UAT Message Success Rate
Bench Test Data

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Feb 2002
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Test Data Types

- General
  - Data was collected as a function of desired signal level from below sensitivity to well above sensitivity
  - Data was collected simultaneously on 2 UAT Pre-MOPS Receivers
    - 0.8 MHz and 1.2 MHz bandwidth receivers
  - Parameters recorded
    - Desired Signal Level
    - Transmitter (LONG ADS-B Messages Only) Count
    - Message Success Count
    - Ground or Air Sync Count (depending on test type)
  - Percent MSR was calculated as the ratio of Message Success Count to Transmitter Count

Tests Conducted

- Types of Tests
  - Baseline - No Interference Tests
  - DME Interference Signal Tests
    - Single Channel DME Tests
      - On Channel; + 1 MHz; + 2 MHz; +3 MHz
    - High Altitude DME
      - Two TACAN Stations and 1 DME Station at + 1 MHz
    - TACAN versus DME
  - UAT Self Interference Tests
    - Core Europe 2015 Environment
    - LA 2020 Environment

Tests Conducted

- Types of Tests (continued)
  - JTIDS Tests
    - ~ Baseline Scenario B - JTIDS Snapshot UAT001
    - ~ JTIDS Snapshot 700 (FG -36, FG -42 dBm)
  - Combination Air to Air Link Tests
    - ~ JTIDS, UAT Self Interference, DME
  - Combination Ground to Air Link Tests
    - ~ JTIDS, UAT Self Interference, DME

JTIDS Scenario

- **JTIDS SNAPSHOT UAT001**
  - B **REF: Baseline Scenario B**
  - B **50 % FG,R1 = -42 dBm**
  - B **50 % R2 = -63 dBm**
  - B **300% Background : R3 and R4 = -87 dBm**

NET 0	Tx Delay 0 uSec 20 % FG	Tx Delay 0 uSec 30 % R1	Tx Delay 0 uSec 50 % R2
NET 1	Tx Delay 600 uSec 20 % R3	Tx Delay 600 uSec 30 % R3	Tx Delay 600 uSec 50 % R3
NET 2	Tx Delay 1200 uSec 20 % R4	Tx Delay 1200 uSec 30 % R4	Tx Delay 1200 uSec 50 % R3
NET 3	Tx Delay 1800 uSec 20 % R4	Tx Delay 1800 uSec 30 % R4	Tx Delay 1800 uSec 50 % R4

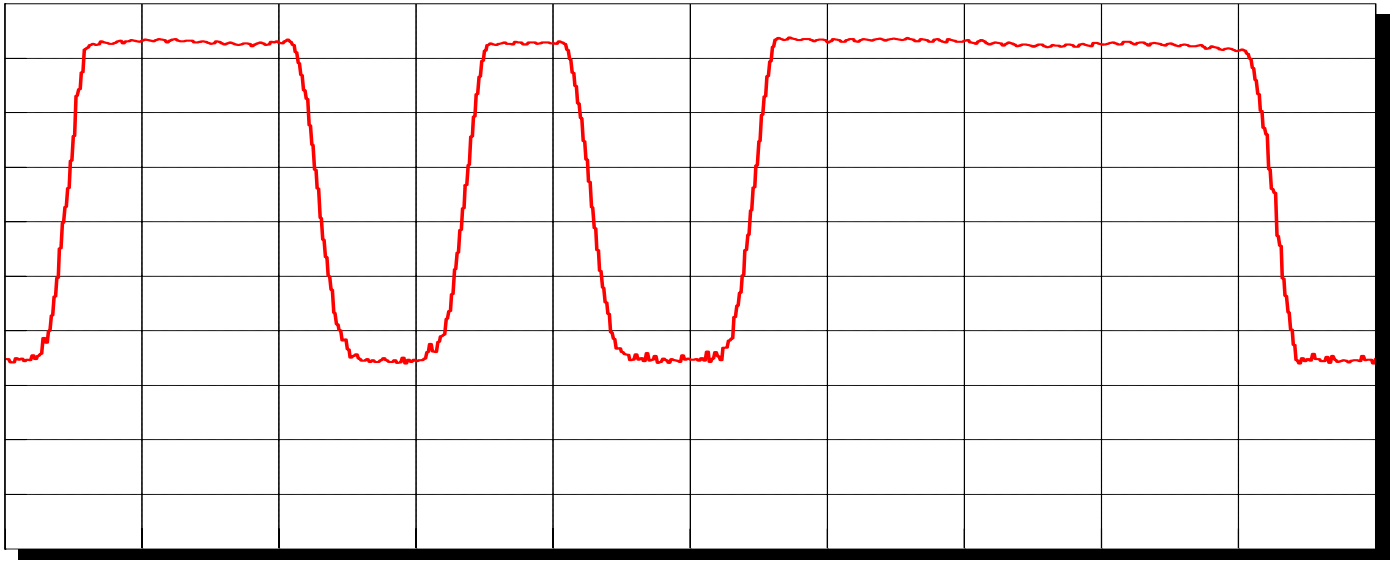
JTIDS Snapshot 700

- **Single JTIDS Transmitter**
  - B **50% Foreground**
  - B **30% Ring 1**
  - B **20% Ring 2**
- **No Overlap, 100 % TSDF Usage**
- **FG -36 dBm and -42 dBm Tested**

50 % Foreground	30 % Ring 1 @ - 60 dBm	20 % Ring 2 @ - 72 dBm

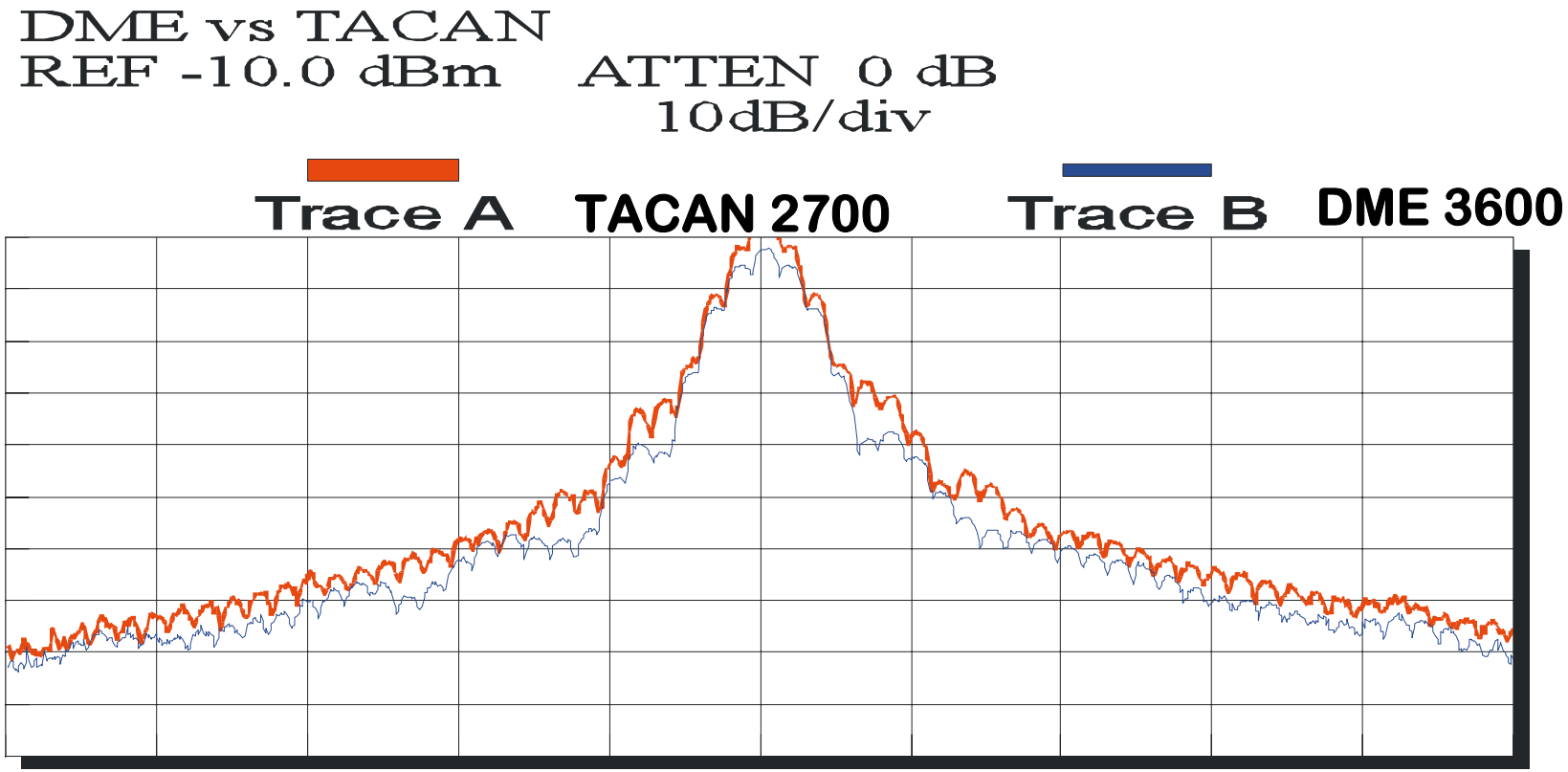
JTIDS Frequency Spectrum

JTIDS Spectrum used for UAT testing
REF 10.0 dBm ATTEN 20 dB
10dB/div

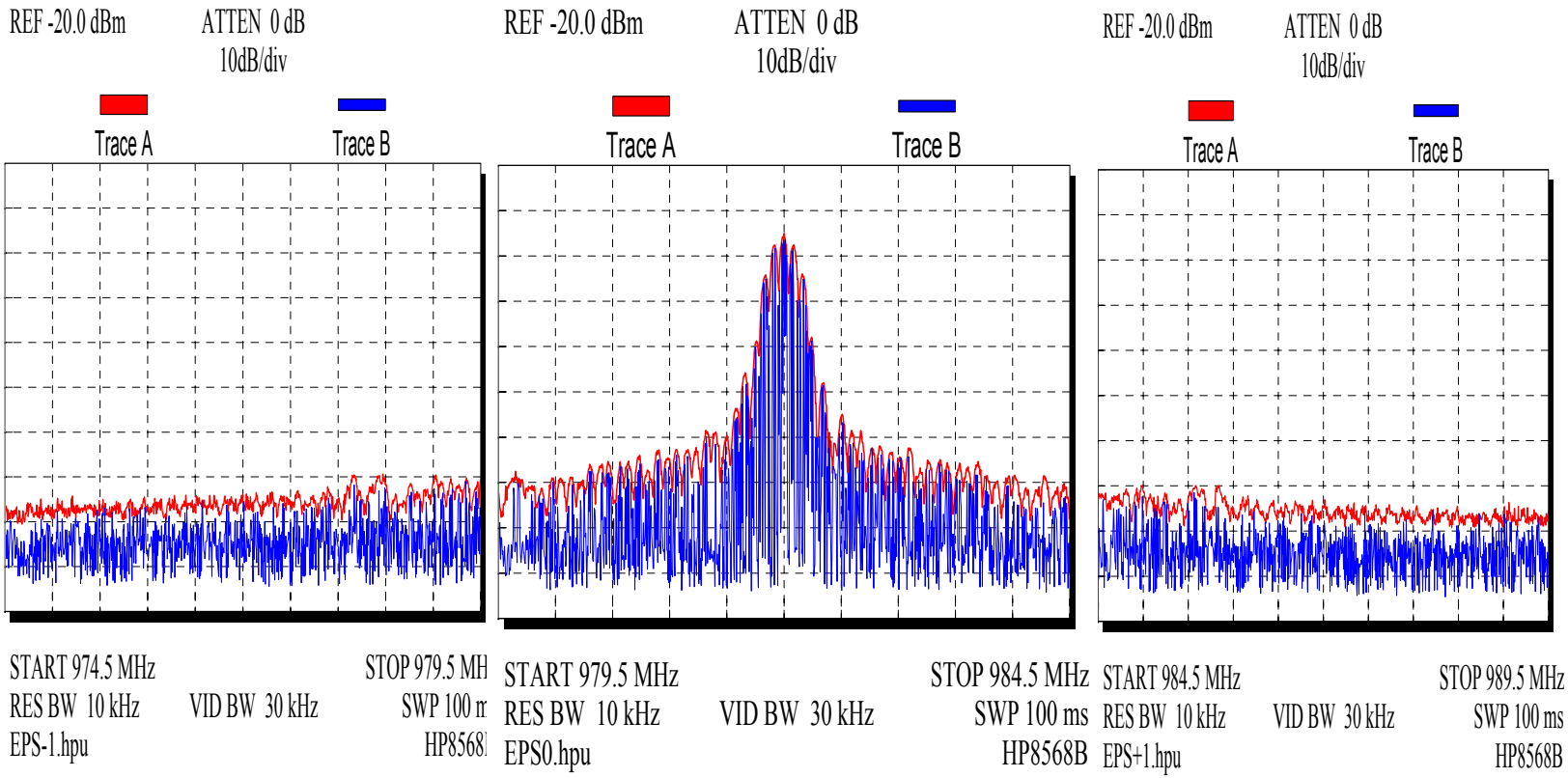


START 950 MHz STOP 1.235 GHz
RES BW 3 MHz VID BW 1 MHz SWP 20 ms
T2- AF26988.hpu HP8568B

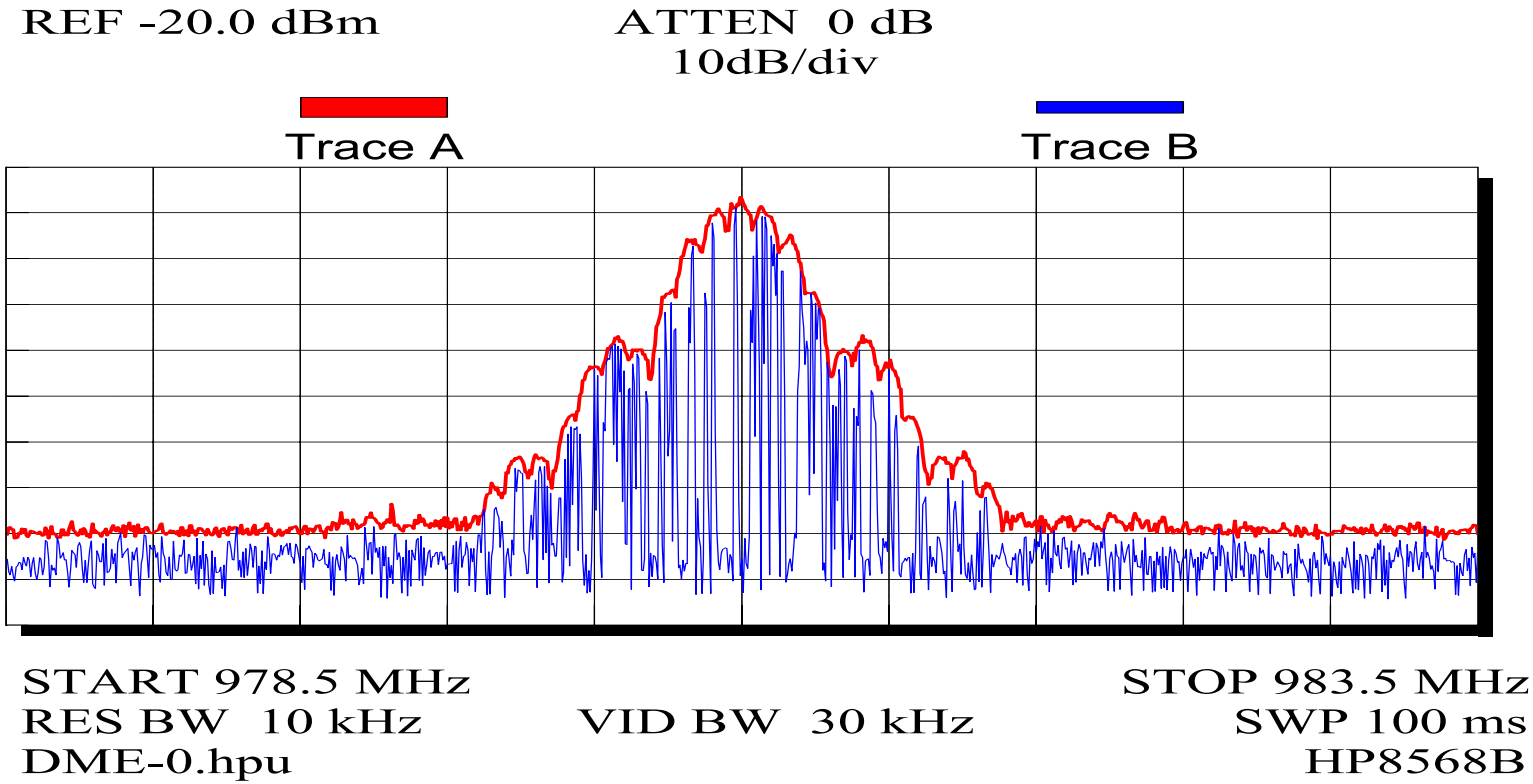
DME versus TACAN Spectrum



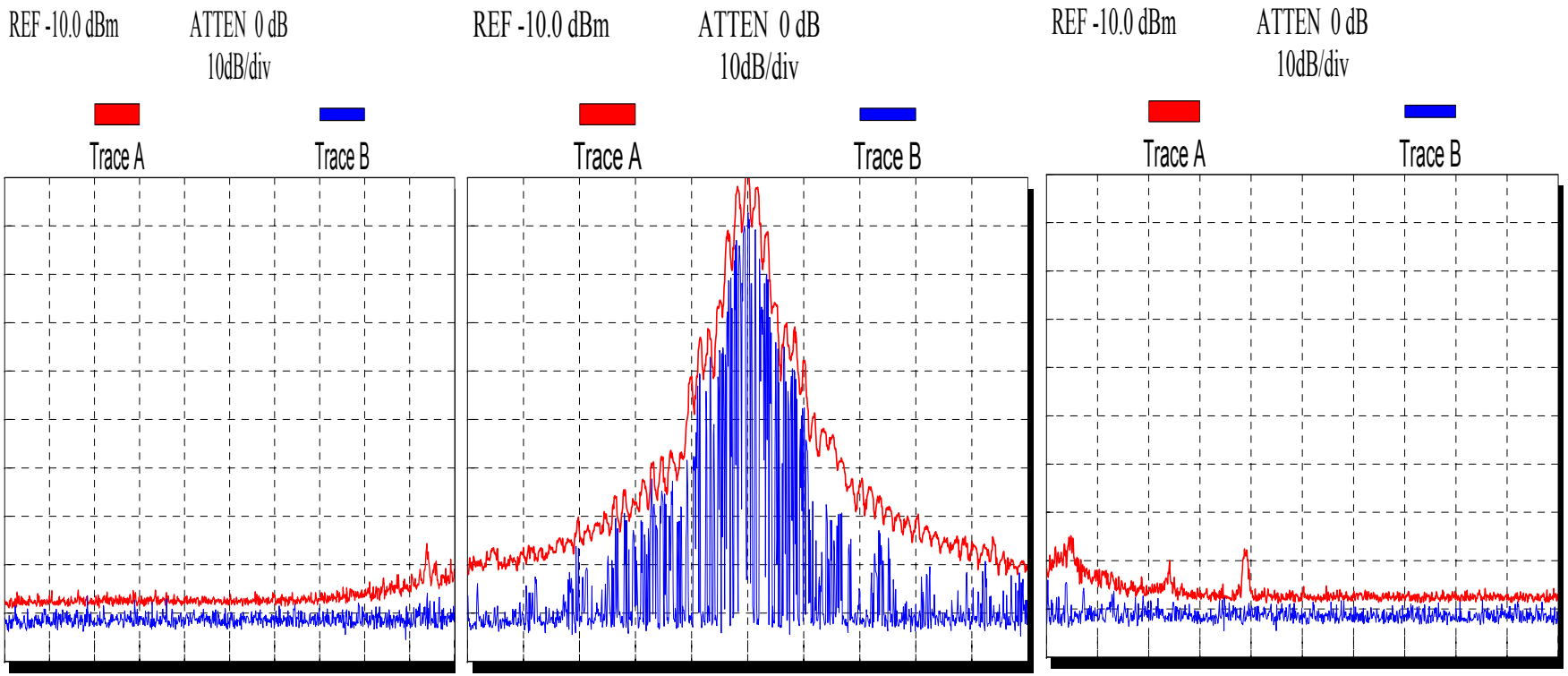
High Alt DME Signal Spectrum (from EPS)



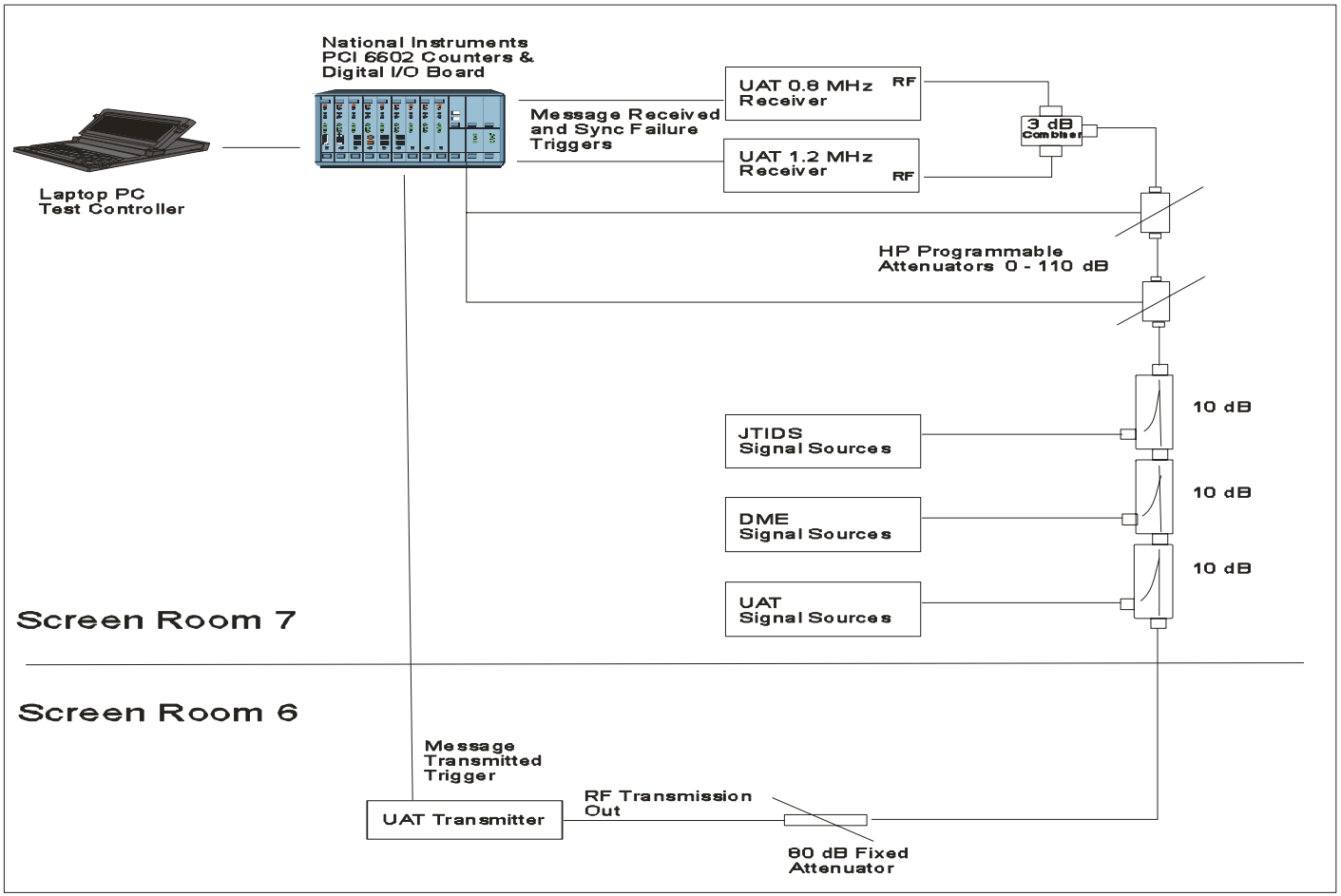
Single Channel DME Spectrum (from Republic DTS-102)



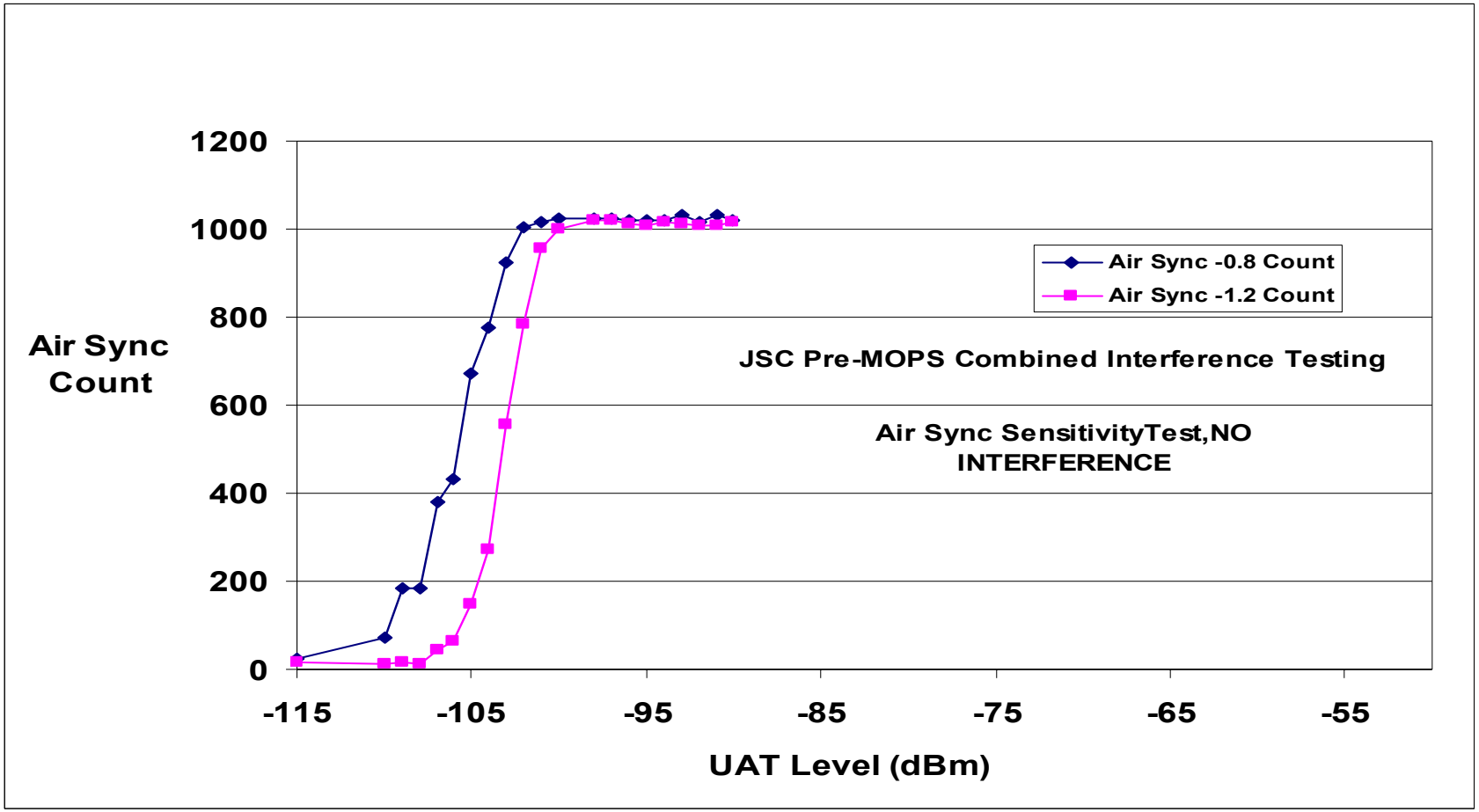
High Alt TACAN Signal Source Spectrum (from Rep DTS-102)



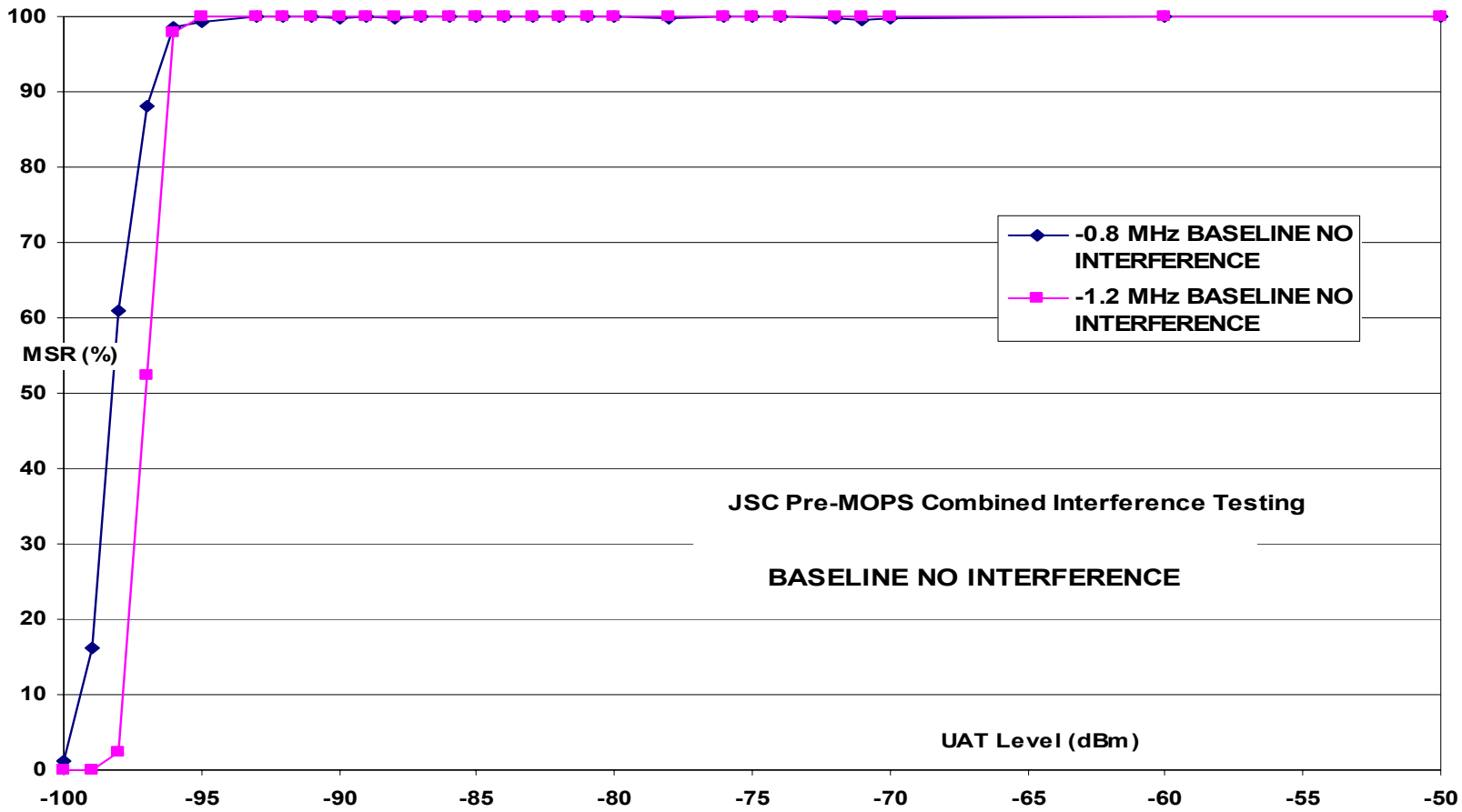
Test Bench Setup



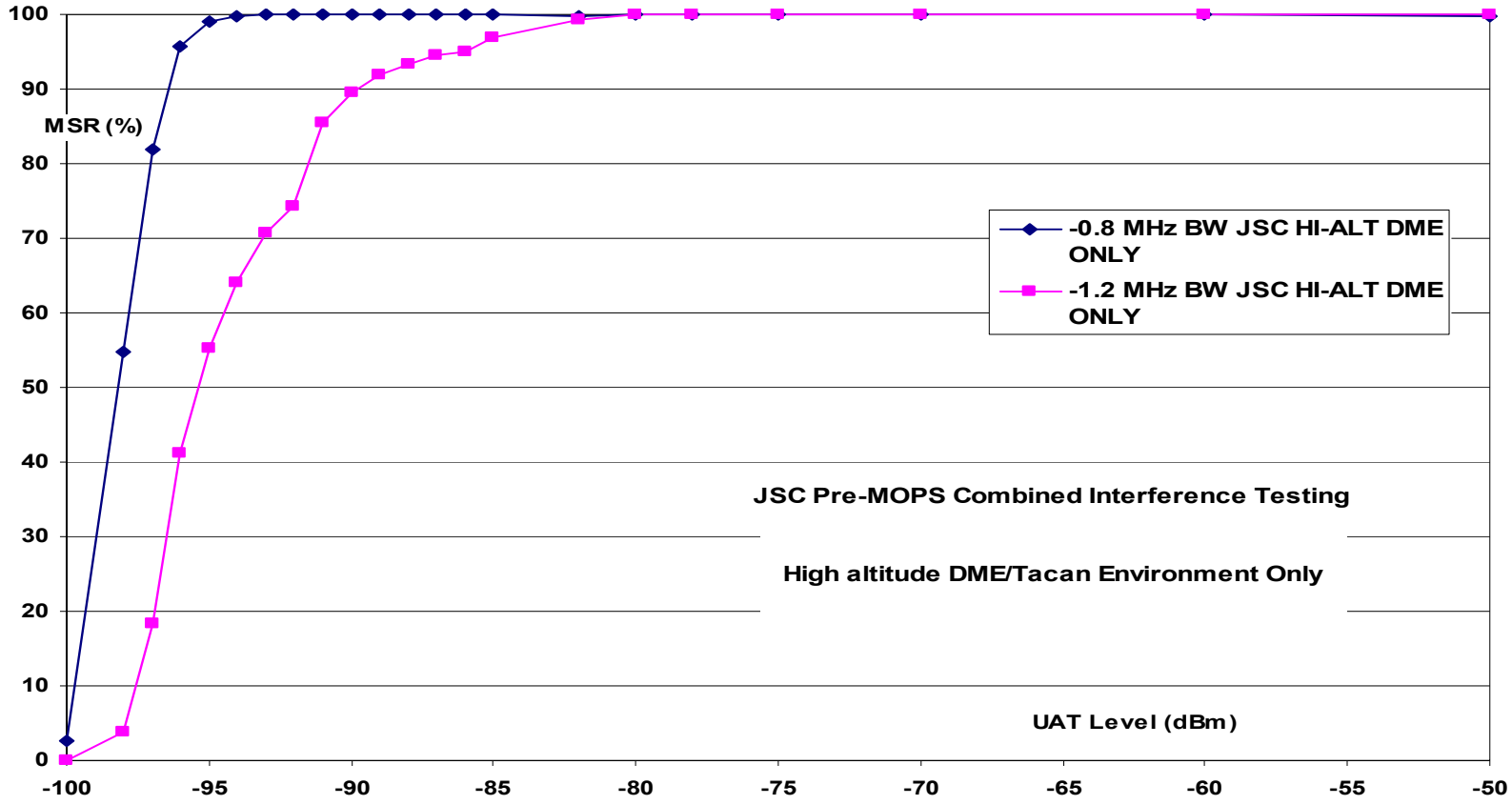
Air Sync Baseline



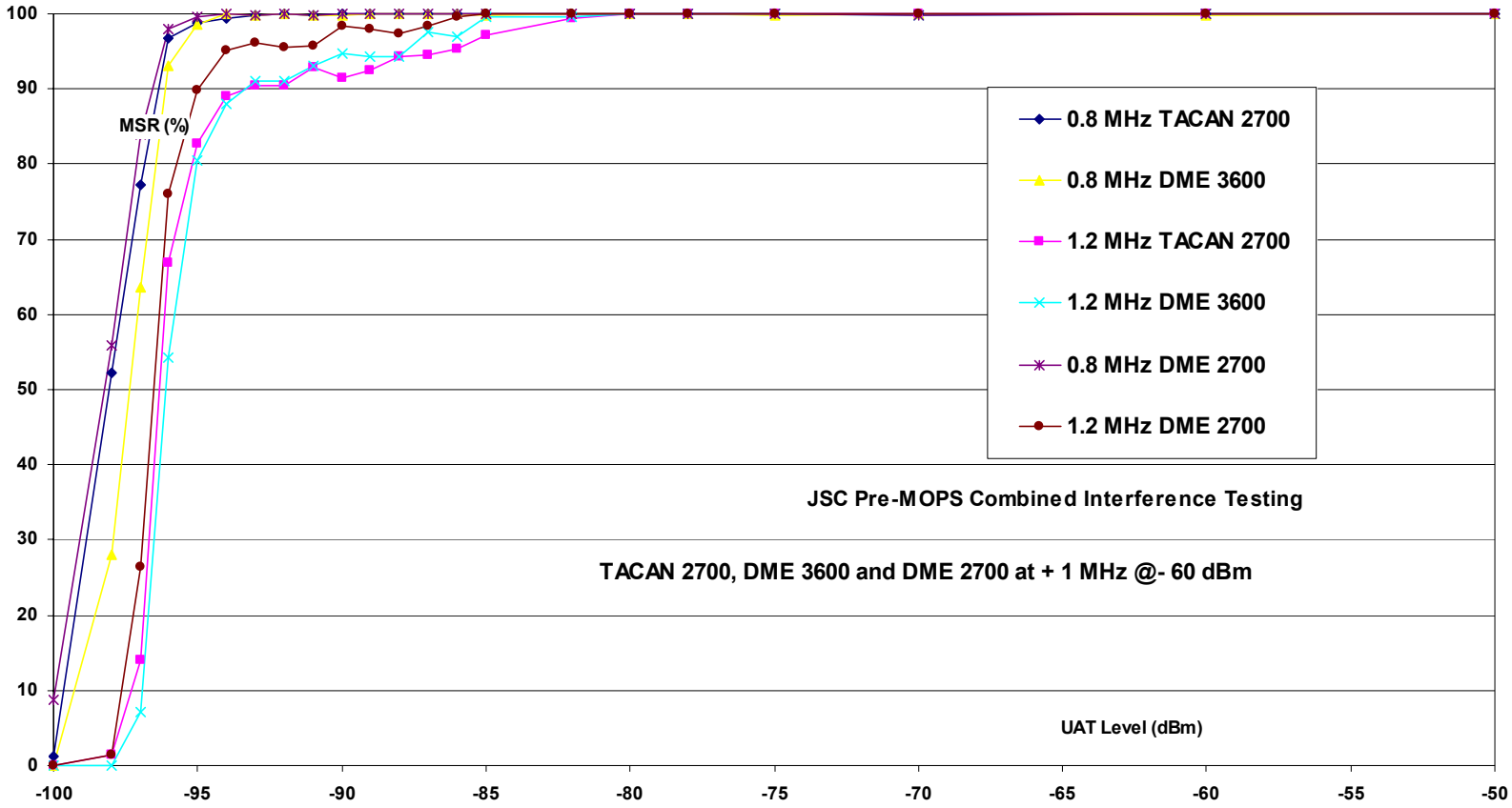
Baseline MSR Data



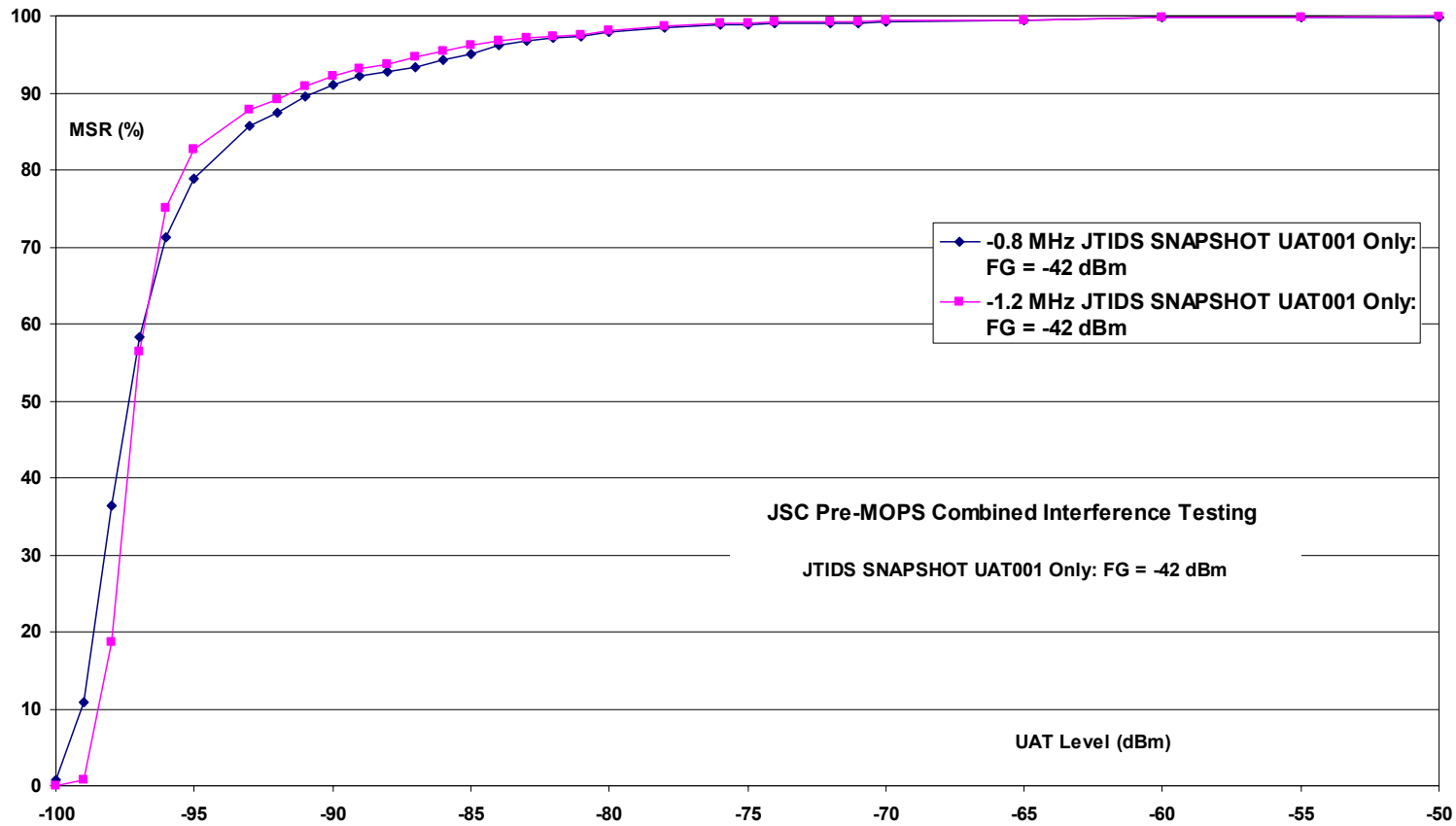
High Altitude DME Only



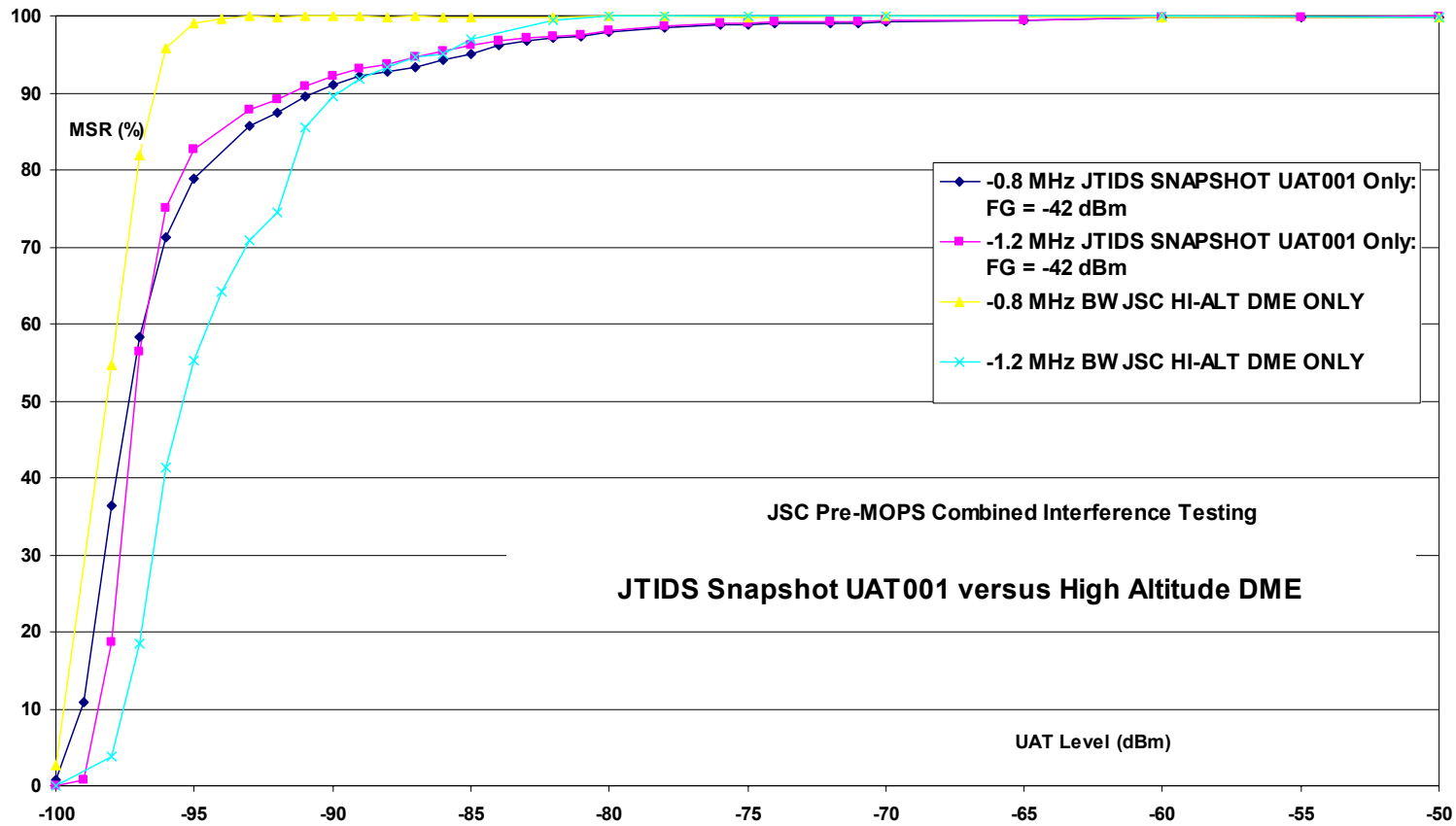
TACAN versus DME



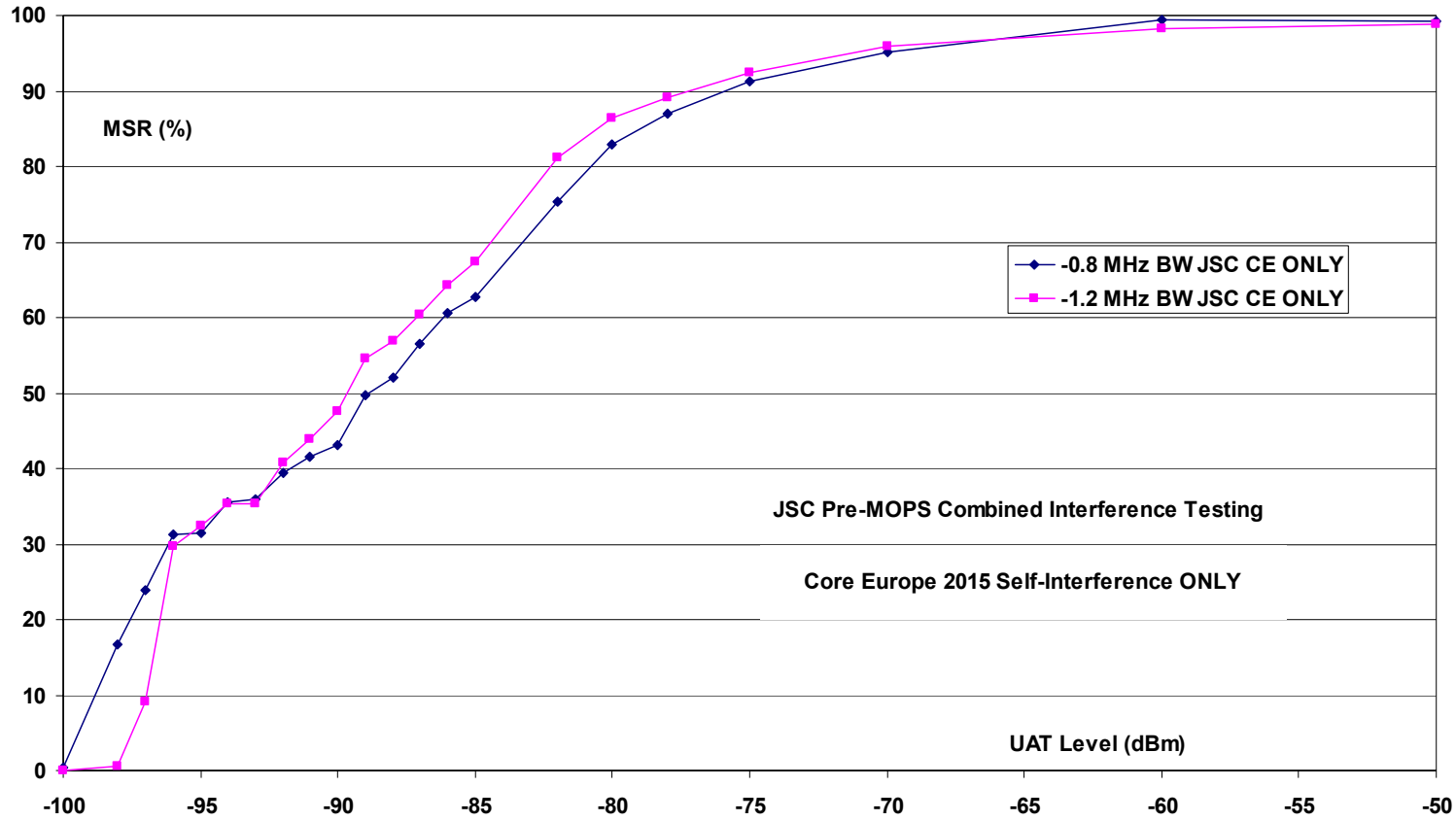
JTIDS Scenario B Only



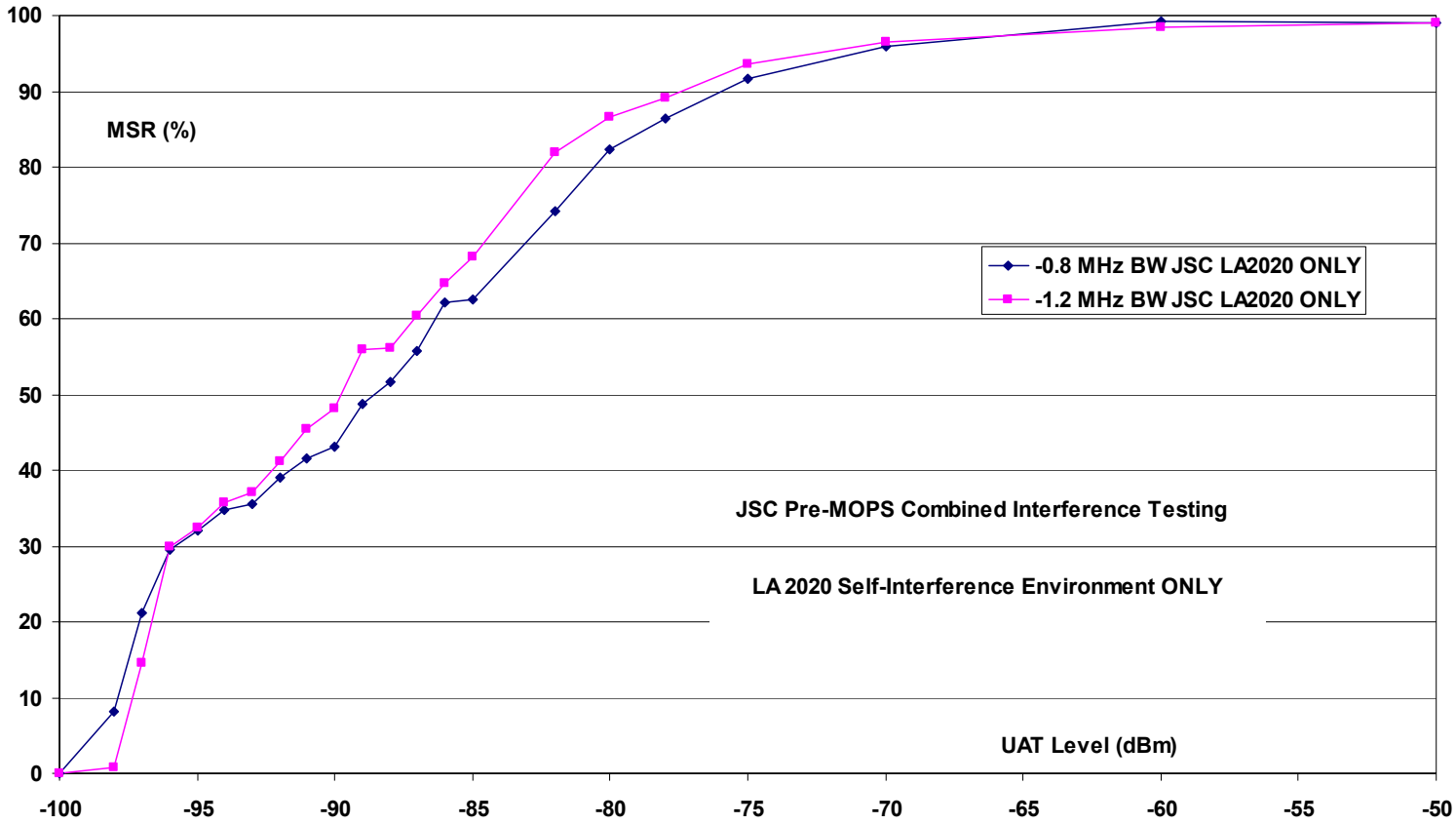
JTIDS Scenario B (UAT001) versus Hi Alt DME



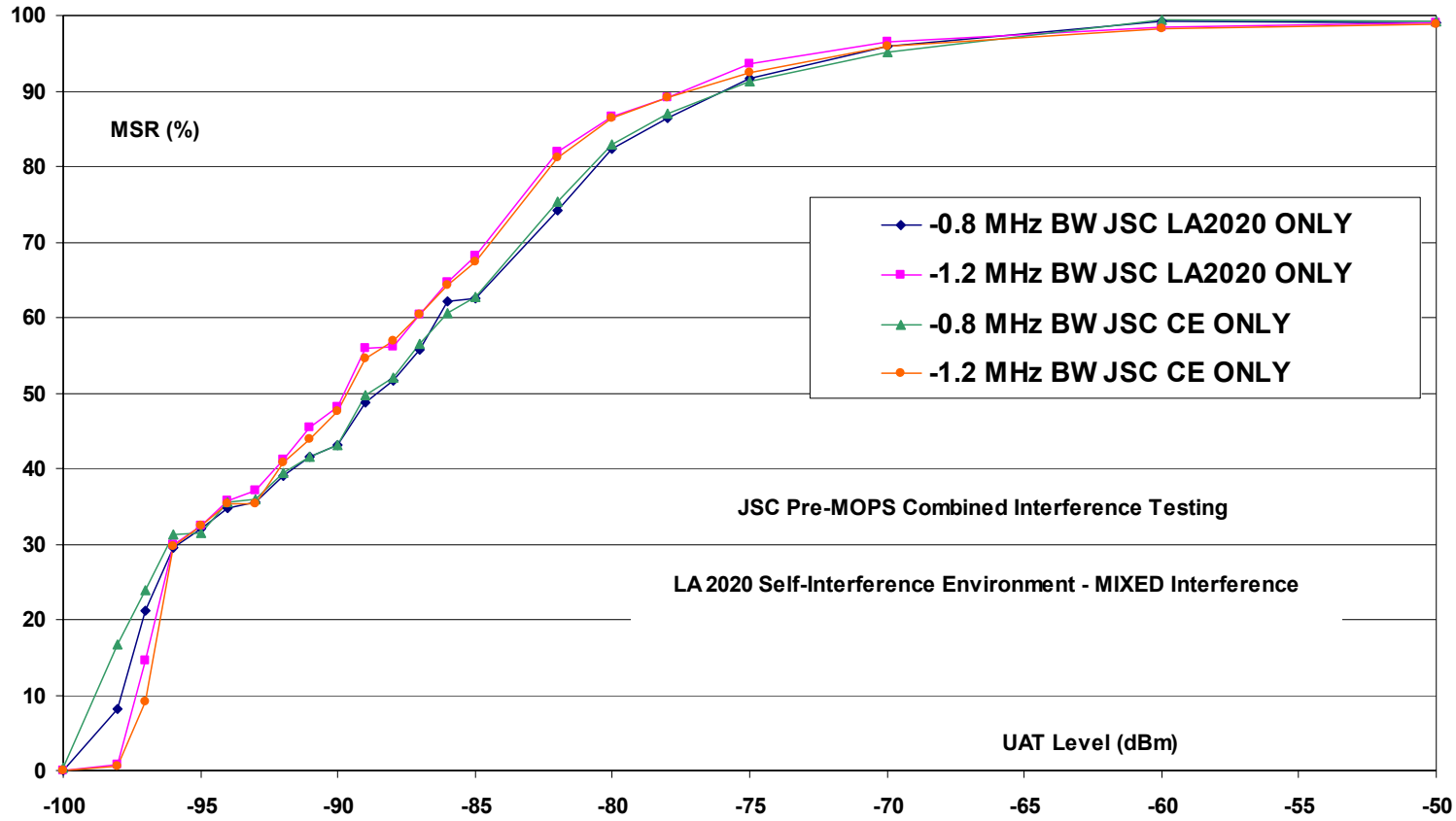
Core Europe 2015 Only



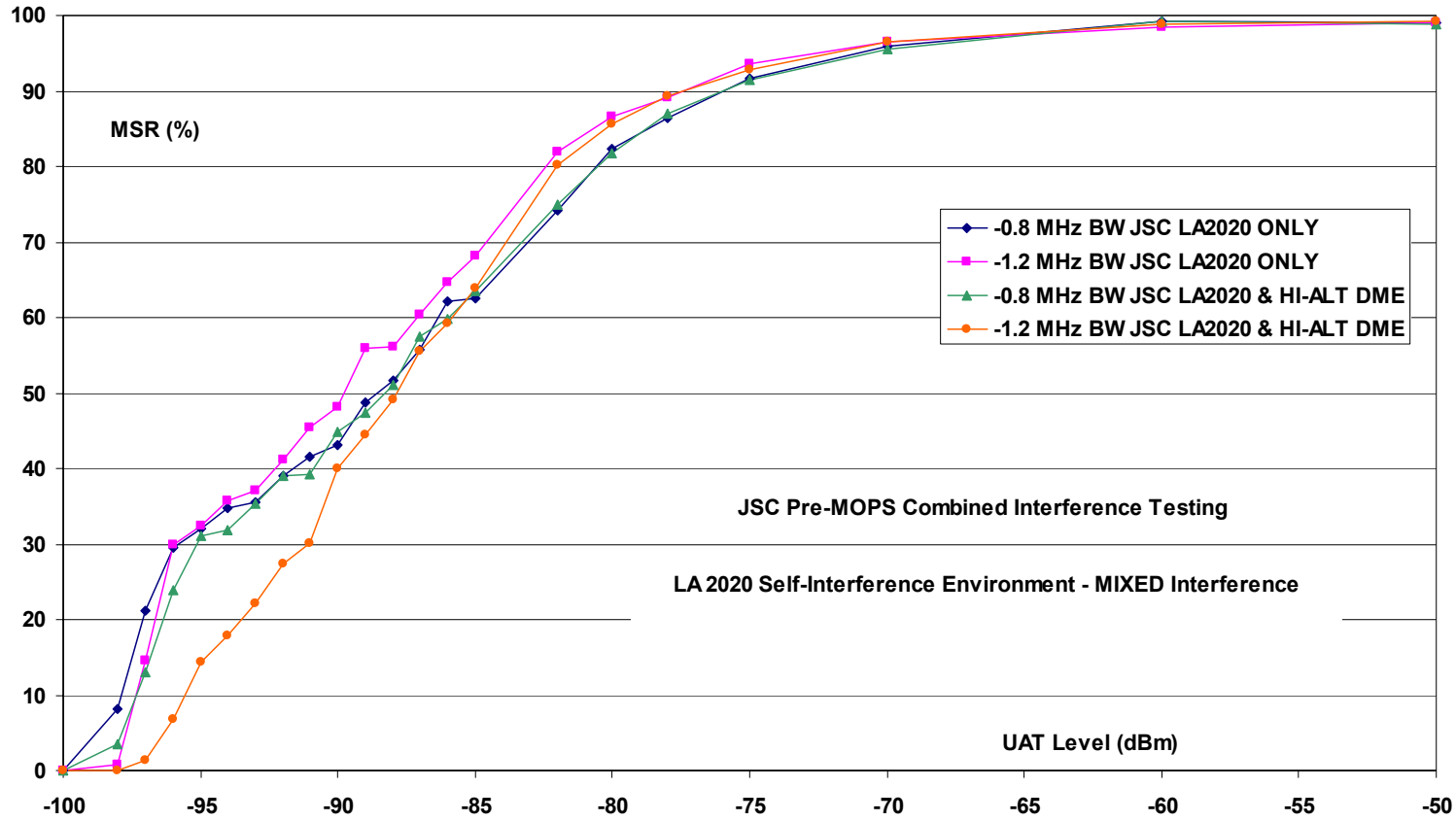
LA 2020 Only


100
90
80
70
60
50
40
30
20
10
0
MSR (%)
-0.8 MHz BW JSC LA2020 ONLY
-1.2 MHz BW JSC LA2020 ONLY
JSC Pre-MOPS Combined Interference Testing
LA 2020 Self-Interference Environment ONLY
UAT Level (dBm)
-100
-95
-90
-85
-80
-75
-70
-65
-60
-55
-50

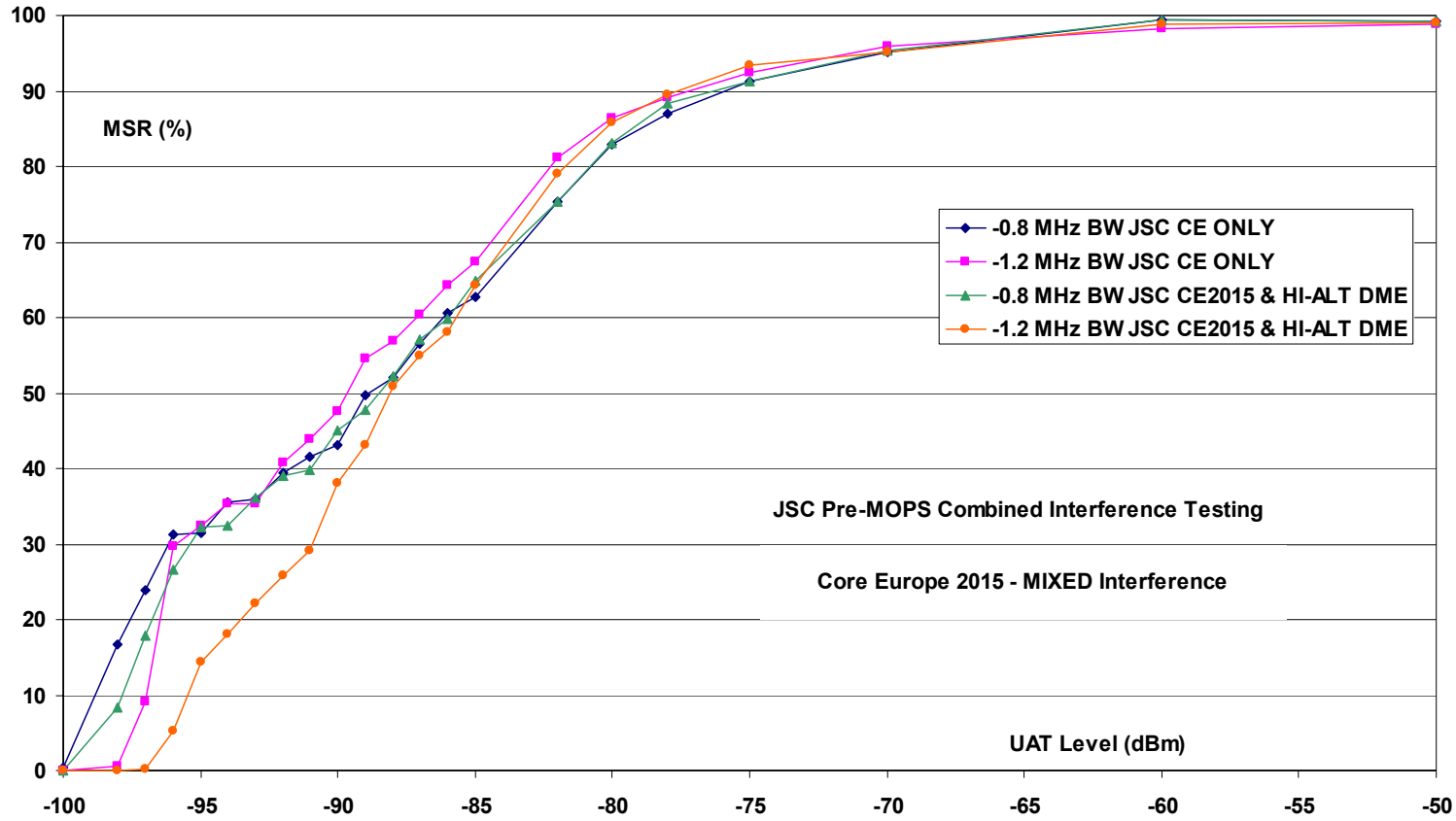
LA2020 versus CE2015 Only



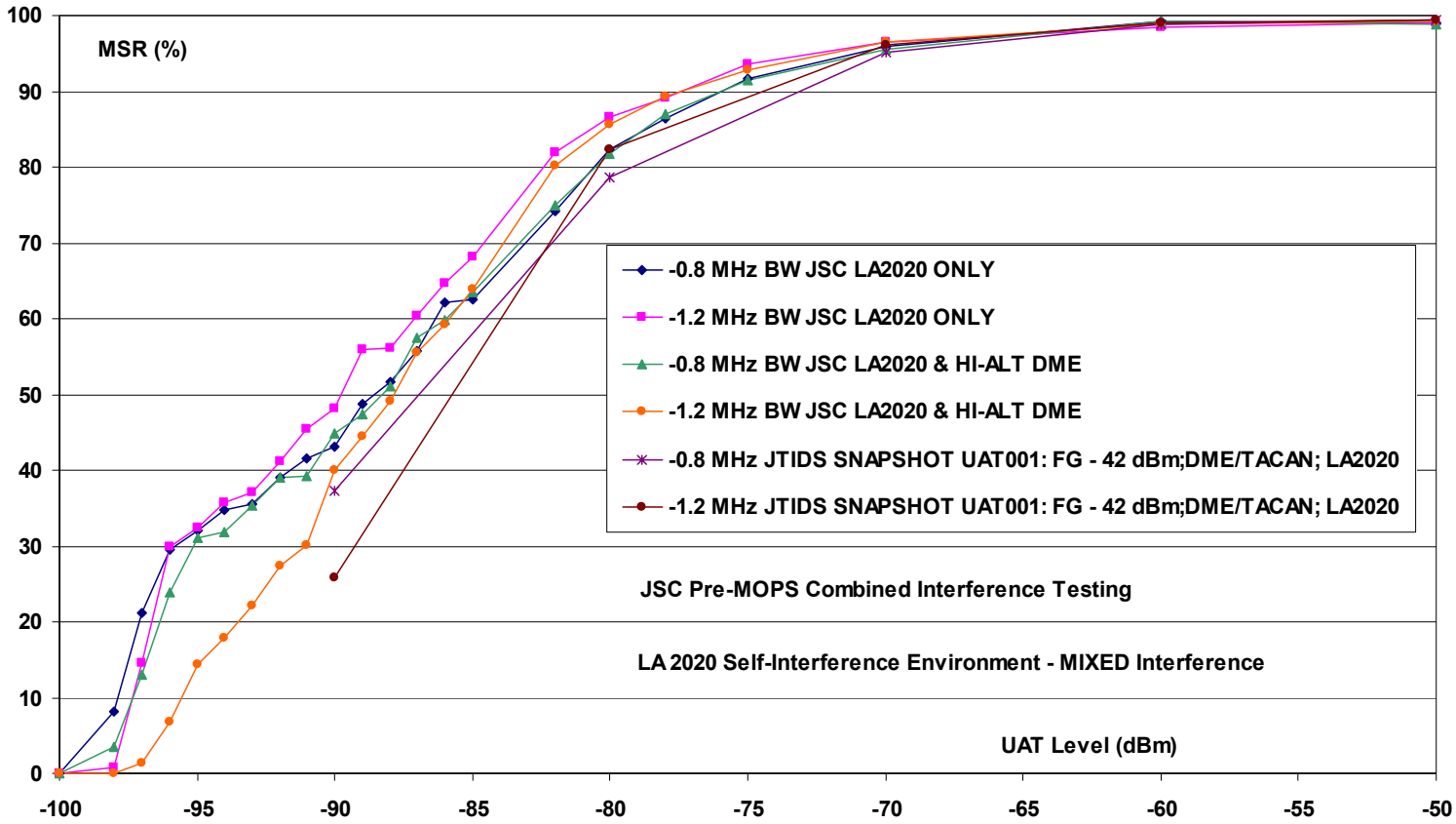
LA2020 Only; LA2020 plus High Altitude DME



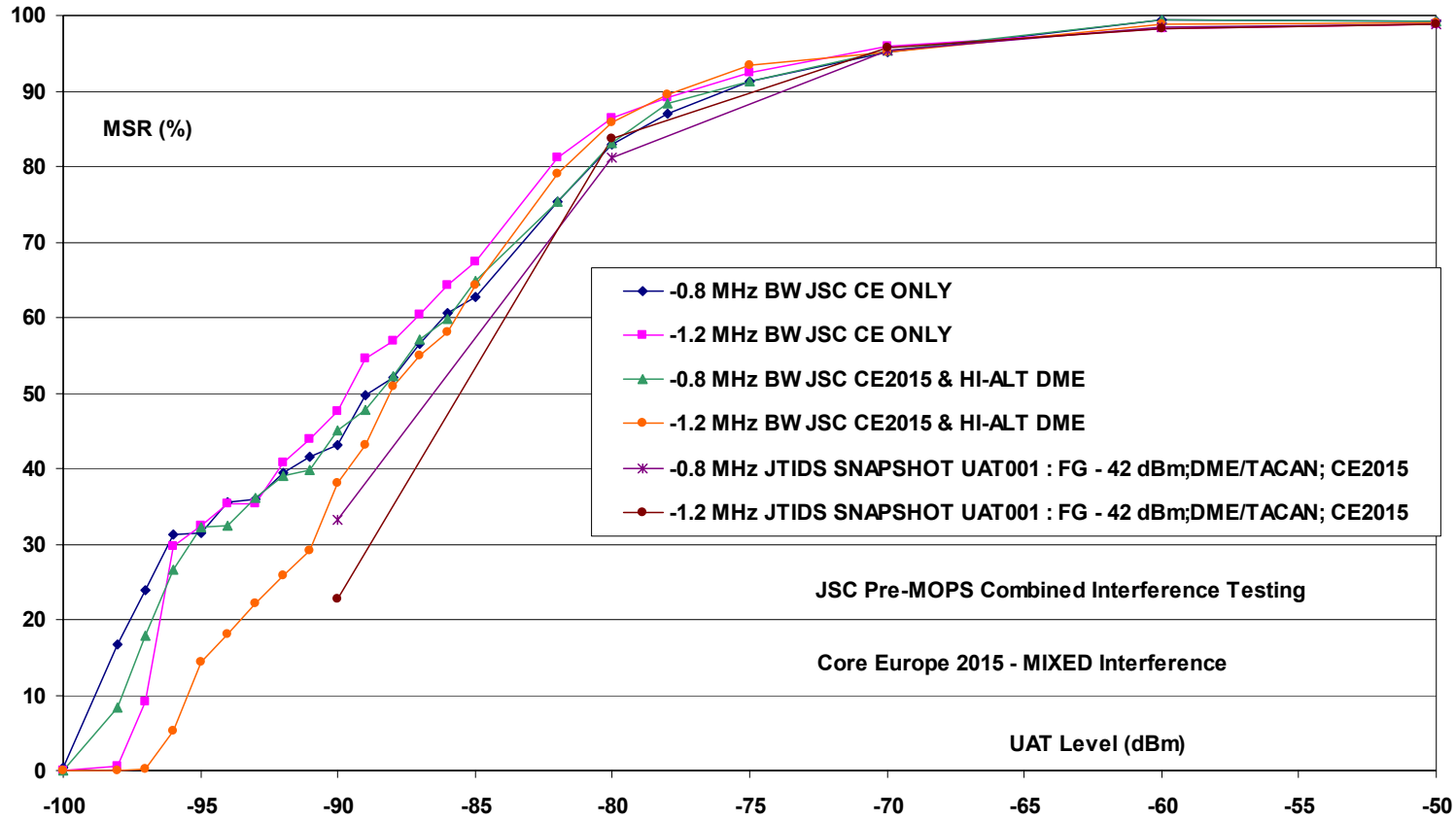
CE2015 Only; CE2015 plus High Altitude DME



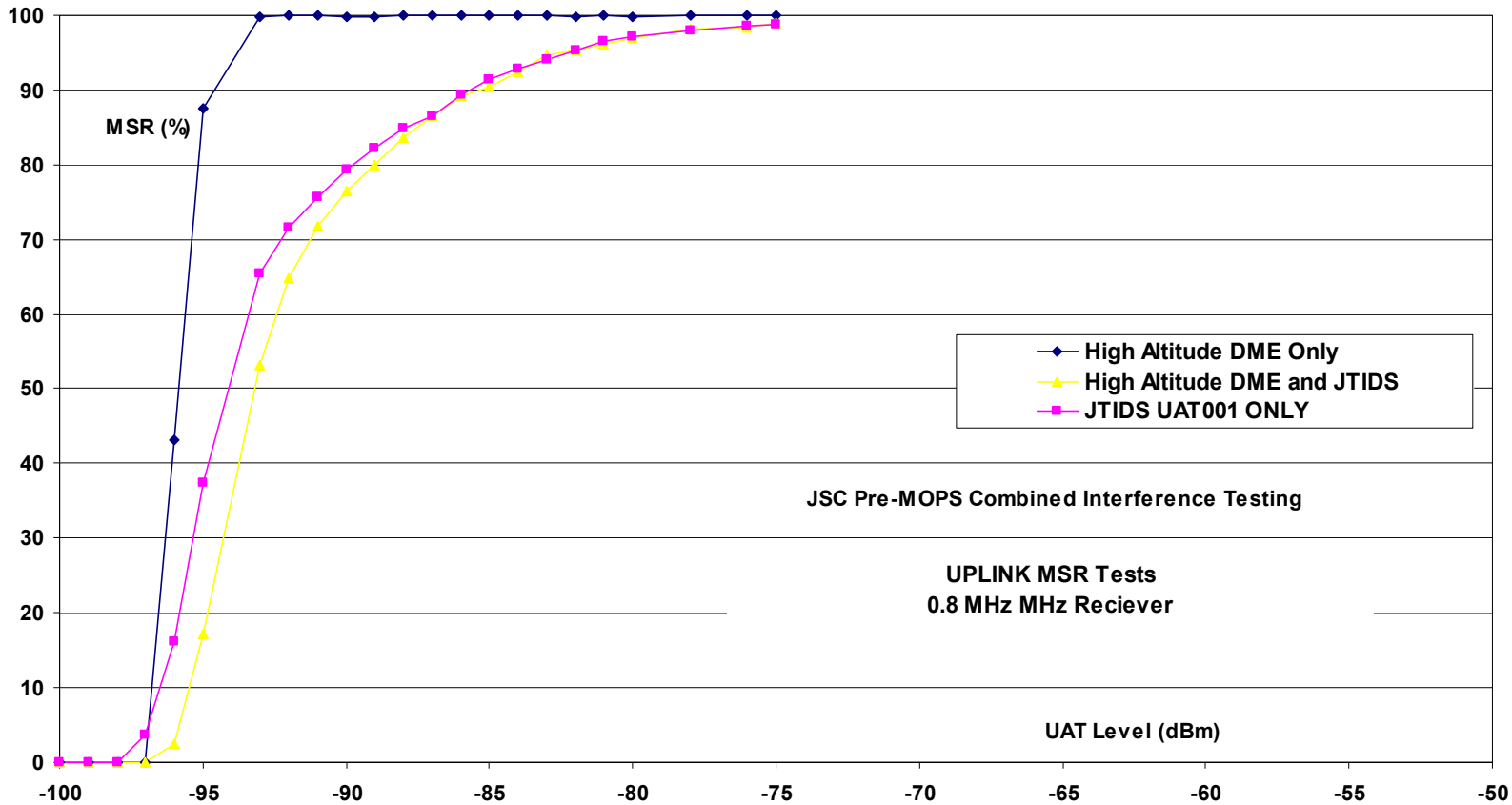
LA 2020 with All Test Conditions



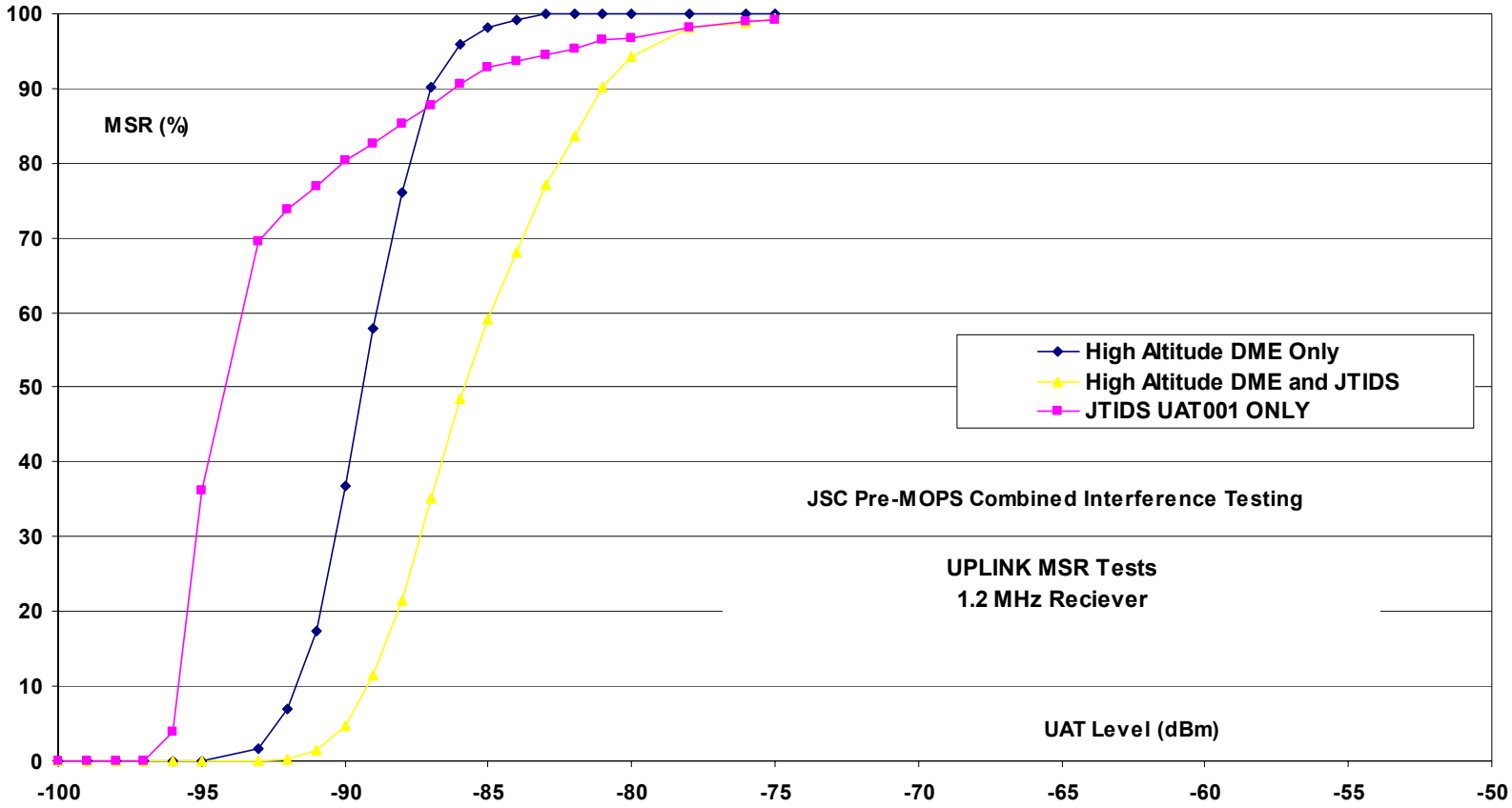
CE 2015 with All Test Conditions



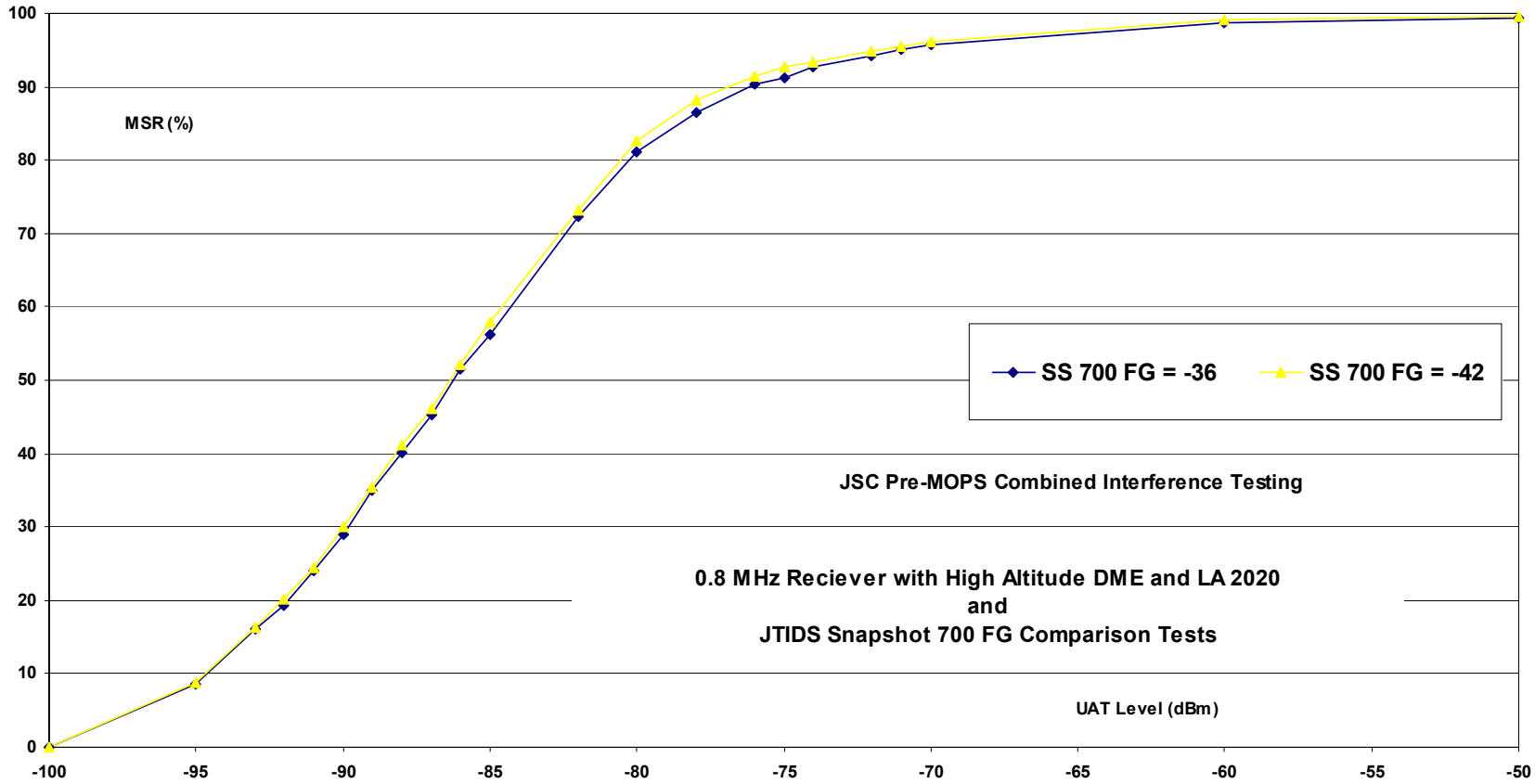
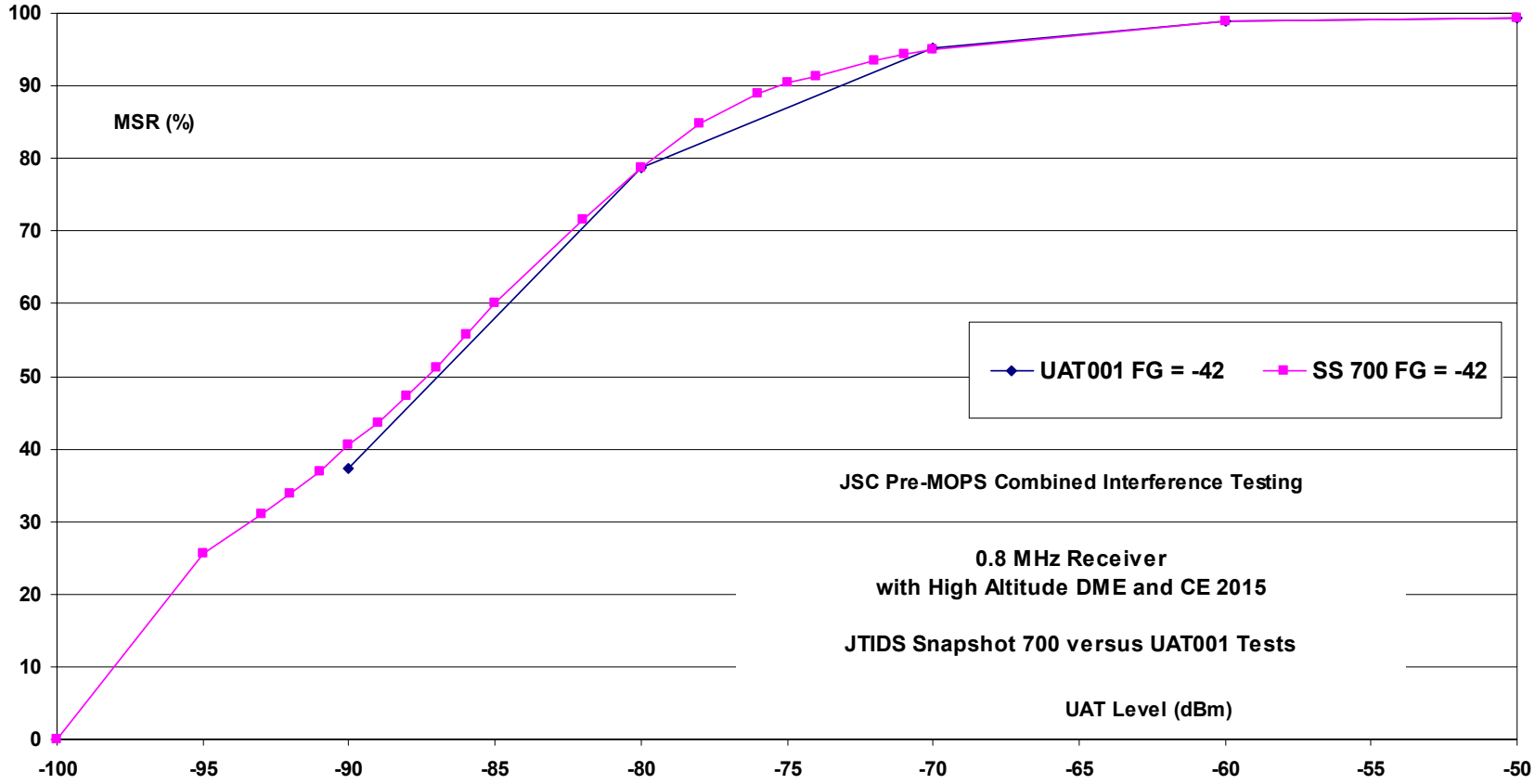
0.8 MHz Receiver UPLINK Tests



1.2 MHz Receiver UPLINK Tests



JTIDS Snapshot 700
FG = -36, FG = -42



UAT001 versus SS 700 Foreground Level - 42 dBm