530       | 2D09      | 2D0A    | Unknown                         |   |           |
| 11531         | 1              | 11531       | 2D0B      | 2D0B    | Current VFO/Memory/Call Mode    | 0x00=VFO, 0x10=Memory, 0x20=Call Channel, 0x30=TV   |           |
| 11532         | 9              | 11540       | 2D0C      | 2D14    | Unknown                         |   |           |
| 11541         | 6              | 11546       | 2D15      | 2D1A    | Current Alpha Tag               | 6 Ascii Characters – Current display tag  |           |
| 11547         | 1              | 11547       | 2D1B      | 2D1B    | VFO Scan                        | 0x00=All, 0x01=Band, 0x02=P0, 0x03=P1, ..., 0x1A=P24  | Pin: 2D1B |
| 11548         | 1              | 11548       | 2D1C      | 2D1C    | Memory Scan                     | 0x00=All, 0x01=Bank, 0x02=SEL BC, 0x03=SEL 5M, 0x04=SEL 50M, 0x05=SEL WFM, 0x06=SEL AIR, 0x07=SEL 144M, 0x08=SEL 220M, 0x09=SEL 300M, 0x0A=SEL 440M, 0x0B=SEL 800M  |           |
| 11549         | 1              | 11549       | 2D1D      | 2D1D    | Unknown                         |   |           |
| 11550         | 1              | 11550       | 2D1E      | 2D1E    | Current TV channel              | Channel 0 thru 68   |           |
| 11551         | 1              | 11551       | 2D1F      | 2D1F    | WX Ch                           | 0x00=WX01, 0x01=WX02, ..., 0x09=WX10  | Pin: 2D1F |
| 11552         | 16             | 11567       | 2D20      | 2D2F    | Comment                         | 16 Ascii Character Comment ( Only set by clone software?)   |           |
| 11568         | 16             | 11583       | 2D30      | 2D3F    | "IcomCloneFormat3"              |   |           |

## ICOM T90A 16 Byte Memory Layout

|   | B0  | B1       | B2       | B3       | B4       | B5       | B6       | B7       | B8       | B9       | B10-15   |
|---|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|   | 76543210  | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 | 76543210 |
| Frequency Multiplier<br>Frequency               | B3[0] b0 = 5000, b1 = 6250<br>(B0 + B1 * 256 + B2 * 65536) * Frequency Multiplier                                   |          |          |          |          |          |          |          |          |          |          |
| DTCS Polarity<br>DTCS                           | B3[7:6] b00=BOTH_N, b01=TN_RR, b10=TR_RN, b11=BOTH_R<br>B7: Zero based index into DTCS codes.                       |          |          |          |          |          |          |          |          |          |          |
| Offset Frequency Multiplier<br>Offset Frequency | B3[3] b0 = 5000, b1 = 6250<br>(B5 + B6 * 256) * Offset Frequency Multiplier   |          |          |          |          |          |          |          |          |          |          |
| Duplex  | B4[6:5] b00=None, b01=Negative, b10=Positive, b11=Unknown   |          |          |          |          |          |          |          |          |          |          |
| Modulation                                      | B4[4:3] b00=FM, b01=WFM, b10=AM, b11=Unknown  |          |          |          |          |          |          |          |          |          |          |
| Tone Mode                                       | B4[2:0] b000=None, b001=Repeater Tone, b010=Tone Squelch, b100=DTCS, Others = Error?                                |          |          |          |          |          |          |          |          |          |          |
| Repeater Tone                                   | B9[1:0] * 16 + B8[7:4] Zero based index into full tone list.  |          |          |          |          |          |          |          |          |          |          |
| Tune Step                                       | B8[3:0] Zero based index into Tune Steps of (5k, 6.25k, 8.33k, 9k, 10k, 12.5k, 15k, 20k, 25k, 30k, 50k, 100k, 200k) |          |          |          |          |          |          |          |          |          |          |
| Squelch Tone                                    | B9[7:2] Zero based index into full tone list.   |          |          |          |          |          |          |          |          |          |          |
| Alpha Tag                                       | B10:B15 ASCII Alpha Tag   |          |          |          |          |          |          |          |          |          |          |
| Unknown   | B3[5-4], B3[2:1], B4[7]   |          |          |          |          |          |          |          |          |          |          |

## 2 Byte Bank Layout

|              | B0   | B1       |
|--------------|--|----------|
|              | 76543210   | 76543210 |
| Program Skip | B0[6] b0 = False, b1 = True  |          |
| Memory Skip  | B0[5] b0 = False, b1 = True  |          |
| Bank Index   | B0[4-0] Zero based index in bank names of (A, B, C, D, E, F, G, H, J, L, N, O, P, Q, R, T, U, Y) |          |
| Bank Channel | B1[7-0] ( 0 – 99 )   |          |
| Unknown      | B0[7]  |          |

## 8 Byte TV Channel Layout

|            | B0                                  | B1       | B2       | B3       | B4-B7    |
|------------|-------------------------------------|----------|----------|----------|----------|
|            | 76543210                            | 76543210 | 76543210 | 76543210 | 76543210 |
| Fixed      | B0[7-1] b0000000                    |          |          |          |          |
| Modulation | B0[0] b0=WFM, b1=AM                 |          |          |          |          |
| Frequency  | (B1 + B2 * 256 + B3 * 65536) * 5000 |          |          |          |          |
| Alpha Tag  | B4:B7 ASCII Alpha Tag               |          |          |          |          |

| PL Tone | DTCS | DTCS<br>Polarity | Tune<br>Step | Bank<br>Names |
|---------|------|------------------|--------------|---------------|
| 67.0    | 023  | BOTH_N           | 5k           | A             |
| 69.3    | 025  | TN_RR            | 6.25k        | B             |
| 71.9    | 026  | TR_RN            | 8.33k        | C             |
| 74.4    | 031  | BOTHR            | 9k           | D             |
| 77.0    | 032  |                  | 10k          | E             |
| 79.7    | 036  |                  | 12.5k        | F             |
| 82.5    | 043  |                  | 15k          | G             |
| 85.4    | 047  |                  | 20k          | H             |
| 88.5    | 051  |                  | 25k          | J             |
| 91.5    | 053  |                  | 30k          | L             |
| 94.8    | 054  |                  | 50k          | N             |
| 97.4    | 065  |                  | 100k         | O             |
| 100.0   | 071  |                  | 200k         | P             |
| 103.5   | 072  |                  |              | Q             |
| 107.2   | 073  |                  |              | R             |
| 110.9   | 074  |                  |              | T             |
| 114.8   | 114  |                  |              | U             |
| 118.8   | 115  |                  |              | Y             |
| 123.0   | 116  |                  |              |               |
| 127.3   | 122  |                  |              |               |
| 131.8   | 125  |                  |              |               |
| 136.5   | 131  |                  |              |               |
| 141.3   | 132  |                  |              |               |
| 146.2   | 134  |                  |              |               |
| 151.4   | 143  |                  |              |               |
| 156.7   | 145  |                  |              |               |
| 159.8   | 152  |                  |              |               |
| 162.2   | 155  |                  |              |               |
| 165.5   | 156  |                  |              |               |
| 167.9   | 162  |                  |              |               |
| 171.3   | 165  |                  |              |               |
| 173.8   | 172  |                  |              |               |
| 177.3   | 174  |                  |              |               |
| 179.9   | 205  |                  |              |               |
| 183.5   | 212  |                  |              |               |
| 186.2   | 223  |                  |              |               |
| 189.9   | 225  |                  |              |               |
| 192.8   | 226  |                  |              |               |
| 196.6   | 243  |                  |              |               |
| 199.5   | 244  |                  |              |               |
| 203.5   | 245  |                  |              |               |
| 206.5   | 246  |                  |              |               |
| 210.7   | 251  |                  |              |               |
| 218.1   | 252  |                  |              |               |
| 225.7   | 255  |                  |              |               |
| 229.1   | 261  |                  |              |               |
| 233.6   | 263  |                  |              |               |
| 241.8   | 265  |                  |              |               |
| 250.3   | 266  |                  |              |               |
| 254.1   | 271  |                  |              |               |
|         | 274  |                  |              |               |
|         | 306  |                  |              |               |
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