15.247 (e) Description of the test setup for the Processing Gain Test Data tables

Measurement using the CW jamming margin method

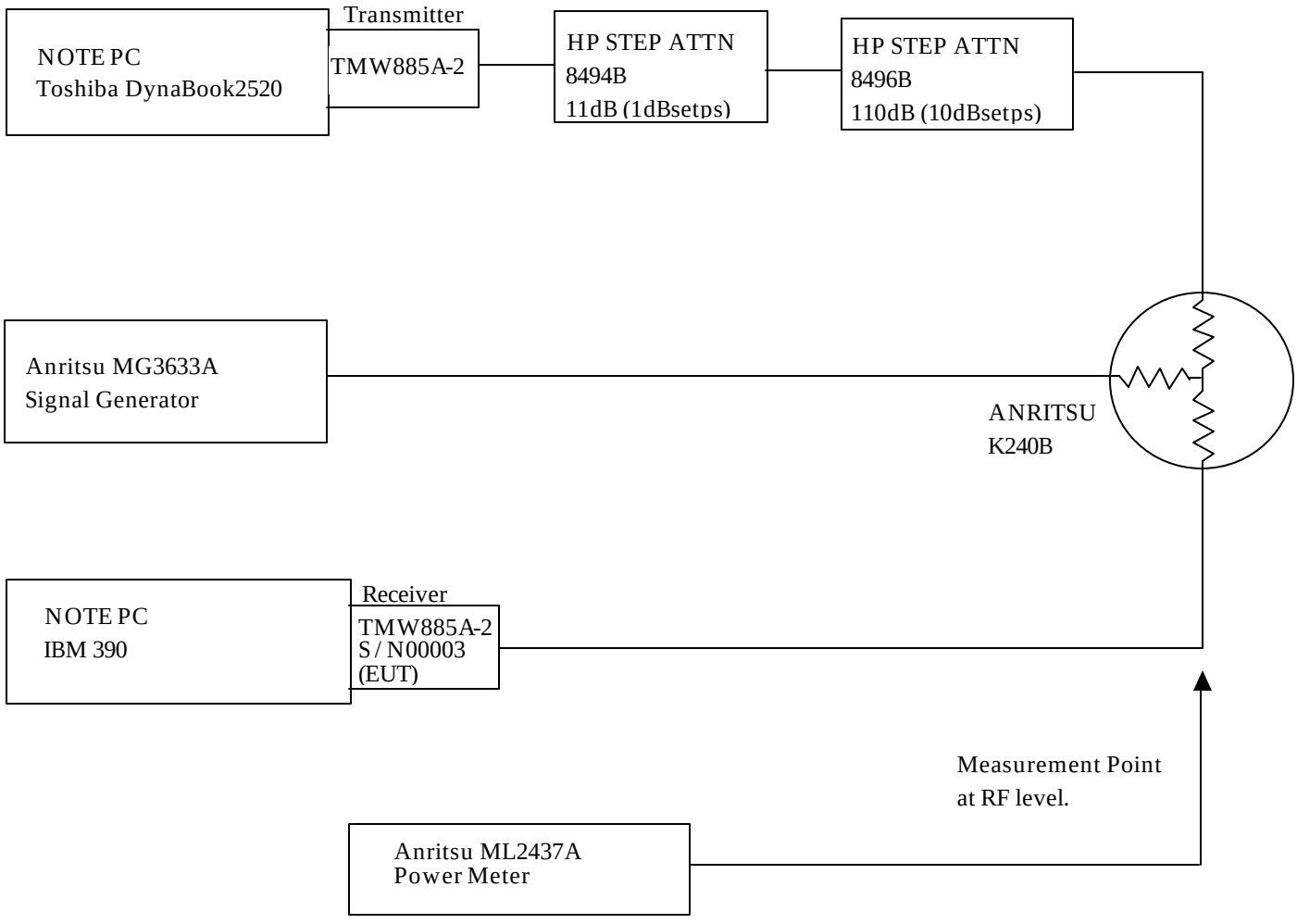
$GP = (S/N)o + Mj + Lsys$

Where: $(S/N)o$ = Signal to noise ratio
Mj = J/S ratio
$Lsys$ = System losses

Requirement : The processing gain shall be at least 10 dB

Measurement Procedure

1. Test Configuration



2. Software

The application of LanEval manufactured by INTERSIL shall be utilized for packet error rate (PER) measurement.

Note: Packet error rate (PER) is same as Bit error rate (BER).

3.Measurement procedure

1. The transmitter (TMW885A-2) shall be kept continuously transmitted. STEP ATTN shall be adjusted to –50dBm for measurement value of power meter. This level is the output value of transmitter in measurement.
2. Signal Generator (SG) for CW Jammer shall be set to CH1 (2412MHz) and non-modulation and output ON, after the transmitter output OFF. SG output level shall be adjusted to –58.4dBm for measurement value of power meter. This level (-58.4dBm) is the reference level of minimum J/S, 10dB process gain.
3. CW Jammer is switched OFF, transmitter is ON in transmission conditions, and then packet error shall be measured with the receiver. It shall be confirmed that PER is error-free.
4. CW Jammer is switched ON at reference level and it shall be confirmed that PER is under 8%.
5. CW Jammer shall be adjusted to PER 8% and it shall be confirmed that the J/S is above –8.4dB to record.
6. 4 and 5 shall be repeated for measurement at 50KHz step in receiver transit range of ± 8.5MHz.
7. Measurement of 1 to 6 shall be performed in CH6 (2437MHz) and CH11 (2463MHz) as like as above.

In case that some points are over PER 8% at step 4, it is acceptable if the number is under 20% of all measurement points. (The data of worst 20% must be excluded from the data of all measurement points to evaluate.)

4. Calculation for each channel

CH1 (2412MHz)

Across the Pass Band : 2403.5 2420.5 MHz
(offset Frequency f = ± 8500 KHz)
Worst J/S data point = -8.1 at offset Frequency f = -1550 KHz (2410.45 MHz)
Discarding the worst 20% of the J/S data point.
-8.1× 0.8 = -6.48
The lowest remaining J/S ratio = -6.4
(S/N)o = 16.4 , Lsys = 2.0
12 (dB) = 16.4 + (-6.4) + 2.0

CH2 (2437MHz)

Across the Pass Band : 2428.5 2445.5 MHz
(offset Frequency f = ｱ 8500 KHz)
Worst J/S data point = -8.1 at offset Frequency f = -1550 KHz (2435.45 MHz)
Discarding the worst 20% of the J/S data point.
-8.1ｦ 0.8 = -6.48
The lowest remaining J/S ratio = -6.4
(S/N)o = 16.4 , Lsys = 2.0
12 (dB) = 16.4 + (-6.4) + 2.0

CH3 (2462MHz)

Across the Pass Band : 2453.5 2470.5 MHz
(offset Frequency f = ｱ 8500 KHz)
Worst J/S data point = -7.9 at offset Frequency f = -1550 KHz (2460.45 MHz)
Discarding the worst 20% of the J/S data point.
-7.9ｦ 0.8 = -6.32
The lowest remaining J/S ratio = -6.3
(S/N)o = 16.4 , Lsys = 2.0
12.1 (dB) = 16.4 + (-6.3) + 2.0