

ANNEX VII. SELF-TEST MODE

WSMR ELECTRONIC PROVING GROUND, US ARMY, FORT HUACHUCA, ARIZONA

MANU: MMI MODEL NO: MBT-040600 SERIAL NO: 096

BEACON CERTIFICATION TEST RESULTS - SELF TEST VERIFICATION

MEASUREMENT DATE: 20 Apr 1999 TIME: 07:59:00

TESTED BY:

J.C. Holt

APPROVED BY:

Edwin King

FRAME SYNCHRONIZATION BIT #: 16 17 18 19 20 21 22 23 24

Should be: 0 1 1 0 1 0 0 0 0

Decoded: 0 1 1 0 1 0 0 0 0

NUMBER OF BURST DURING SELF TEST CYCLE: 1

WSMR ELECTRONIC PROVING GROUND, US ARMY, FORT HUACHUCA, ARIZONA

MANU: MMI MODEL NO: MBT-040600 SERIAL NO. 000

BEACON CERTIFICATION TEST RESULTS - SELF TEST

MEASUREMENT DATE: 20 Apr 1999 TIME: 08:14:34

TESTED BY: MC. 2/1

APPROVED BY: Edwin A. King

BEACON DIGITAL MESSAGE VERIFICATION

SYNCHRONIZATION BIT #: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Should be: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Decoded: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

*** BIT SYNCHRONIZATION OK ***

FRAME SYNCHRONIZATION BIT #: 16 17 18 19 20 21 22 23 24

Should be: 0 0 0 1 0 1 1 1 1
Decoded: 0 1 1 0 1 0 0 0 0

*** ERROR IN FRAME SYNCHRONIZATION ***

MESSAGE TYPE: LONG MESSAGE (bit 25 = 1)

15 Hex Beacon ID (bits 26-85): 2DD60030BF81FE0

30 Hex Message (bits 25-144): 96EB00185FC0FF01CE953400000000

BCH CODE BIT #: 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06

Should be: 0 0 1 1 1 0 0 1 1 1 0 1 0 0 1 0 1 0 1 0 0
Decoded: 0 0 1 1 1 0 0 1 1 1 0 1 0 0 1 0 1 0 1 0 0

*** BCH CODE OK ***

BCH CODE BIT #: 33 34 35 36 37 38 39 40 41 42 43 44

Should be: 1 1 1 1 0 0 0 1 1 0 0 1
Decoded: 0 0 0 0 0 0 0 0 0 0 0 0

*** ERROR IN BCH CODE ***

MEASUREMENT DATE: 20 Apr 1999/ TIME: 08:15:22

APPROVED BY: Ethel King

DIGITAL MESSAGE IN BINARY:

[illegible]

4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7			
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	

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BIT NUMBER:
8 8 8 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
-----
1 0 0 0 0 0 0 0 1 1 1 0 0 1 1 1 0 1 0 0 1 0 1 0 1 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0

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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 4 4 4 4
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
-----
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

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WSMR ELECTRONIC PROVING GROUND, US ARMY, FORT HUACHUCA, ARIZONA
MANU: MMI MODEL NO: MBT-040600 SERIAL NO: 096
BEACON CERTIFICATION TEST RESULTS - SELF TEST
MEASUREMENT DATE: 20 Apr 1999 TIME: 08:15:23

TESTED BY:

J. C. Holt

APPROVED BY:

Edwin R. King

MESSAGE DATA:

Message Format: 1
Protocol Flag: 0
Country Code: 0101101110
Protocol Code: 1011
Serial Number: 000000000001100000
Reported Latitude: N127 0
Reported Longitude: E255 0
Position Data Source Flag: 1
Spare (108): 1
Homing Device Flag: 0
Additional Data Flag: 1
Spare (111,112):
00
Delta Latitude (min): 0
Delta Latitude (sec): 0
Delta Longitude (min): 0
Delta Longitude (sec): 0
Spare (127-132): 000000

Corrected latitude: N127 0 0
Corrected longitude: E255 0 0

Self-test burst envelope time: 441.0 msec

APPENDIX B. ANTENNA CHARACTERISTICS

TABLE B-1. VERTICAL POLARIZATION RECEIVED SIGNAL LEVELS (PV, IN DBM)

AZIMUTH ANGLE (degrees)	ELEVATION ANGLE (degrees)				
	10	20	30	40	50
0	-21.33	-19.67	-19.83	-20.00	-20.83
30	-21.50	-19.33	-18.33	-20.00	-21.00
60	-20.50	-19.67	-18.67	-20.00	-21.17
90	-21.33	-19.00	-18.17	-18.67	-23.33
120	-20.83	-18.33	-18.00	-19.67	-23.50
150	-19.83	-18.00	-18.83	-19.17	-23.00
180	-20.00	-18.67	-18.50	-19.17	-23.83
210	-20.33	-18.67	-17.67	-19.33	-23.50
240	-20.33	-18.67	-17.67	-19.33	-23.50
270	-20.17	-18.83	-18.33	-20.83	-21.50
300	-20.67	-19.33	-20.00	-19.17	-22.33
330	-21.17	-20.00	-19.17	-20.67	-22.00

TABLE B-2. HORIZONTAL POLARIZATION RECEIVED SIGNAL LEVELS
(PH, IN dBm)

AZIMUTH ANGLE (degrees)	ELEVATION ANGLE (degrees)				
	10	20	30	40	50
0	-48.83	-45.33	-48.83	-44.17	-45.00
30	-42.17	-39.00	-62.17	-40.33	-43.00
60	-50.50	-41.50	-48.67	-47.17	-39.50
90	-46.17	-40.17	-51.33	-41.67	-50.67
120	-42.67	-42.67	-41.00	-45.83	-42.83
150	-43.50	-61.33	-42.17	-44.33	-42.33
180	-45.83	-38.17	-47.50	-41.17	-67.83
210	-51.83	-48.33	-49.17	-44.33	-40.83
240	-39.50	-44.17	-36.33	-42.33	-47.67
270	-48.83	-42.83	-45.83	-48.67	-46.50
300	-43.50	-48.33	-40.83	-42.67	-40.50
330	-45.83	-40.83	-49.67	-40.83	-45.33

TABLE B-3. TOTAL ERP (IN dBm) / ANTENNA GAIN (IN dBi)

AZIMUTH ANGLE (degrees)	ELEVATION ANGLE (degrees)				
	10	20	30	40	50
0	32.28 / -3.83	33.94 / -2.17	33.78 / -2.33	33.62 / -2.49	32.79 / -3.32
30	32.14 / -3.97	34.32 / -1.79	35.27 / -0.84	33.64 / -2.47	32.63 / -3.48
60	33.10 / -3.01	33.96 / -2.15	34.93 / -1.18	33.61 / -2.50	32.49 / -3.62
90	32.28 / -3.83	34.63 / -1.48	35.43 / -0.68	34.95 / -1.16	30.28 / -5.83
120	32.80 / -3.31	35.29 / -0.82	35.62 / -0.49	33.94 / -2.17	30.15 / -5.96
150	33.79 / -2.32	35.60 / -0.51	34.79 / -1.32	34.44 / -1.67	30.65 / -5.46
180	33.61 / -2.50	34.98 / -1.13	35.11 / -1.00	34.46 / -1.65	29.77 / -6.34
210	33.27 / -2.84	34.93 / -1.18	35.93 / -0.18	34.28 / -1.83	30.18 / -5.93
240	33.32 / -2.79	34.94 / -1.17	35.99 / -0.12	34.29 / -1.82	30.12 / -5.99
270	33.44 / -2.67	34.79 / -1.32	35.28 / -0.83	32.78 / -3.33	32.11 / -4.00
300	32.95 / -3.16	34.28 / -1.83	33.64 / -2.47	34.45 / -1.66	31.34 / -4.77
330	32.44 / -3.67	33.64 / -2.47	34.43 / -1.68	32.97 / -3.14	31.62 / -4.49

Antenna Gain is based on measured power output of 4.09 watts (36.11 dBm)

$$ERP_{\text{maxEOL}} = ERP_{\text{max}} - ERP_{\text{LOSS}} = 35.99 - (-0.54) = 36.53 \text{ dBm} = 4.498 \text{ watts}$$

$$ERP_{\text{minEOL}} = ERP_{\text{min}} - ERP_{\text{LOSS}} = 29.77 - (-0.54) = 30.31 \text{ dBm} = 1.074 \text{ watts}$$

NOTE: These values do NOT include the range instrumentation accuracy of ± 2.45 dB.