

Evaluation Results -1

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March. 1998

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Merged Proposal

-Former proposals by Lucent Tech. and NTT is merged into one proposal that describes in a draft of full document (98/72r1)

-Evaluations of 16-QAM are reported by Lucent Tech, evaluations of DQPSK and DBPSK are reported by NTT.

General Description

Parameter	Value(s)
Data Suppo	30, 20,
Spacing	15 MHz
Center Frequencies	Lower band Middle band 5270,5285, 5300, 5315, 5330 Upper band 5745,5760, 5775, 5790, 5805
	5.15-5.25 GHz: 30 5.25-5.35 GHz: mW 5.725-5.825 GHz:
Sensitivities (NF=10 dB)	15 Mbit/s : -83.5 dBm 10 Mbit/s : - 86.3dBm 5 Mbit/s : -89.6 dBm
CCA threshold	-78 dBm
Clock Rate accuracy	40 ppm maximum
Carrier Frequency accuracy	40 ppm maximum
Waveform implementation accuracy in RF	insensitive 5 dB for rate Back
Implementation Complexity	Hardware size gates (Base band) Power : duty 30 Mbit/s : 186 20 Mbit/s : 124 15 Mbit/s : 93 10 Mbit/s : 62 5 Mbit/s : 31

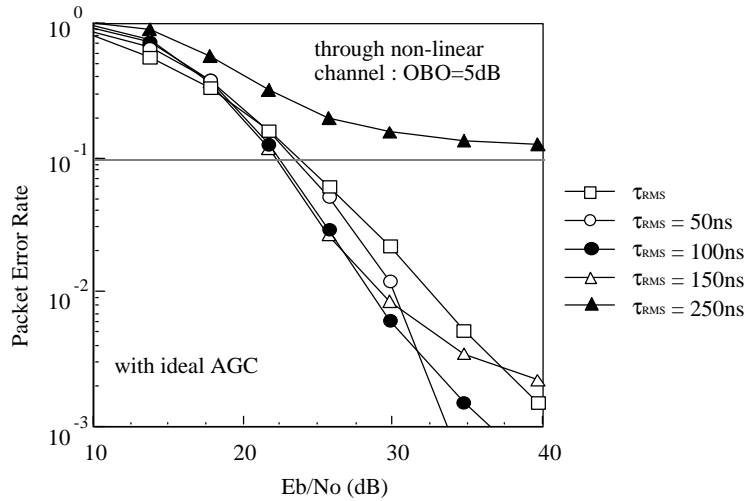
Per-Rate Feature Summary

Parameter	30Mbit/s	20Mbit/s	15Mbit/s	10Mbit/s	5Mbit/s
D ar e	30Mbi s	20Mbi s	15Mbit/s	10Mbi s	5Mbi s
E m h od	$r=3/4$	$r=1/2$	$r=3/4$	$r=1/2$	$r=1/2$
In e ingn h od	Co olutional 24x8	Co olutional 24x8	Convolutional 12x8	Co olutional 12x8	Co olutional 6x8
Sugge ste m i m se nst i NF=10dB/1000Byepckst	-	-	-78dBm (differe nti al)	-81dBm (differe nti al)	-84dBm(differe nti al)
Sugge ste dCo-Chann el re je ction re quiredCIRofl000 Bye packe t+ α	-	-	-10dB(differe nti al)	-7dB(differe nti al)	-4dB(differe nti al)
Sugge ste dAdj ce nt Channe l re je ction re quiredCIRofl000 Bye packe t+ α	-	-	17dB(differe nti al)	21dB(differe nti al)	23dB(differe nti al)
Sugge ste dAlterna te Channe l re je ction re quiredCIRofl000 Bye packe t+ α	-	-	46dB(differe nti al)	49dB(differe nti al)	50dB(differe nti al)
Implementatio accuracy	Not sensitive by skipping the centersubcarrier				

Results of DQPSK, $r=3/4$ (15 Mbit/s)

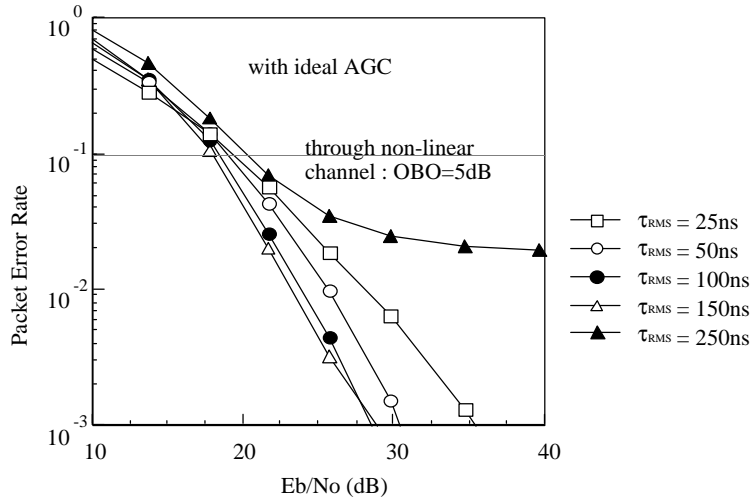
Packet Error Rate in Multipath Propagation with AWGN

Information data rate = 15Mbit/s, Coding rate = 3/4)



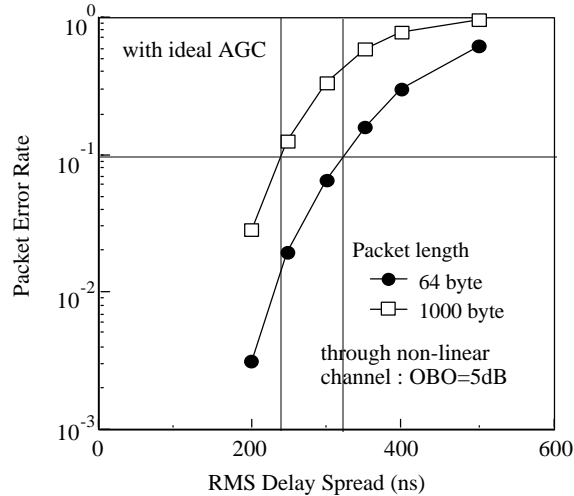
Packet Error Rate in Multipath Propagation with AWGN

Information data rate = 15Mbit/s, Coding rate = 3/4)

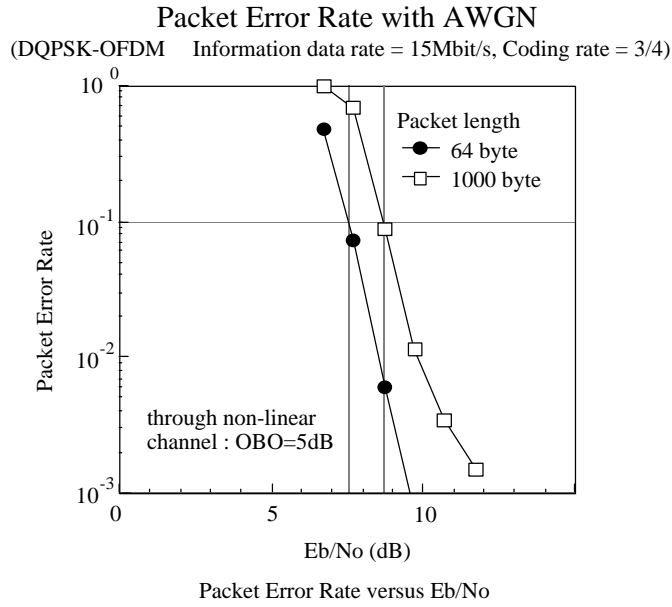


Packet Error Rate in Multipath Propagation

(DQPSK-OFDM Information data rate = 15Mbit/s, Coding rate = 3/4)



Packet Error Rate versus RMS Delay Spread

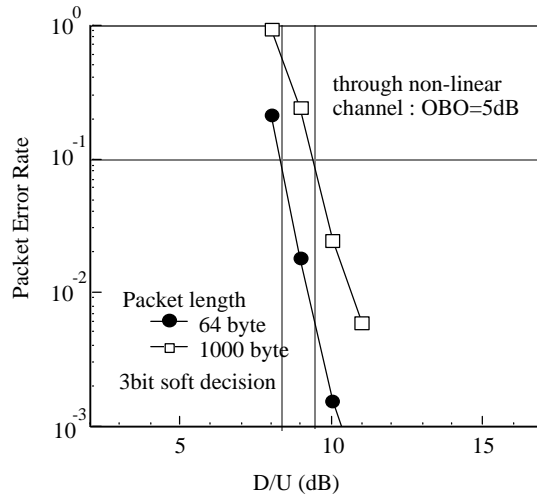


Packet Error Rate with Adjacent Channel Interference

(DQPSK-OFDM Information data rate = 15Mbit/s, Coding rate = 3/4)

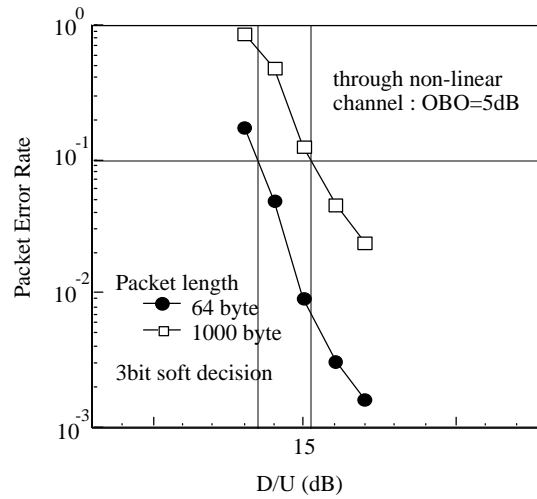
Packet Error Rate with Co-Channel Interference

Information data rate = 15Mbit/s, Coding rate = 3/4)

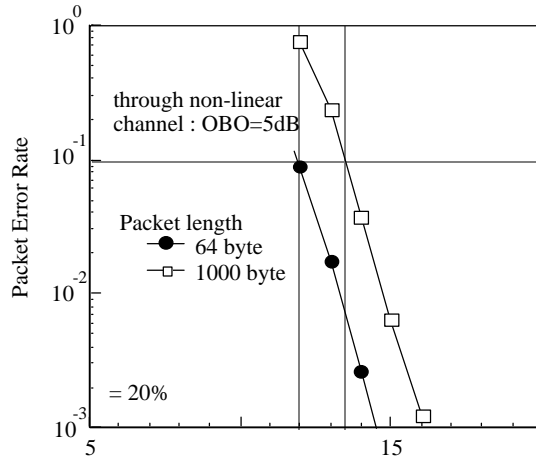


Packet Error Rate with CW Interference

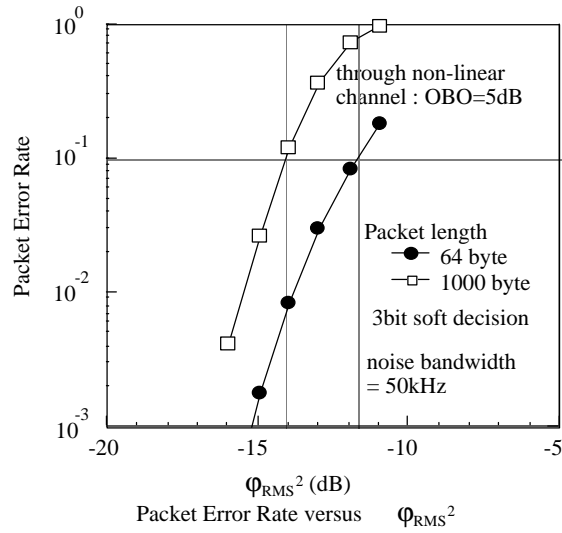
Information data rate = 15Mbit/s, Coding rate = 3/4)



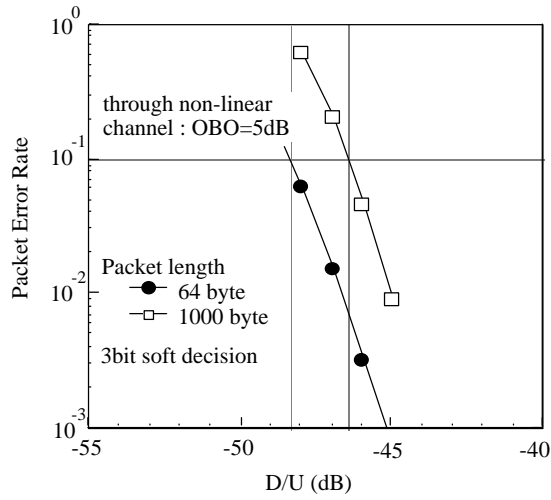
Packet Error Rate with Narrowband Gaussian Noise Interference



(DQPSK-OFDM Information data rate = 15Mbit/s, Coding rate = 3/4)



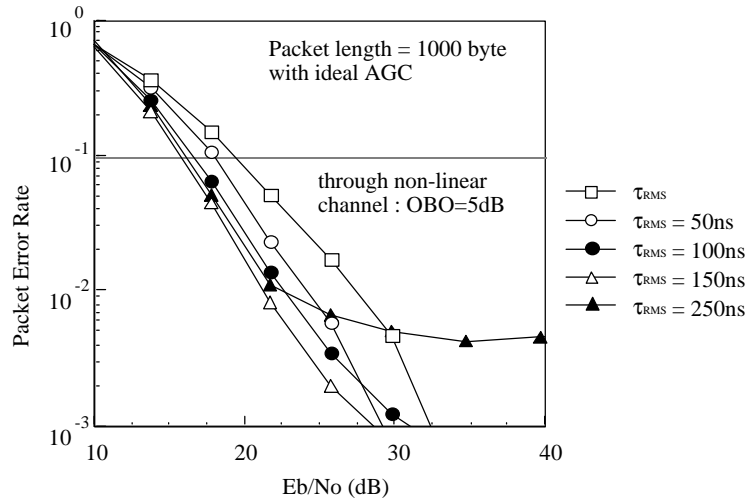
Packet Error Rate with Alternate Channel Interference



Results of DQPSK, $r=1/2$ (10 Mbit/s)

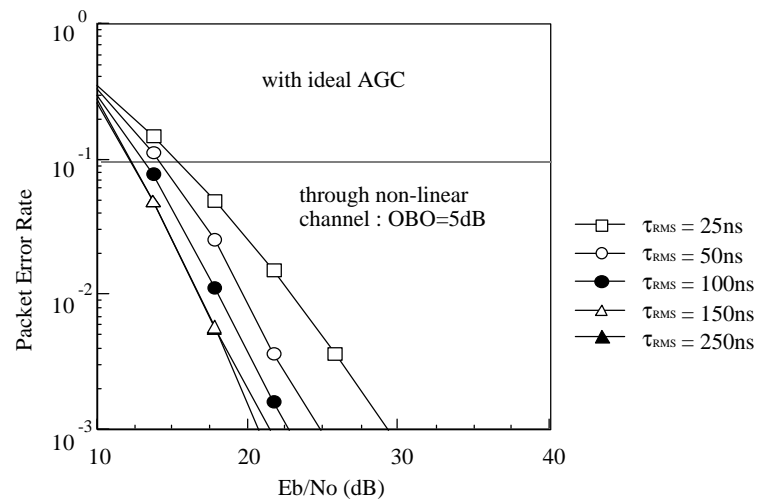
Packet Error Rate in Multipath Propagation with AWGN

(DQPSK-OFDM Information data rate = 10Mbit/s, Coding rate = 1/2)

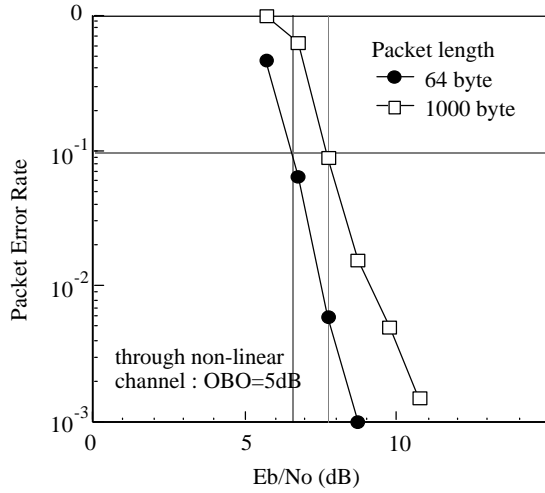


Packet Error Rate in Multipath Propagation with AWGN

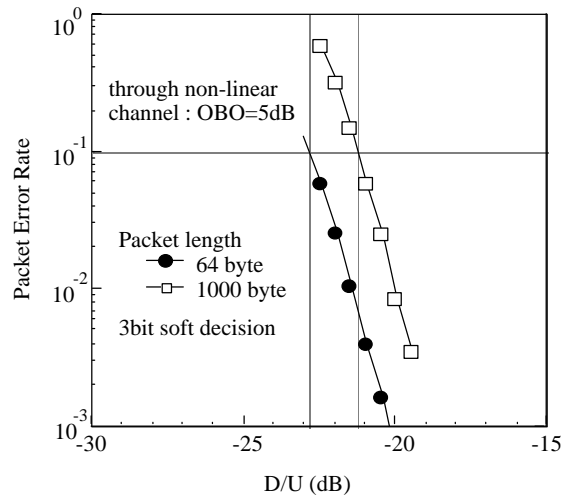
Information data rate = 10Mbit/s, Coding rate = 1/2)



Packet Error Rate with AWGN
(DQPSK-OFDM Information data rate = 10Mbit/s, Coding rate = 1/2)

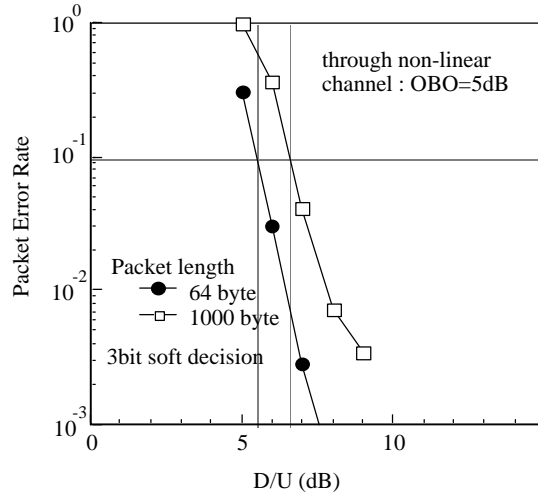


Packet Error Rate versus Eb/No



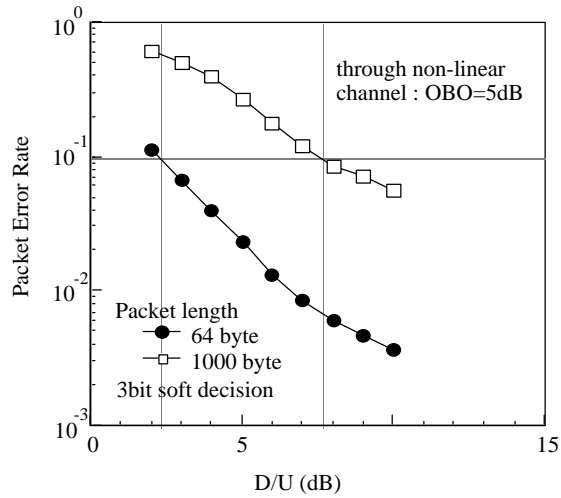
Packet Error Rate with Co-channel Interference

Information data rate = 10Mbit/s, Coding rate = 1/2)

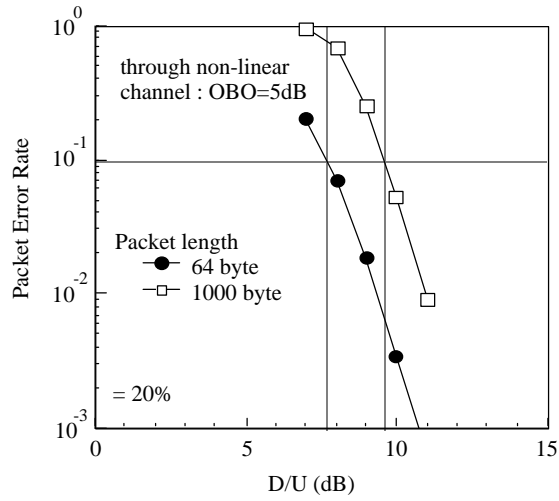


Packet Error Rate with CW Interference

Information data rate = 10Mbit/s, Coding rate = 1/2)

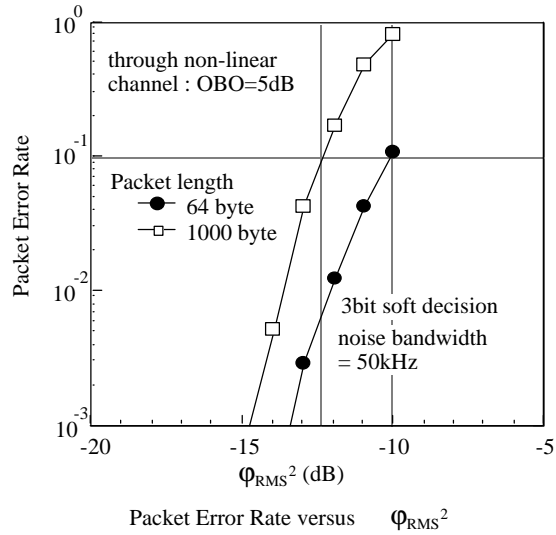


Packet Error Rate with Narrowband Gaussian Noise Interference



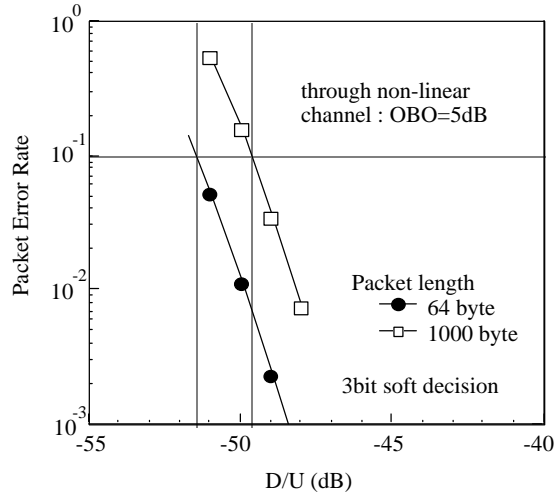
Packet Error Rate with Phase Noise

Information data rate = 10Mbit/s, Coding rate = 1/2)



Packet Error Rate with Alternate Channel Interference

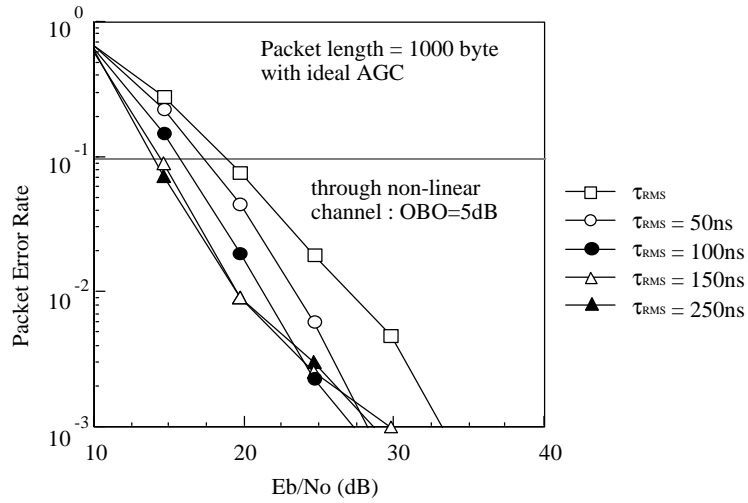
Information data rate = 10Mbit/s, Coding rate = 1/2)



Results of DBPSK, r=1/2 (5 Mbit/s)

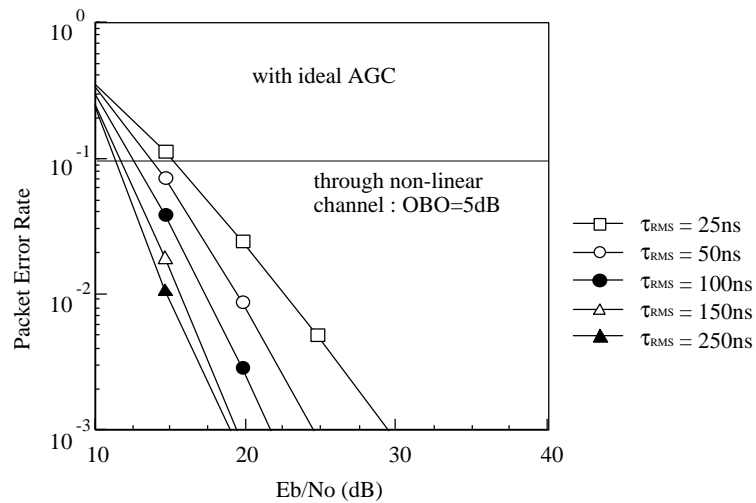
Packet Error Rate in Multipath Propagation with AWGN

Information data rate = 5Mbit/s, Coding rate = 1/2)

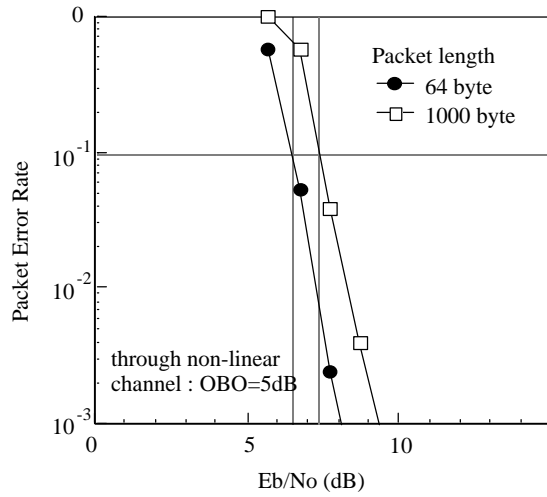


Packet Error Rate in Multipath Propagation with AWGN

Information data rate = 5Mbit/s, Coding rate = 1/2)



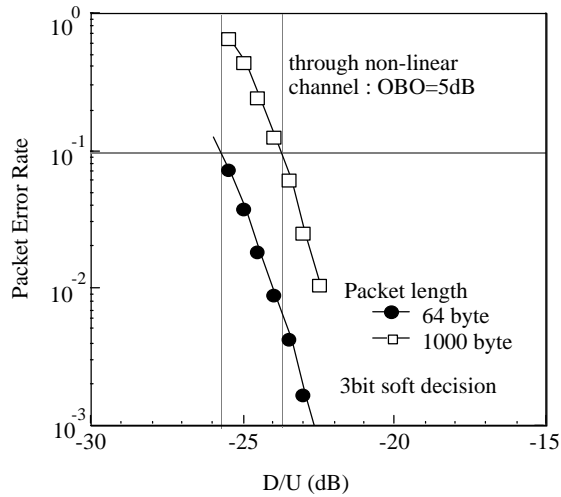
Packet Error Rate with AWGN (DBPSK-OFDM Information data rate = 5Mbit/s, Coding rate = 1/2)



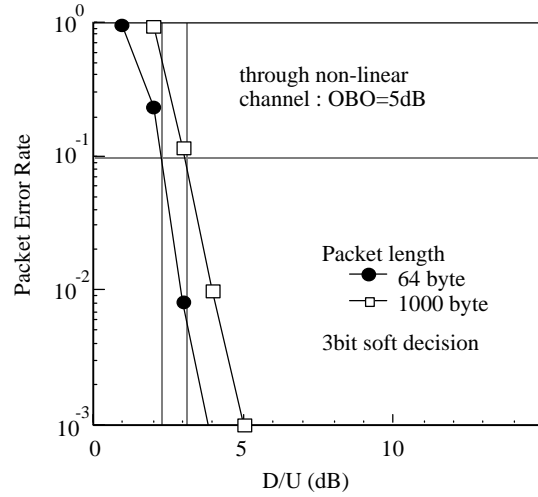
Packet Error Rate versus Eb/No

Packet Error Rate with Adjacent Channel Interference

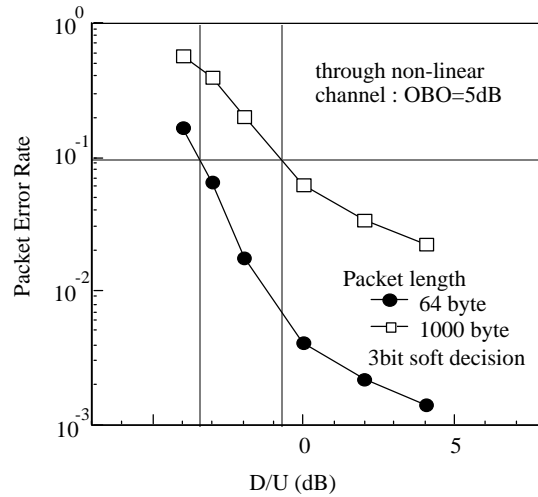
Information data rate = 5Mbit/s, Coding rate = 1/2



Packet Error Rate with Co-Channel Interference
(DBPSK-OFDM Information data rate = 5Mbit/s, Coding rate = 1/2)

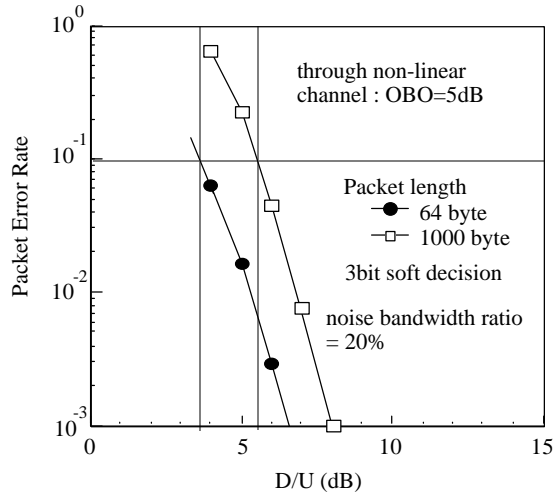


Packet Error Rate with CW Interference
(DBPSK-OFDM Information data rate = 5Mbit/s, Coding rate = 1/2)



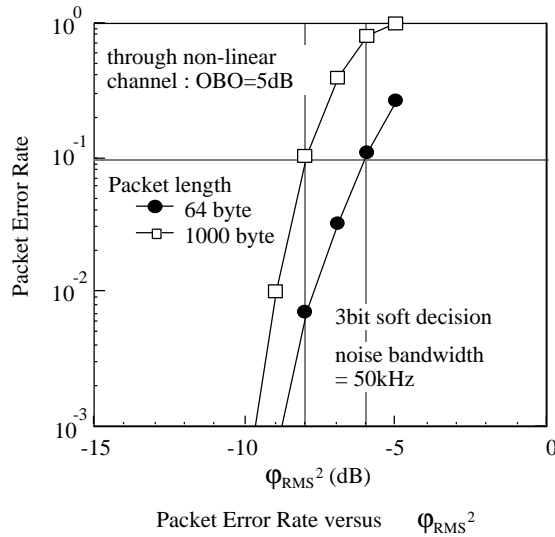
Packet Error Rate with Narrowband Gaussian Noise Interference

(DBPSK-OFDM Information data rate = 5Mbit/s, Coding rate = 1/2)



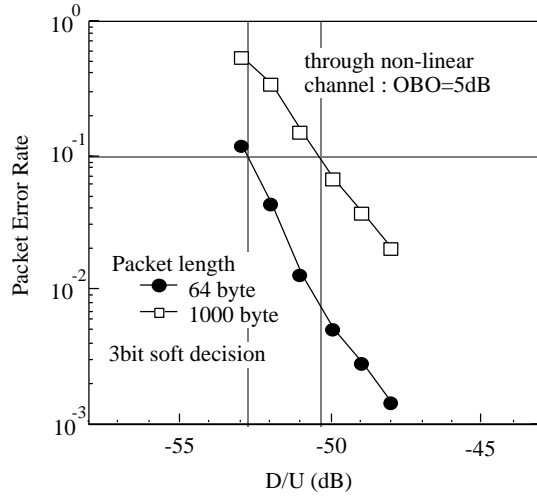
Packet Error Rate with Phase Noise

Information data rate = 5Mbit/s, Coding rate = 1/2)



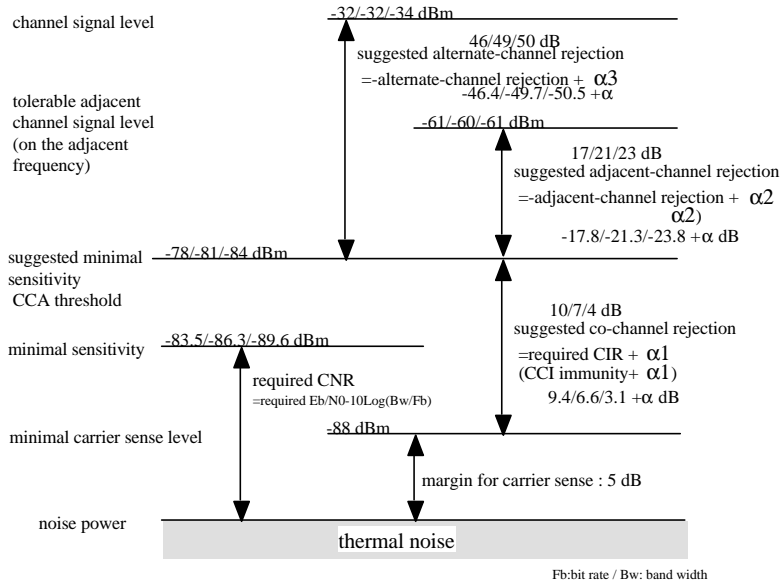
Packet Error Rate with Alternate Channel Interference

BPSK-OFDM Information data rate = 5Mbit/s, Coding rate = 1/2)



Timing and Overhead related parameters

Attribute	Suggested Value
aSlotTime	6 μs
aCCATime	≤4 μs
aRxTxTurnaroundTime	implementation dependent
aTxPLCPDelay	implementation dependent
aRxTxSwitchTime	implementation dependent
aTxRampOnTime	Not applicable
aTxRFDelay	implementation dependent
aSIFSTime	13 μs
aRxRFDelay	4 μs
aRxPLCPDelay	7 μs
aMACProcessingDelay	implementation dependent
aTxRampOffTime	Not applicable
aPreambleLength	19? ? s
aPLCPHdrLength	4 μs (for 30Mbit/s) 5 μs (for 20Mbit/s) 6 μs (for 15Mbit/s) 7 μs (for 10Mbit/s) 12 μs (for 5Mbit/s)
aMPDUDurationFactor	(coding rate) ⁻¹
aAirPropagationTime	<1 μs
aCWmin	15
aCWmax	1023



Evaluation Results -2

Richard van Nee

March. 1998

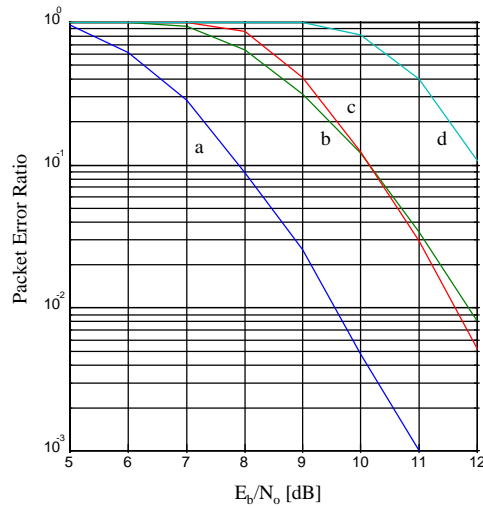
Lucent Technologies

Bell Labs.

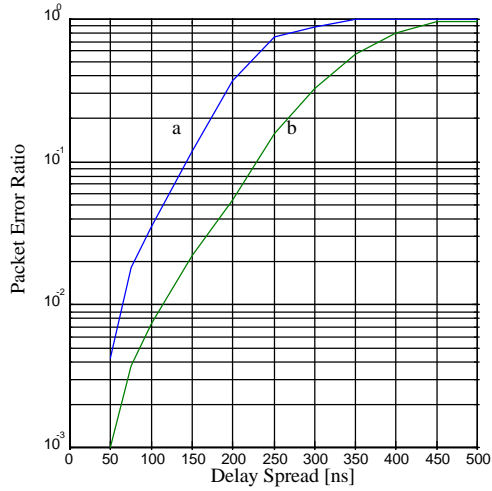
vantee@lucent.com

Per-Rate Feature Summary

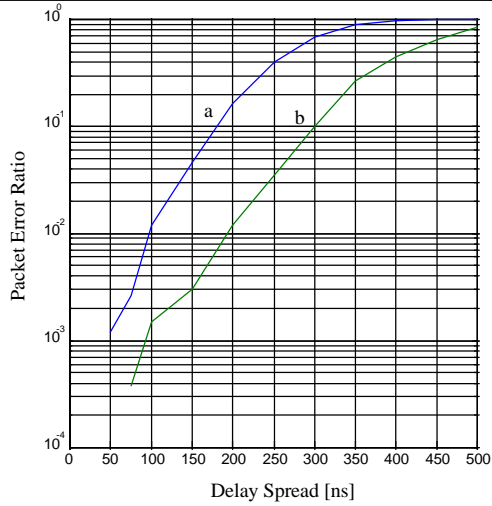
<i>Parameter</i>		
Data rate	20 Mbps	30 Mbps
ECC method	rate 1/2	rate 3/4
Interleaving method	block of 192 bits	288 bits
Suggested minimal sensitivity	-75	-72
Suggested Co-Channel rejection	-12	-16
Suggested Adjacent Channel rejection	15	11
Suggested Alternate Channel rejection	50	50
Implementation Accuracy		



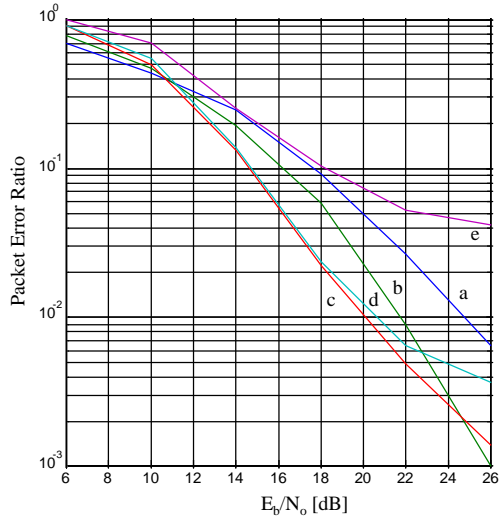
AWGN, a) 20 Mbps, 64 bytes, b) 30 Mbps, 64 bytes, c) 20 Mbps, 1000 bytes, d) 30 Mbps, 1000 bytes



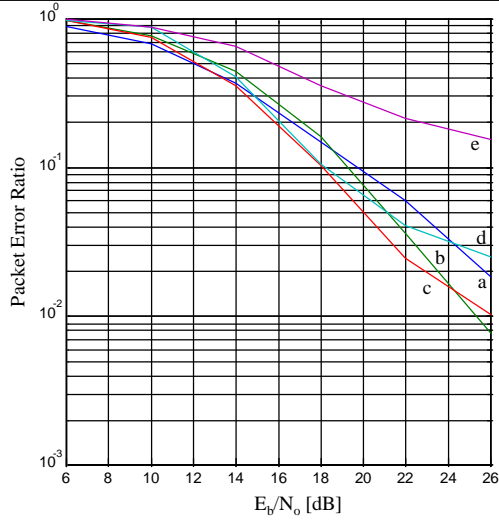
Irreducible Packet Error Ratio versus Delay Spread, 1000 byte packets, a) 30 Mbps, b) 20 Mbps.



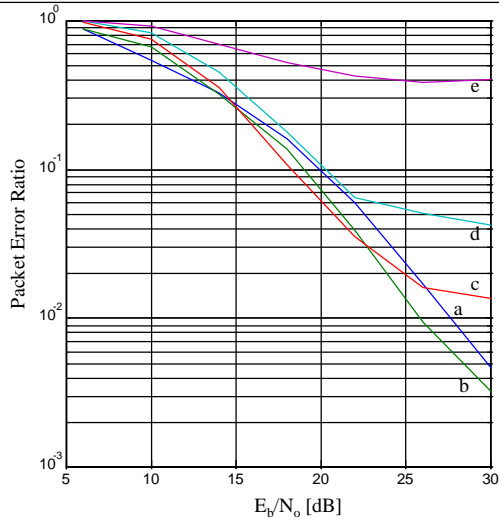
Irreducible Packet Error Ratio versus Delay Spread, 64 byte packets, a) 30 Mbps, b) 20 Mbps.



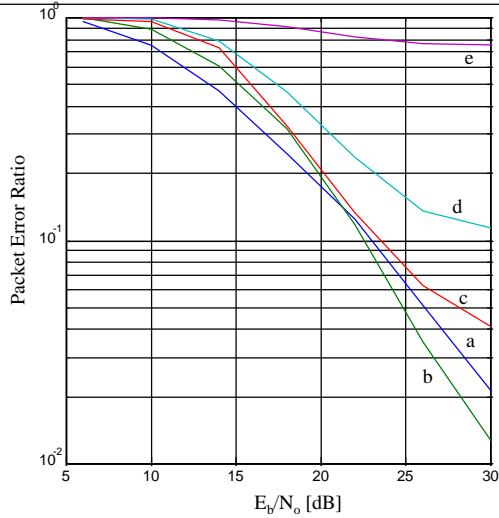
Rayleigh fading, 20 Mbps, 64 byte packets, delay spread =
a) 25 ns, b) 50 ns, c) 100 ns, d) 150 ns, e) 250 ns.



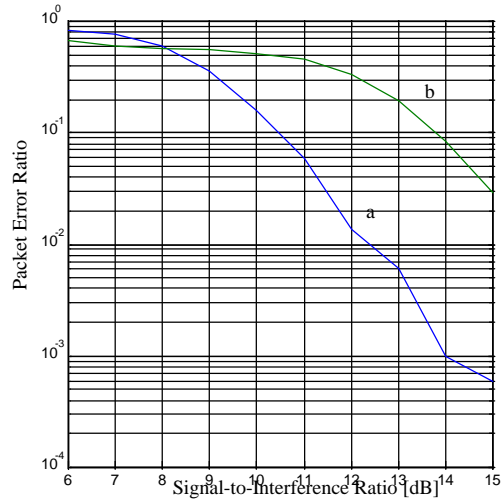
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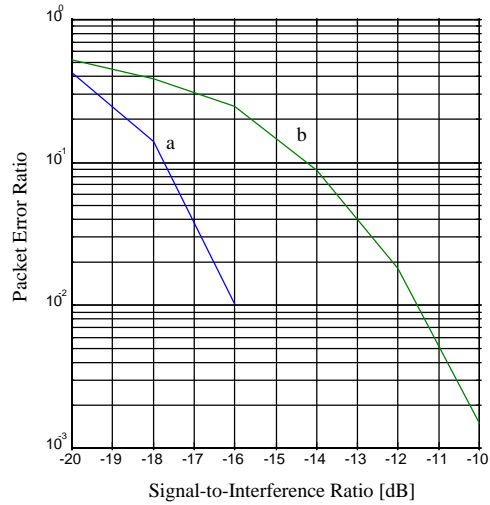
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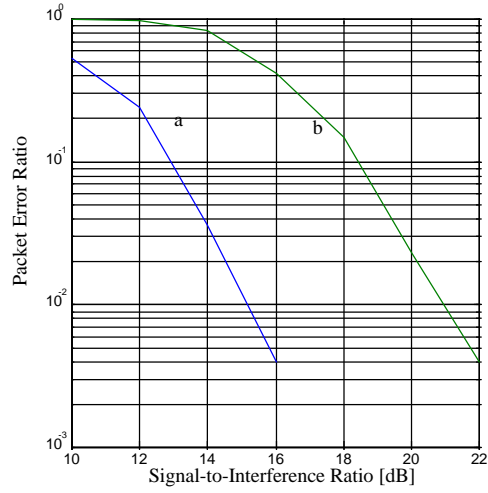
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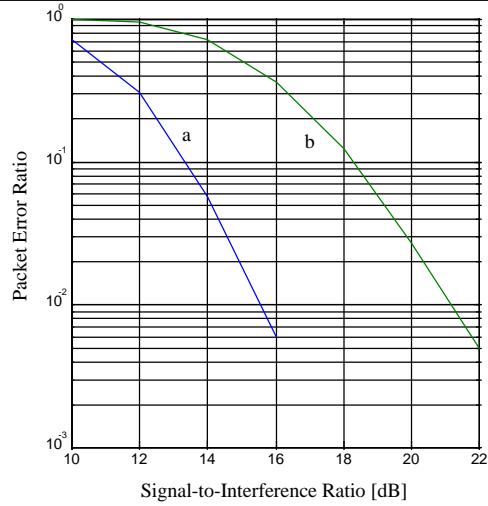
Packet Error Ratio with Co-Channel Interference
a) 20 Mbps, b) 30 Mbps



Packet Error Ratio with Adjacent Channel Interference
a) 20 Mbps, b) 30 Mbps



Packet Error Ratio with Continuous Wave Interference
a) 20 Mbps, b) 30 Mbps



Packet Error Ratio with Narrowband Gaussian Noise
a) 20 Mbps, b) 30 Mbps