



Processing gain of Direct Sequence Spread Spectrum

Product name: XI-1250 11Mbps Access Point

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FCC requirements: The processing gain of a direct sequence system shall be at least 10dB. The processing gain shall be determined from the ratio in dB of the signal-to-noise ratio with the system spreading code turned off to the signal-to-noise ratio with the system spreading code turned on, as measured at the demodulated output of the receiver.

This document contains theoretical calculation and test setup, procedure, measurement data and report.

Test equipment:

R&S FSEM20 spectrum analyzer

R&S SMIQ03B signal generator

Giga-tronics 8541C universal power meter

Hp8496B attenuator/110dB with 10dB step

Hp8494B attenuator/11dB with 1dB step

Hp11636BB power splitter

Notebook/PC X2

Theoretical calculation: The Processing gain is related to be jamming margin as follows:

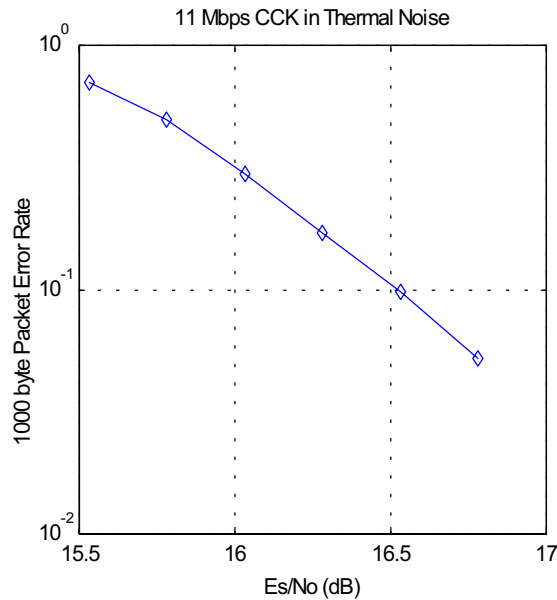
$$G_p = \left(\frac{S}{N} \right)_{output} + \left(\frac{J}{S} \right) + L_{sys}$$

Where $BER_{reference}$ is the reference bit error ratio with its corresponding, theoretical output signal to noise ratio per symbol, $(S/N)_{output}$, (J/S) is the jamming margin(jamming signal power relative to desired signal power), and L_{sys} is the system losses.

For 5.5Mbps and 11Mbps case: The HFA3861B direct sequence spread spectrum baseband processor use CCK modulation which is a form of M-ary Orthogonal Keying. The Probability of error for generalized M-ary orthogonal signaling using coherent demodulation is given by:

$$P_e = 1 - P_{c1} = 1 - \frac{1}{\sqrt{2\pi}} \int_{-\frac{S_{01}}{N_0}}^{\infty} \left[2(1 - Q\left\{z + \sqrt{2\frac{E_b}{\eta}}\right\}) \right]^{\frac{M}{2}-1} \exp\left\{-\frac{z^2}{2}\right\} dz$$

The



FER performance curve is derived by [1] as left graph:

Therefore:

$$G_p = (E_s/N_0)_0 + (J/S) + L_{sys} \\ = 16.4 + 2.0 + (J/S)$$

and, $G_p = 18.4 + (J/S)$ must be greater than 10dB

For the case of the HFA3861B, the bit rates are 1, 2, 5.5 and 11Mbps. The corresponding symbol rates are 1, 1, 1.375 and 1.375 Msps. The chip rate is always 11Mcps, so the ratio of chip rate to symbol rate is 11:1 for the 1, 2Mbps and 8:1 for 5.5, 11Mbps rates. Since the symbol rate to bit rate is less than 10 for the higher rates, we supply the theoretical processing gain and coding are utilized. This is a reasonable in that they cannot be separated in the demodulation process. If a separable FEC coding scheme were used, we would not be comfortable making this assertion.

As can be seen from the curve of figure 1, the E_s/N_0 is 16.4dB at the PER of 8%. It is well known that the E_b/N_0 of BPSK is 9.6dB for $1e-5$ BER, so therefore the coding gain of CCK over BPSK is 2.2dB. We add this to the processing gain of 9B to get 11.2dB overall processing gain for the CW jamming test.

Taking the calculation above, if the $(J/S) > -8.4\text{dB}$ then the equipment passes the CW jamming test.

For 1 and 2Mbps case, the modulation is either DBPSK or DQPSK for 1 and 2Mbps. With differential coding, there is an error extension factor of 2 which comes from the fact that if one symbol is error, then the next will be demodulated in error too. Since its phase is dependant on the change of phase from symbol to symbol. In DBPSK, this result is a simple factor of two in BER. With DQPSK, the picture is a little muddled in that a symbol error may cause one or two bit errors since two bits are carried per symbol. From the book of Fig.7.2, Viterbi, A.J. Principles of Coherent Communications, Page 192 (New York; McGraw-Hill, 1996), the E_b/N_0 of BPSK is 9.6dB. When operating DQPSK at 2Mbps, the E_b/N_0 remains essentially the same, but the E_s/N_0 goes up by 3dB. So the $(S/N)_0$ is 12.6.

Test procedure:

Obtain the simplex link shown. Perform all independent instrumentation calibration prior to this procedure. Set operating levels using fixed and variable attenuator in system to meet the following objectives:

1. Signal Power at receiver is approximately -60dBm .
2. Signal Power at power meter between -20 and -30dBm .
3. Use spectrum analyzer to monitor test.
4. Ensure that CW jammer generator RF output is disabled and measure the power at the power meter port using Giga-tronics 8541C power meter. This is relative power, S_r .
5. Disable TX and set CW jammer output frequency equal to the carrier frequency and enable generator output. Set reference CW jammer power level at power meter port 8.4dB below S_r .
6. Disable CW jammer and re-establish Link. FER test should be essentially error free.

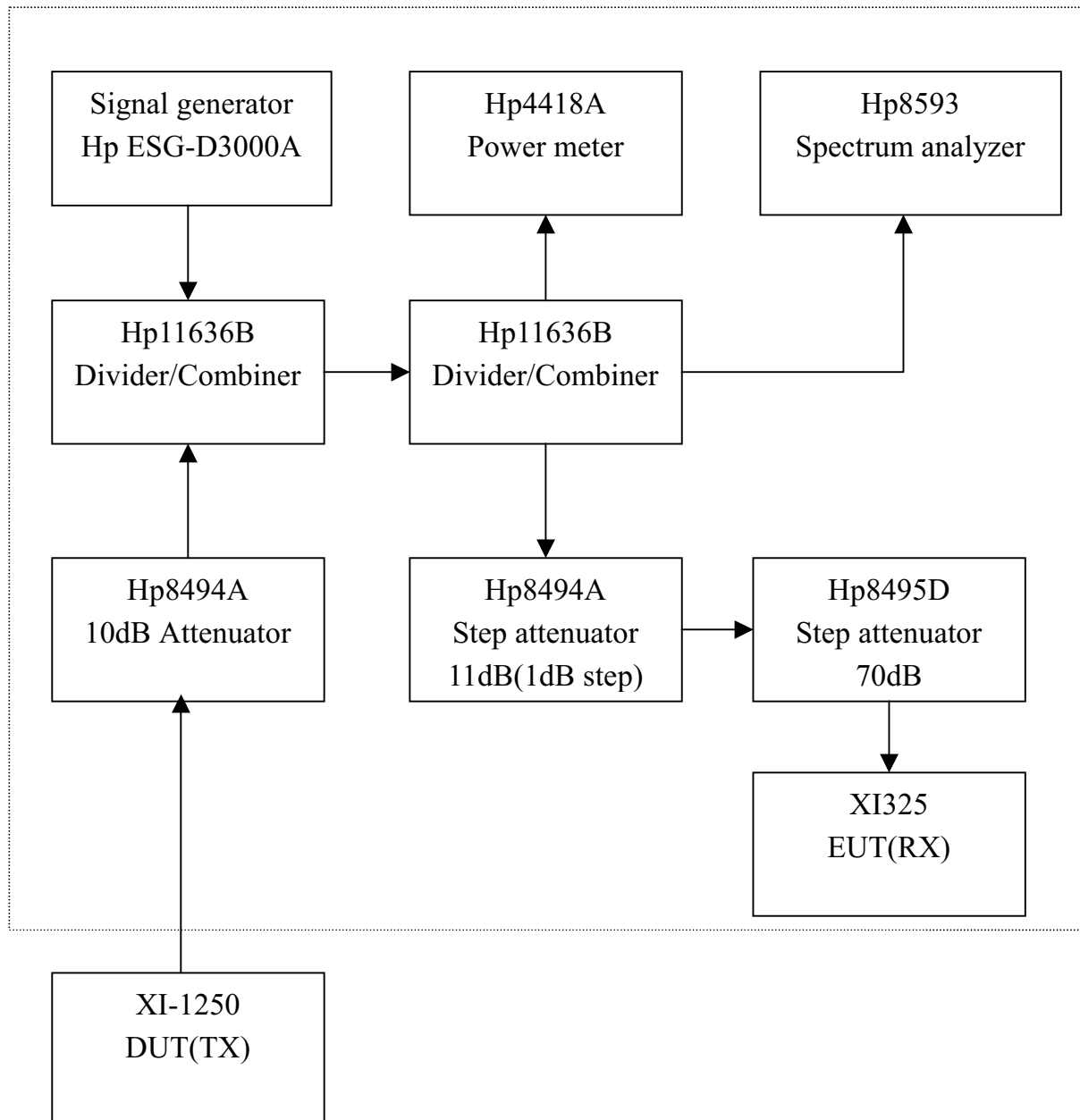
7. Enable the CW jammer at the reference power level and verify that FER at the reference power level and verify that FER test indicate less than 8%.
8. Alternatively, adjust the CW jammer level to that which causes 8% FER.
9. Repeat Step 7 for uniform steps in frequency increments of 50KHz across the receiver passband with the CW jammer. In this case, the receiver passband is $\pm 8.5\text{MHz}$

Test setup: as shown at next page

Processing gain test result summary:

Frequency channel	Frequency	Data rate (Mbps)	Gp (dB)
1	2412MHz	11	11.6
6	2437MHz	11	13.8
11	2462MHz	11	10.4

Shielding room



Processing gain test setup

11Mbps Channel 1 Processing Gain							
Gp=(S/N)o+Mj+Lsys							
Freq. (MHz)	Gp (dB)	(S/N)o (dB)	Mj = J/S (dB)	Lsys (dB)	Jammer (dBm)	Lvl (dBm)	FER
2403.50	27.71708	16.4	9.317076825	2	-11.68292318	-21	6.1
2403.55	19.90373	16.4	1.503728062	2	-19.49627194	-21	6.3
2403.60	27.62824	16.4	9.228235409	2	-11.77176459	-21	7
2403.65	27.21156	16.4	8.811555964	2	-12.18844404	-21	6.3
2403.70	26.9257	16.4	8.525697429	2	-12.47430257	-21	4.5
2403.75	26.89339	16.4	8.49339055	2	-12.50660945	-21	4.9
2403.80	27.29538	16.4	8.895376195	2	-12.1046238	-21	7.4
2403.85	27.52939	16.4	9.129385154	2	-11.87061485	-21	6.5
2403.90	27.19075	16.4	8.790753719	2	-12.20924628	-21	7.9
2403.95	26.7034	16.4	8.303396156	2	-12.69660384	-21	6.5
2404.00	26.42152	16.4	8.02152187	2	-12.97847813	-21	7.1
2404.05	25.9985	16.4	7.59850162	2	-13.40149838	-21	6.8
2404.10	25.87843	16.4	7.478430037	2	-13.52156996	-21	7.2
2404.15	25.76875	16.4	7.368754844	2	-13.63124516	-21	7.6
2404.20	25.42777	16.4	7.027773646	2	-13.97222635	-21	7.1
2404.25	25.00651	16.4	6.606512303	2	-14.3934877	-21	7.8
2404.30	24.93827	16.4	6.538268615	2	-14.46173138	-21	7.8
2404.35	24.42757	16.4	6.027566897	2	-14.9724331	-21	6
2404.40	24.28831	16.4	5.888309791	2	-15.11169021	-21	7.5
2404.45	24.43318	16.4	6.033175631	2	-14.96682437	-21	6.8
2404.50	24.15258	16.4	5.752580803	2	-15.2474192	-21	7.2
2404.55	23.76172	16.4	5.361723057	2	-15.63827694	-21	7.5
2404.60	23.62996	16.4	5.229958723	2	-15.77004128	-21	7.9
2404.65	22.90662	16.4	4.506624531	2	-16.49337547	-21	7.9
2404.70	22.91489	16.4	4.514893546	2	-16.48510645	-21	7.7
2404.75	23.03596	16.4	4.635961489	2	-16.36403851	-21	7.9
2404.80	11.92743	16.4	-6.472569102	2	-27.4725691	-21	7.3
2404.85	22.77529	16.4	4.375290058	2	-16.62470994	-21	7.3
2404.90	13.06575	16.4	-5.334245849	2	-26.33424585	-21	7.3
2404.95	22.55647	16.4	4.156466956	2	-16.84353304	-21	7.7
2405.00	22.16471	16.4	3.764710249	2	-17.23528975	-21	7.4
2405.05	22.49238	16.4	4.092376296	2	-16.9076237	-21	7.4
2405.10	22.343	16.4	3.94299514	2	-17.05700486	-21	7.5

2405.15	21.96254	16.4	3.562536662	2	-17.43746334	-21	7.8
2405.20	22.25575	16.4	3.85575387	2	-17.14424613	-21	7.4
2405.25	22.18817	16.4	3.788166715	2	-17.21183328	-21	7.6
2405.30	21.72315	16.4	3.323149481	2	-17.67685052	-21	7.9
2405.35	22.20389	16.4	3.803888203	2	-17.1961118	-21	7.5
2405.40	22.22799	16.4	3.827994445	2	-17.17200555	-21	7.7
2405.45	22.19524	16.4	3.795243955	2	-17.20475604	-21	7.6
2405.50	22.13401	16.4	3.734011282	2	-17.26598872	-21	7.6
2405.55	21.64342	16.4	3.243416852	2	-17.75658315	-21	7.9
2405.60	21.5258	16.4	3.125802495	2	-17.8741975	-21	7.8
2405.65	20.97948	16.4	2.579484984	2	-18.42051502	-21	7.7
2405.70	21.26713	16.4	2.867125789	2	-18.13287421	-21	7.6
2405.75	21.37208	16.4	2.972079899	2	-18.0279201	-21	7.9
2405.80	21.00856	16.4	2.60856345	2	-18.39143655	-21	7.6
2405.85	21.23193	16.4	2.831932063	2	-18.16806794	-21	7.7
2405.90	21.36566	16.4	2.96566149	2	-18.03433851	-21	7.7
2405.95	21.03986	16.4	2.639856283	2	-18.36014372	-21	7.8
2406.00	20.90184	16.4	2.501839875	2	-18.49816012	-21	7.9
2406.05	20.95484	16.4	2.554841469	2	-18.44515853	-21	7.9
2406.10	20.74436	16.4	2.344359135	2	-18.65564086	-21	7.6
2406.15	21.03228	16.4	2.63227851	2	-18.36772149	-21	7.8
2406.20	20.52224	16.4	2.122237569	2	-18.87776243	-21	7.7
2406.25	20.6408	16.4	2.240802206	2	-18.75919779	-21	7.7
2406.30	20.58779	16.4	2.187791843	2	-18.81220816	-21	7.9
2406.35	19.97731	16.4	1.577305503	2	-19.4226945	-21	7.9
2406.40	20.1705	16.4	1.770495896	2	-19.2295041	-21	7.9
2406.45	20.14539	16.4	1.745392532	2	-19.25460747	-21	7.5
2406.50	19.99162	16.4	1.591624236	2	-19.40837576	-21	7.9
2406.55	20.19429	16.4	1.794289908	2	-19.20571009	-21	7.5
2406.60	20.12031	16.4	1.720312648	2	-19.27968735	-21	7.3
2406.65	20.05726	16.4	1.657263334	2	-19.34273667	-21	7.6
2406.70	20.30505	16.4	1.905045666	2	-19.09495433	-21	7.9
2406.75	20.46178	16.4	2.061775916	2	-18.93822408	-21	7.4
2406.80	20.1777	16.4	1.777699963	2	-19.22230004	-21	7.5
2406.85	19.73584	16.4	1.335842303	2	-19.6641577	-21	7.9
2406.90	19.88993	16.4	1.489929613	2	-19.51007039	-21	7.7
2406.95	19.98114	16.4	1.581144434	2	-19.41885557	-21	7.5

2407.00	19.64094	16.4	1.240943967	2	-19.75905603	-21	7.7
2407.05	19.09106	16.4	0.691060364	2	-20.30893964	-21	7.7
2407.10	19.0185	16.4	0.618499876	2	-20.38150012	-21	7.5
2407.15	18.68885	16.4	0.288851922	2	-20.71114808	-21	7.9
2407.20	15.22211	16.4	-3.17788904	2	-24.17788904	-21	7.9
2407.25	17.06498	16.4	-1.335021722	2	-22.33502172	-21	7.8
2407.30	10.83049	16.4	-7.569508074	2	-28.56950807	-21	7.5
2407.35	17.82551	16.4	-0.574494106	2	-21.57449411	-21	7.5
2407.40	11.14152	16.4	-7.258484703	2	-28.2584847	-21	7.9
2407.45	11.9858	16.4	-6.414200413	2	-27.41420041	-21	7.7
2407.50	17.19101	16.4	-1.208989374	2	-22.20898937	-21	7.9
2407.55	11.21642	16.4	-7.183580704	2	-28.1835807	-21	7.8
2407.60	11.04729	16.4	-7.352705497	2	-28.3527055	-21	7.9
2407.65	19.31272	16.4	0.912715289	2	-20.08728471	-21	7.9
2407.70	11.01412	16.4	-7.385876292	2	-28.38587629	-21	7.7
2407.75	11.15081	16.4	-7.249186062	2	-28.24918606	-21	7.8
2407.80	11.20037	16.4	-7.199625255	2	-28.19962525	-21	7.9
2407.85	18.20261	16.4	-0.197393687	2	-21.19739369	-21	7.5
2407.90	10.70805	16.4	-7.691952738	2	-28.69195274	-21	7.6
2407.95	13.94157	16.4	-4.458428781	2	-25.45842878	-21	7.3
2408.00	11.72959	16.4	-6.670406497	2	-27.6704065	-21	7.6
2408.05	12.1654	16.4	-6.234600093	2	-27.23460009	-21	7.9
2408.10	12.14887	16.4	-6.251125653	2	-27.25112565	-21	7.4
2408.15	13.98533	16.4	-4.414674836	2	-25.41467484	-21	7.6
2408.20	11.15935	16.4	-7.240649471	2	-28.24064947	-21	7.6
2408.25	15.48481	16.4	-2.915193065	2	-23.91519307	-21	7.9
2408.30	11.36604	16.4	-7.033959777	2	-28.03395978	-21	7.5
2408.35	8.127851	16.4	-10.27214857	2	-31.27214857	-21	7.7
2408.40	12.71686	16.4	-5.683135722	2	-26.68313572	-21	7.5
2408.45	15.09712	16.4	-3.302876853	2	-24.30287685	-21	7.5
2408.50	16.00954	16.4	-2.390459897	2	-23.3904599	-21	7.9
2408.55	11.02478	16.4	-7.375215786	2	-28.37521579	-21	7.7
2408.60	8.373657	16.4	-10.02634277	2	-31.02634277	-21	7.5
2408.65	16.19262	16.4	-2.207375025	2	-23.20737502	-21	7.6
2408.70	13.76446	16.4	-4.63554402	2	-25.63554402	-21	7.5
2408.75	12.4087	16.4	-5.991301563	2	-26.99130156	-21	7.7
2408.80	14.11906	16.4	-4.280941697	2	-25.2809417	-21	7.7

2408.85	11.67827	16.4	-6.721727392	2	-27.72172739	-21	7.8
2408.90	11.14254	16.4	-7.257461104	2	-28.2574611	-21	7.6
2408.95	14.99308	16.4	-3.406923386	2	-24.40692339	-21	7.7
2409.00	10.97442	16.4	-7.425578933	2	-28.42557893	-21	7.5
2409.05	11.59232	16.4	-6.807680415	2	-27.80768041	-21	7.9
2409.10	6.308433	16.4	-12.09156686	2	-33.09156686	-21	7.5
2409.15	12.02658	16.4	-6.373420427	2	-27.37342043	-21	7.5
2409.20	6.828676	16.4	-11.57132443	2	-32.57132443	-21	7.8
2409.25	13.07687	16.4	-5.323128171	2	-26.32312817	-21	7.8
2409.30	5.299787	16.4	-13.10021317	2	-34.10021317	-21	7.9
2409.35	11.16546	16.4	-7.234535246	2	-28.23453525	-21	7.7
2409.40	11.31113	16.4	-7.0888679	2	-28.0888679	-21	7.8
2409.45	11.14699	16.4	-7.253011504	2	-28.2530115	-21	7.5
2409.50	14.05131	16.4	-4.348693967	2	-25.34869397	-21	7.6
2409.55	9.123427	16.4	-9.276572562	2	-30.27657256	-21	7.6
2409.60	11.26648	16.4	-7.133524795	2	-28.1335248	-21	7.9
2409.65	10.2724	16.4	-8.127604518	2	-29.12760452	-21	7.7
2409.70	11.42143	16.4	-6.978569533	2	-27.97856953	-21	7.2
2409.75	14.1688	16.4	-4.231196655	2	-25.23119665	-21	7.9
2409.80	-5.31453	16.4	-23.71452686	2	-44.71452686	-21	7.7
2409.85	13.49317	16.4	-4.906830768	2	-25.90683077	-21	7.8
2409.90	11.73329	16.4	-6.66671187	2	-27.66671187	-21	7.2
2409.95	13.10444	16.4	-5.295557529	2	-26.29555753	-21	7.5
2410.00	12.62963	16.4	-5.770366154	2	-26.77036615	-21	7.3
2410.05	10.95894	16.4	-7.441059038	2	-28.44105904	-21	7.4
2410.10	11.80861	16.4	-6.591390371	2	-27.59139037	-21	7.6
2410.15	11.36429	16.4	-7.035712096	2	-28.0357121	-21	7.7
2410.20	4.19405	16.4	-14.20595046	2	-35.20595046	-21	7.3
2410.25	11.08069	16.4	-7.319309954	2	-28.31930995	-21	7.2
2410.30	8.627493	16.4	-9.772506848	2	-30.77250685	-21	7.5
2410.35	11.13289	16.4	-7.267105483	2	-28.26710548	-21	7.4
2410.40	11.92557	16.4	-6.474432768	2	-27.47443277	-21	7.5
2410.45	3.314013	16.4	-15.08598699	2	-36.08598699	-21	7.9
2410.50	9.196882	16.4	-9.203118124	2	-30.20311812	-21	7.9
2410.55	12.13128	16.4	-6.268724186	2	-27.26872419	-21	7.6
2410.60	9.031877	16.4	-9.368123324	2	-30.36812332	-21	7.7
2410.65	11.94674	16.4	-6.45325716	2	-27.45325716	-21	7.2

2410.70	-0.26231	16.4	-18.66231447	2	-39.66231447	-21	7.9
2410.75	11.14916	16.4	-7.250836584	2	-28.25083658	-21	7.6
2410.80	5.81816	16.4	-12.5818404	2	-33.5818404	-21	7.3
2410.85	-25.9788	16.4	-44.37877191	2	-65.37877191	-21	8
2410.90	-3.08347	16.4	-21.48346562	2	-42.48346562	-21	7.7
2410.95	-3.04525	16.4	-21.44524528	2	-42.44524528	-21	7.9
2411.00	-15.5042	16.4	-33.90421027	2	-54.90421027	-21	7.3
2411.05	-26.8465	16.4	-45.24651678	2	-66.24651678	-21	7.8
2411.10	5.805371	16.4	-12.59462889	2	-33.59462889	-21	7.8
2411.15	-27.4632	16.4	-45.86319096	2	-66.86319096	-21	7.8
2411.20	11.58674	16.4	-6.813264124	2	-27.81326412	-21	7.7
2411.25	11.4274	16.4	-6.972604661	2	-27.97260466	-21	7.8
2411.30	7.145351	16.4	-11.25464919	2	-32.25464919	-21	7.9
2411.35	-27.7933	16.4	-46.19333996	2	-67.19333996	-21	7.9
2411.40	-27.6131	16.4	-46.01314161	2	-67.01314161	-21	7.9
2411.45	-27.656	16.4	-46.05599738	2	-67.05599738	-21	7.9
2411.50	-27.8883	16.4	-46.28834061	2	-67.28834061	-21	8
2411.55	-27.5782	16.4	-45.97817861	2	-66.97817861	-21	7.9
2411.60	-27.8267	16.4	-46.22673	2	-67.22673	-21	7.5
2411.65	11.31403	16.4	-7.085968554	2	-28.08596855	-21	7.6
2411.70	16.31919	16.4	-2.080808785	2	-23.08080879	-21	7.1
2411.75	17.25572	16.4	-1.144284484	2	-22.14428448	-21	7.8
2411.80	18.03124	16.4	-0.368762318	2	-21.36876232	-21	7.2
2411.85	17.75457	16.4	-0.645430459	2	-21.64543046	-21	7.8
2411.90	18.03715	16.4	-0.36284654	2	-21.36284654	-21	7.7
2411.95	12.07039	16.4	-6.329610015	2	-27.32961001	-21	7.9
2412.00	18.01334	16.4	-0.386661241	2	-21.38666124	-21	7.7
2412.05	17.94484	16.4	-0.455159736	2	-21.45515974	-21	7.7
2412.10	17.94963	16.4	-0.450367471	2	-21.45036747	-21	7.2
2412.15	16.05781	16.4	-2.342190627	2	-23.34219063	-21	7.4
2412.20	13.97221	16.4	-4.427785287	2	-25.42778529	-21	7.6
2412.25	14.87156	16.4	-3.528442273	2	-24.52844227	-21	7.4
2412.30	13.18301	16.4	-5.216990688	2	-26.21699069	-21	7.9
2412.35	-27.3755	16.4	-45.77546965	2	-66.77546965	-21	7.9
2412.40	-27.4238	16.4	-45.82384475	2	-66.82384475	-21	7.3
2412.45	-27.1852	16.4	-45.58523174	2	-66.58523174	-21	7.2
2412.50	-16.4272	16.4	-34.82723983	2	-55.82723983	-21	7.2

2412.55	-15.0887	16.4	-33.48868388	2	-54.48868388	-21	7.2
2412.60	-26.8745	16.4	-45.27451642	2	-66.27451642	-21	7.2
2412.65	8.877289	16.4	-9.522711023	2	-30.52271102	-21	7.9
2412.70	10.86632	16.4	-7.533678833	2	-28.53367883	-21	7.3
2412.75	-1.19084	16.4	-19.59083638	2	-40.59083638	-21	7.4
2412.80	-26.9451	16.4	-45.34505596	2	-66.34505596	-21	7.3
2412.85	5.538565	16.4	-12.86143456	2	-33.86143456	-21	7.5
2412.90	-6.26184	16.4	-24.66184013	2	-45.66184013	-21	7.4
2412.95	3.343203	16.4	-15.05679655	2	-36.05679655	-21	7.5
2413.00	-15.4747	16.4	-33.87469646	2	-54.87469646	-21	7.2
2413.05	4.123394	16.4	-14.27660576	2	-35.27660576	-21	7.8
2413.10	-26.2991	16.4	-44.6991359	2	-65.6991359	-21	7.9
2413.15	10.41381	16.4	-7.986189754	2	-28.98618975	-21	7.9
2413.20	12.2131	16.4	-6.186904589	2	-27.18690459	-21	7.8
2413.25	10.906	16.4	-7.494001698	2	-28.4940017	-21	8
2413.30	-5.77419	16.4	-24.17418774	2	-45.17418774	-21	7.4
2413.35	10.89537	16.4	-7.504630686	2	-28.50463069	-21	7.5
2413.40	8.919067	16.4	-9.480932872	2	-30.48093287	-21	7.5
2413.45	11.76974	16.4	-6.630256733	2	-27.63025673	-21	7.6
2413.50	10.53074	16.4	-7.869263215	2	-28.86926321	-21	7.9
2413.55	9.780436	16.4	-8.619564169	2	-29.61956417	-21	7.4
2413.60	12.97922	16.4	-5.42078098	2	-26.42078098	-21	7.9
2413.65	10.23235	16.4	-8.167650058	2	-29.16765006	-21	7.6
2413.70	12.17905	16.4	-6.220945399	2	-27.2209454	-21	7.4
2413.75	12.94389	16.4	-5.456113572	2	-26.45611357	-21	7.4
2413.80	11.95106	16.4	-6.448935263	2	-27.44893526	-21	7.8
2413.85	11.74709	16.4	-6.652912403	2	-27.6529124	-21	8
2413.90	13.09066	16.4	-5.309336119	2	-26.30933612	-21	7.7
2413.95	5.120628	16.4	-13.27937207	2	-34.27937207	-21	7.3
2414.00	6.916578	16.4	-11.48342156	2	-32.48342156	-21	7.8
2414.05	10.30378	16.4	-8.096224471	2	-29.09622447	-21	7.3
2414.10	11.79145	16.4	-6.608549706	2	-27.60854971	-21	7.7
2414.15	8.772737	16.4	-9.627262566	2	-30.62726257	-21	7.6
2414.20	11.11707	16.4	-7.282927506	2	-28.28292751	-21	7.8
2414.25	12.46373	16.4	-5.936274653	2	-26.93627465	-21	7.6
2414.30	10.93929	16.4	-7.460707333	2	-28.46070733	-21	7.4
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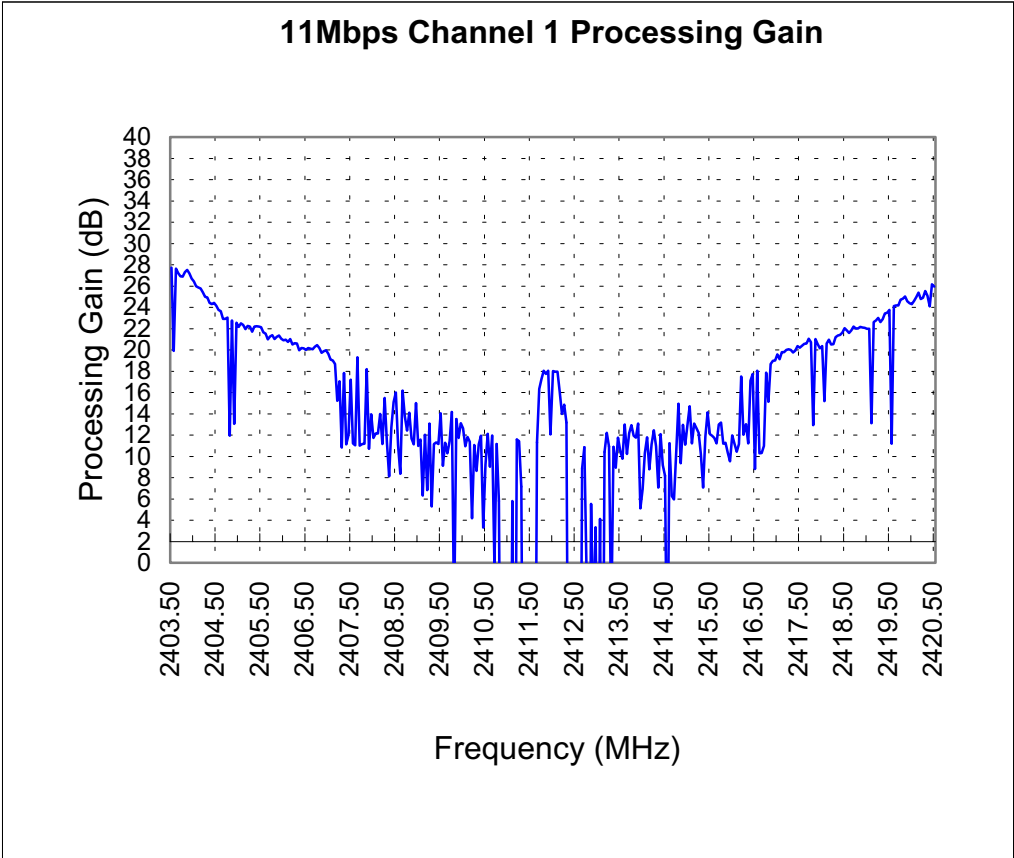
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2414.45	9.16061	16.4	-9.239390392	2	-30.23939039	-21	7.2
2414.50	8.193255	16.4	-10.20674505	2	-31.20674505	-21	7.7
2414.55	-13.2336	16.4	-31.63364327	2	-52.63364327	-21	7.6
2414.60	11.21648	16.4	-7.183515333	2	-28.18351533	-21	7.8
2414.65	6.294113	16.4	-12.10588745	2	-33.10588745	-21	7.6
2414.70	5.956117	16.4	-12.44388314	2	-33.44388314	-21	7.6
2414.75	10.40353	16.4	-7.996468214	2	-28.99646821	-21	7.7
2414.80	14.9433	16.4	-3.456701651	2	-24.45670165	-21	7.8
2414.85	9.349531	16.4	-9.050469451	2	-30.05046945	-21	7.6
2414.90	12.9622	16.4	-5.437802082	2	-26.43780208	-21	7.9
2414.95	11.08861	16.4	-7.311391397	2	-28.3113914	-21	7.4
2415.00	12.94356	16.4	-5.456441825	2	-26.45644183	-21	7.4
2415.05	14.70984	16.4	-3.690159884	2	-24.69015988	-21	7.9
2415.10	11.21516	16.4	-7.184844782	2	-28.18484478	-21	7.8
2415.15	13.08607	16.4	-5.31393157	2	-26.31393157	-21	8
2415.20	12.64759	16.4	-5.752413302	2	-26.7524133	-21	7.9
2415.25	12.19906	16.4	-6.200939095	2	-27.2009391	-21	7.5
2415.30	10.19849	16.4	-8.201514243	2	-29.20151424	-21	8
2415.35	7.082605	16.4	-11.31739524	2	-32.31739524	-21	7.7
2415.40	11.85845	16.4	-6.541552575	2	-27.54155257	-21	7.6
2415.45	14.14048	16.4	-4.25951994	2	-25.25951994	-21	7.7
2415.50	12.08778	16.4	-6.312221766	2	-27.31222177	-21	8
2415.55	11.92815	16.4	-6.471851067	2	-27.47185107	-21	7.6
2415.60	11.74233	16.4	-6.657666459	2	-27.65766646	-21	7.7
2415.65	11.20443	16.4	-7.19556679	2	-28.19556679	-21	7.5
2415.70	12.99384	16.4	-5.406163596	2	-26.4061636	-21	7.9
2415.75	13.18225	16.4	-5.217745301	2	-26.2177453	-21	7.4
2415.80	11.19952	16.4	-7.200484152	2	-28.20048415	-21	7.3
2415.85	11.27889	16.4	-7.121108264	2	-28.12110826	-21	8
2415.90	10.33882	16.4	-8.061180961	2	-29.06118096	-21	7.2
2415.95	9.546462	16.4	-8.853538162	2	-29.85353816	-21	7.5
2416.00	11.96732	16.4	-6.432677322	2	-27.43267732	-21	7.4
2416.05	11.1929	16.4	-7.207104143	2	-28.20710414	-21	7.8
2416.10	10.42356	16.4	-7.976439352	2	-28.97643935	-21	7.3
2416.15	11.14636	16.4	-7.253644932	2	-28.25364493	-21	7.9
2416.20	17.51678	16.4	-0.883222084	2	-21.88322208	-21	7.5

2416.25	12.04365	16.4	-6.356347317	2	-27.35634732	-21	7.5
2416.30	13.03608	16.4	-5.363923578	2	-26.36392358	-21	7.1
2416.35	11.21905	16.4	-7.180949092	2	-28.18094909	-21	7.4
2416.40	17.12431	16.4	-1.275693384	2	-22.27569338	-21	7.6
2416.45	17.74998	16.4	-0.650023365	2	-21.65002337	-21	7.8
2416.50	8.805771	16.4	-9.594228741	2	-30.59422874	-21	7.5
2416.55	18.03786	16.4	-0.362142145	2	-21.36214214	-21	7.3
2416.60	10.27304	16.4	-8.126962555	2	-29.12696255	-21	7.6
2416.65	10.32609	16.4	-8.073909385	2	-29.07390939	-21	8
2416.70	10.97069	16.4	-7.429305673	2	-28.42930567	-21	7.8
2416.75	17.85978	16.4	-0.540219911	2	-21.54021991	-21	7.3
2416.80	15.13284	16.4	-3.267156501	2	-24.2671565	-21	7.6
2416.85	18.68455	16.4	0.284553073	2	-20.71544693	-21	7.6
2416.90	18.9757	16.4	0.57569977	2	-20.42430023	-21	7.6
2416.95	19.00632	16.4	0.606316932	2	-20.39368307	-21	7.3
2417.00	19.57087	16.4	1.1708722	2	-19.8291278	-21	7.4
2417.05	19.12935	16.4	0.729345324	2	-20.27065468	-21	7.9
2417.10	19.79484	16.4	1.394840196	2	-19.6051598	-21	7.3
2417.15	19.78633	16.4	1.386334494	2	-19.61366551	-21	7.7
2417.20	19.99376	16.4	1.593759891	2	-19.40624011	-21	7.7
2417.25	20.0737	16.4	1.673698196	2	-19.3263018	-21	7.9
2417.30	20.00838	16.4	1.608383728	2	-19.39161627	-21	8
2417.35	19.76836	16.4	1.368360786	2	-19.63163921	-21	7.4
2417.40	19.94032	16.4	1.540321548	2	-19.45967845	-21	6.8
2417.45	20.36381	16.4	1.963805778	2	-19.03619422	-21	7.2
2417.50	20.21143	16.4	1.811427217	2	-19.18857278	-21	7.1
2417.55	20.4003	16.4	2.000299459	2	-18.99970054	-21	6.5
2417.60	20.56307	16.4	2.163065186	2	-18.83693481	-21	6.4
2417.65	20.61268	16.4	2.212682954	2	-18.78731705	-21	5.3
2417.70	21.0469	16.4	2.646900408	2	-18.35309959	-21	7.1
2417.75	20.72842	16.4	2.328416298	2	-18.6715837	-21	6.8
2417.80	12.9392	16.4	-5.460802569	2	-26.46080257	-21	7.5
2417.85	21.03157	16.4	2.631565226	2	-18.36843477	-21	7.1
2417.90	20.53726	16.4	2.137259728	2	-18.86274027	-21	6.3
2417.95	20.1405	16.4	1.740501661	2	-19.25949834	-21	6.5
2418.00	20.37255	16.4	1.972548966	2	-19.02745103	-21	5.8
2418.05	15.17584	16.4	-3.224162294	2	-24.22416229	-21	5.9

2418.10	20.61532	16.4	2.215318066	2	-18.78468193	-21	6.1
2418.15	20.97302	16.4	2.573024968	2	-18.42697503	-21	6.2
2418.20	20.5054	16.4	2.105396862	2	-18.89460314	-21	6
2418.25	20.54139	16.4	2.141387668	2	-18.85861233	-21	5.7
2418.30	21.19148	16.4	2.791481276	2	-18.20851872	-21	5.8
2418.35	21.34903	16.4	2.94903313	2	-18.05096687	-21	5.7
2418.40	21.41835	16.4	3.018349651	2	-17.98165035	-21	7
2418.45	21.62064	16.4	3.220644324	2	-17.77935568	-21	6.8
2418.50	22.03224	16.4	3.632238761	2	-17.36776124	-21	6.7
2418.55	21.82792	16.4	3.427915874	2	-17.57208413	-21	6.8
2418.60	21.60349	16.4	3.20349158	2	-17.79650842	-21	5.9
2418.65	21.82696	16.4	3.426955814	2	-17.57304419	-21	7.3
2418.70	22.1964	16.4	3.796397839	2	-17.20360216	-21	7.2
2418.75	22.02747	16.4	3.627470993	2	-17.37252901	-21	7.1
2418.80	22.0095	16.4	3.60949907	2	-17.39050093	-21	7
2418.85	22.16554	16.4	3.765543806	2	-17.23445619	-21	6.8
2418.90	22.10269	16.4	3.702694407	2	-17.29730559	-21	6.7
2418.95	22.08136	16.4	3.681359561	2	-17.31864044	-21	6.8
2419.00	21.98128	16.4	3.581279325	2	-17.41872068	-21	5.9
2419.05	21.98012	16.4	3.580121933	2	-17.41987807	-21	6.1
2419.10	13.11057	16.4	-5.289429826	2	-26.28942983	-21	5.7
2419.15	22.62337	16.4	4.223368984	2	-16.77663102	-21	6.1
2419.20	22.75559	16.4	4.355586966	2	-16.64441303	-21	6.2
2419.25	22.99415	16.4	4.594150475	2	-16.40584953	-21	6.3
2419.30	22.62966	16.4	4.229656557	2	-16.77034344	-21	6.1
2419.35	22.87636	16.4	4.476362816	2	-16.52363718	-21	5.8
2419.40	23.43184	16.4	5.031837144	2	-15.96816286	-21	5.9
2419.45	23.49778	16.4	5.09777973	2	-15.90222027	-21	6.1
2419.50	23.7737	16.4	5.373698605	2	-15.62630139	-21	7.1
2419.55	11.17474	16.4	-7.225261862	2	-28.22526186	-21	7.3
2419.60	24.11375	16.4	5.713746492	2	-15.28625351	-21	7.4
2419.65	24.17426	16.4	5.774256862	2	-15.22574314	-21	7.5
2419.70	24.16619	16.4	5.766185095	2	-15.23381491	-21	7.6
2419.75	24.7225	16.4	6.322502367	2	-14.67749763	-21	7.1
2419.80	24.80536	16.4	6.405361171	2	-14.59463883	-21	7.4
2419.85	25.01142	16.4	6.611417872	2	-14.38858213	-21	5.9
2419.90	24.57061	16.4	6.170614769	2	-14.82938523	-21	5.6

2419.95	24.37724	16.4	5.977235873	2	-15.02276413	-21	5.8
2420.00	24.31483	16.4	5.914832854	2	-15.08516715	-21	6.3
2420.05	24.59085	16.4	6.19085406	2	-14.80914594	-21	6.1
2420.10	24.95641	16.4	6.556411813	2	-14.44358819	-21	6.2
2420.15	25.37149	16.4	6.97149163	2	-14.02850837	-21	6.3
2420.20	24.78063	16.4	6.380630049	2	-14.61936995	-21	6.1
2420.25	24.91144	16.4	6.511439112	2	-14.48856089	-21	6.5
2420.30	25.534	16.4	7.134002749	2	-13.86599725	-21	6.3
2420.35	25.08358	16.4	6.683582482	2	-14.31641752	-21	6.4
2420.40	24.08397	16.4	5.683971063	2	-15.31602894	-21	6.5
2420.45	26.17699	16.4	7.776989464	2	-13.22301054	-21	6.2
2420.50	25.9444	16.4	7.544395331	2	-13.45560467	-21	6.5

Processing Gain (dB) @20th Percentile= 10.4236



11Mbps Channel 6 Processing Gain							
Gp=(S/N)o+Mj+Lsys							
Freq. (MHz)	Gp (dB)	(S/N)o (dB)	Mj = J/S (dB)	Lsys (dB)	Jammer (dBm)	Lvl (dBm)	FER
2428.50	28.31957	16.4	9.919570441	2	-11.08042956	-21	7.2
2428.55	27.578772	16.4	9.178771591	2	-11.82122841	-21	6.7
2428.60	27.532469	16.4	9.132468689	2	-11.86753131	-21	7.6
2428.65	27.323551	16.4	8.923551101	2	-12.0764489	-21	6.5
2428.70	27.550988	16.4	9.150987996	2	-11.849012	-21	7.8
2428.75	27.179521	16.4	8.779521489	2	-12.22047851	-21	7.3
2428.80	27.767883	16.4	9.367882674	2	-11.63211733	-21	6.5
2428.85	27.261036	16.4	8.861035615	2	-12.13896439	-21	9.7
2428.90	31.589661	16.4	13.18966065	2	-7.810339348	-21	6.9
2428.95	26.745435	16.4	8.345435212	2	-12.65456479	-21	7.2
2429.00	26.528236	16.4	8.128236262	2	-12.87176374	-21	6.9
2429.05	26.010575	16.4	7.610575073	2	-13.38942493	-21	7.9
2429.10	26.118074	16.4	7.718074208	2	-13.28192579	-21	7.4
2429.15	30.307428	16.4	11.90742772	2	-9.092572281	-21	7.4
2429.20	25.586645	16.4	7.186644638	2	-13.81335536	-21	7
2429.25	25.58353	16.4	7.183530143	2	-13.81646986	-21	6.7
2429.30	24.899594	16.4	6.499594042	2	-14.50040596	-21	6.5
2429.35	25.046706	16.4	6.646705612	2	-14.35329439	-21	7.6
2429.40	24.421835	16.4	6.021835142	2	-14.97816486	-21	7.4
2429.45	24.352702	16.4	5.952701835	2	-15.04729816	-21	7.3
2429.50	24.369658	16.4	5.969658445	2	-15.03034155	-21	7.3
2429.55	24.426382	16.4	6.026382162	2	-14.97361784	-21	5.3
2429.60	23.950591	16.4	5.550591176	2	-15.44940882	-21	5.6
2429.65	28.79529	16.4	10.39529038	2	-10.60470962	-21	6.7
2429.70	23.428367	16.4	5.028366919	2	-15.97163308	-21	6.8
2429.75	23.587689	16.4	5.187688754	2	-15.81231125	-21	6.7
2429.80	23.294979	16.4	4.894978507	2	-16.10502149	-21	5.5
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2429.90	23.096312	16.4	4.696312227	2	-16.30368777	-21	7.8
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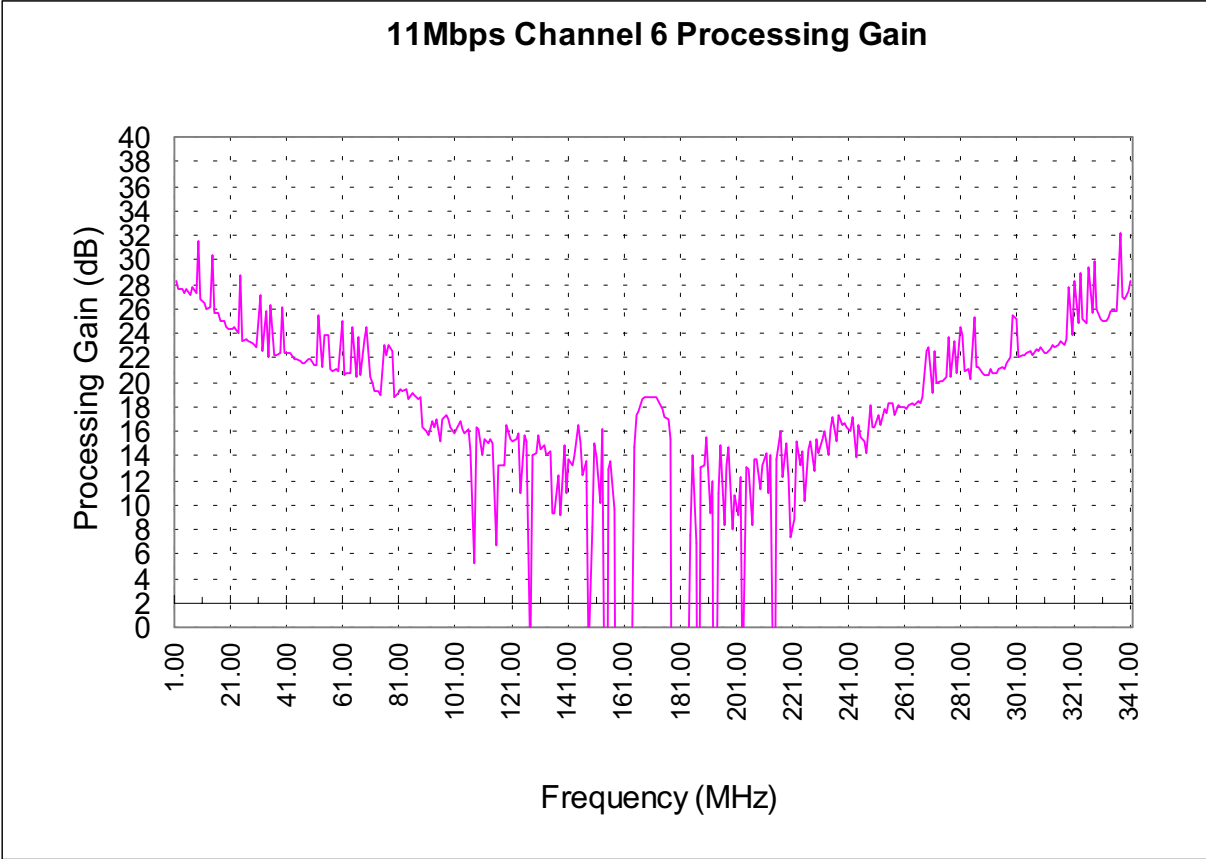
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2439.90	15.399518	16.4	-3.00048158	2	-24.00048158	-21	5.4
2439.95	14.204358	16.4	-4.19564243	2	-25.19564243	-21	5.6
2440.00	15.280637	16.4	-3.11936321	2	-24.11936321	-21	7.7
2440.05	16.051286	16.4	-2.3487143	2	-23.3487143	-21	7.2
2440.10	13.961319	16.4	-4.43868097	2	-25.43868097	-21	6.9
2440.15	16.232029	16.4	-2.16797093	2	-23.16797093	-21	6.8
2440.20	17.190038	16.4	-1.20996216	2	-22.20996216	-21	6.5
2440.25	15.171957	16.4	-3.22804335	2	-24.22804335	-21	6.8
2440.30	17.372803	16.4	-1.02719667	2	-22.02719667	-21	6.5
2440.35	16.500455	16.4	-1.89954495	2	-22.89954495	-21	6.2
2440.40	16.605379	16.4	-1.79462071	2	-22.79462071	-21	5.6
2440.45	16.310525	16.4	-2.08947477	2	-23.08947477	-21	5.4
2440.50	16.053631	16.4	-2.34636934	2	-23.34636934	-21	5.6
2440.55	17.192667	16.4	-1.20733294	2	-22.20733294	-21	4.8
2440.60	13.811871	16.4	-4.58812861	2	-25.58812861	-21	3.4
2440.65	16.519025	16.4	-1.88097532	2	-22.88097532	-21	6.7
2440.70	15.574685	16.4	-2.82531495	2	-23.82531495	-21	6.1
2440.75	15.17019	16.4	-3.22980984	2	-24.22980984	-21	5.6
2440.80	14.153084	16.4	-4.2469165	2	-25.2469165	-21	5.1
2440.85	18.075642	16.4	-0.32435774	2	-21.32435774	-21	6.2
2440.90	16.32884	16.4	-2.07115991	2	-23.07115991	-21	5.6
2440.95	16.333733	16.4	-2.06626701	2	-23.06626701	-21	7
2441.00	17.377653	16.4	-1.02234702	2	-22.02234702	-21	7.1
2441.05	16.50706	16.4	-1.89293956	2	-22.89293956	-21	5.8
2441.10	17.752398	16.4	-0.64760174	2	-21.64760174	-21	6.2
2441.15	17.422817	16.4	-0.97718339	2	-21.97718339	-21	5.3
2441.20	18.273273	16.4	-0.1267265	2	-21.1267265	-21	5.6
2441.25	18.214541	16.4	-0.18545944	2	-21.18545944	-21	6.2
2441.30	17.315719	16.4	-1.08428088	2	-22.08428088	-21	7.2
2441.35	18.097585	16.4	-0.30241537	2	-21.30241537	-21	5.1
2441.40	17.982184	16.4	-0.4178162	2	-21.4178162	-21	6.8
2441.45	17.913421	16.4	-0.48657858	2	-21.48657858	-21	6.5
2441.50	17.806263	16.4	-0.59373693	2	-21.59373693	-21	6.7
2441.55	18.145145	16.4	-0.25485499	2	-21.25485499	-21	5.8
2441.60	18.213326	16.4	-0.18667399	2	-21.18667399	-21	6.2
2441.65	18.14182	16.4	-0.25818048	2	-21.25818048	-21	6.8
2441.70	18.430622	16.4	0.030621937	2	-20.96937806	-21	2.2

2441.75	18.359314	16.4	-0.04068559	2	-21.04068559	-21	4.6
2441.80	18.728665	16.4	0.32866533	2	-20.67133467	-21	6.2
2441.85	22.522906	16.4	4.122905837	2	-16.87709416	-21	5.4
2441.90	22.783978	16.4	4.383978461	2	-16.61602154	-21	6.8
2441.95	19.095521	16.4	0.695521183	2	-20.30447882	-21	6.2
2442.00	22.473145	16.4	4.073145139	2	-16.92685486	-21	5.6
2442.05	19.837098	16.4	1.437097652	2	-19.56290235	-21	6.8
2442.10	20.158874	16.4	1.758873841	2	-19.24112616	-21	4.2
2442.15	20.017794	16.4	1.617794023	2	-19.38220598	-21	5.9
2442.20	20.410903	16.4	2.010903236	2	-18.98909676	-21	4.4
2442.25	23.730415	16.4	5.330415144	2	-15.66958486	-21	6.6
2442.30	20.392845	16.4	1.992844582	2	-19.00715542	-21	7.1
2442.35	23.413263	16.4	5.013262981	2	-15.98673702	-21	5.6
2442.40	20.682403	16.4	2.282402622	2	-18.71759738	-21	6.4
2442.45	24.504254	16.4	6.104254009	2	-14.89574599	-21	6.3
2442.50	23.912314	16.4	5.512313798	2	-15.4876862	-21	6.9
2442.55	20.832275	16.4	2.432275247	2	-18.56772475	-21	7.2
2442.60	21.006343	16.4	2.606343057	2	-18.39365694	-21	6.2
2442.65	20.294675	16.4	1.894674938	2	-19.10532506	-21	5.4
2442.70	25.279153	16.4	6.879152588	2	-14.12084741	-21	5.1
2442.75	21.176527	16.4	2.776527378	2	-18.22347262	-21	4.3
2442.80	21.2385	16.4	2.838499754	2	-18.16150025	-21	6.2
2442.85	20.71226	16.4	2.312259586	2	-18.68774041	-21	5.8
2442.90	20.645057	16.4	2.245057375	2	-18.75494262	-21	7.2
2442.95	20.591342	16.4	2.191342492	2	-18.80865751	-21	6.3
2443.00	21.117088	16.4	2.717087965	2	-18.28291204	-21	5.7
2443.05	20.784086	16.4	2.384086479	2	-18.61591352	-21	6.5
2443.10	20.808001	16.4	2.408001254	2	-18.59199875	-21	5.5
2443.15	21.132227	16.4	2.732227291	2	-18.26777271	-21	5.9
2443.20	21.221559	16.4	2.821558747	2	-18.17844125	-21	6.4
2443.25	21.084542	16.4	2.684541742	2	-18.31545826	-21	6.7
2443.30	21.480272	16.4	3.080271605	2	-17.91972839	-21	6.2
2443.35	22.0104	16.4	3.610400485	2	-17.38959952	-21	5.4
2443.40	25.444307	16.4	7.044307093	2	-13.95569291	-21	5.1
2443.45	25.158162	16.4	6.758161816	2	-14.24183818	-21	5.6
2443.50	22.089341	16.4	3.689341315	2	-17.31065869	-21	4.8
2443.55	22.17809	16.4	3.778089695	2	-17.2219103	-21	6.8
2443.60	22.175146	16.4	3.775145876	2	-17.22485412	-21	4.3
2443.65	22.416723	16.4	4.016723148	2	-16.98327685	-21	4.2
2443.70	22.543788	16.4	4.143788441	2	-16.85621156	-21	5.6
2443.75	22.194543	16.4	3.794542987	2	-17.20545701	-21	6.7
2443.80	22.627179	16.4	4.227178913	2	-16.77282109	-21	7.8
2443.85	22.496252	16.4	4.096251916	2	-16.90374808	-21	5.4
2443.90	22.809893	16.4	4.409892999	2	-16.590107	-21	4.9
2443.95	22.346048	16.4	3.946048208	2	-17.05395179	-21	7

2444.00	22.29699	16.4	3.896990355	2	-17.10300965	-21	5.6
2444.05	22.705185	16.4	4.305185475	2	-16.69481453	-21	6.8
2444.10	22.955283	16.4	4.555283041	2	-16.44471696	-21	5.3
2444.15	22.85635	16.4	4.456350491	2	-16.54364951	-21	5.9
2444.20	23.039709	16.4	4.639709389	2	-16.36029061	-21	5.2
2444.25	23.371907	16.4	4.971907403	2	-16.0280926	-21	6.3
2444.30	22.977284	16.4	4.577283522	2	-16.42271648	-21	4.8
2444.35	23.439077	16.4	5.039076826	2	-15.96092317	-21	5.4
2444.40	27.756858	16.4	9.356857954	2	-11.64314205	-21	4.7
2444.45	23.868854	16.4	5.46885447	2	-15.53114553	-21	5.9
2444.50	28.175053	16.4	9.775053295	2	-11.2249467	-21	7
2444.55	24.757374	16.4	6.357374125	2	-14.64262588	-21	6.7
2444.60	28.831146	16.4	10.43114621	2	-10.56885379	-21	4.7
2444.65	25.150578	16.4	6.750578085	2	-14.24942192	-21	4.8
2444.70	24.786432	16.4	6.38643181	2	-14.61356819	-21	6
2444.75	29.322233	16.4	10.9222329	2	-10.0777671	-21	6.1
2444.80	25.66841	16.4	7.268409713	2	-13.73159029	-21	5.9
2444.85	29.904436	16.4	11.50443587	2	-9.495564135	-21	6.2
2444.90	25.887401	16.4	7.487401214	2	-13.51259879	-21	7.2
2444.95	25.184627	16.4	6.78462651	2	-14.21537349	-21	6.5
2445.00	24.957613	16.4	6.557612685	2	-14.44238731	-21	6.7
2445.05	25.020679	16.4	6.620678869	2	-14.37932113	-21	6.3
2445.10	25.313731	16.4	6.913730805	2	-14.08626919	-21	6.2
2445.15	25.74614	16.4	7.346140239	2	-13.65385976	-21	5.4
2445.20	25.790043	16.4	7.390042667	2	-13.60995733	-21	5.2
2445.25	25.857522	16.4	7.457521597	2	-13.5424784	-21	6
2445.30	32.13841	16.4	13.73840957	2	-7.261590427	-21	5.6
2445.35	26.93051	16.4	8.530509585	2	-12.46949042	-21	6.4
2445.40	26.761599	16.4	8.361598622	2	-12.63840138	-21	6.2
2445.45	27.42015	16.4	9.020149797	2	-11.9798502	-21	6.7
2445.50	28.168362	16.4	9.768361984	2	-11.23163802	-21	7.3

Processing Gain (dB) @20th Percentile= 13.8119



11Mbps Channel 11 Processing Gain							
Gp=(S/N)o+Mj+Lsys							
Freq. (MHz)	Gp (dB)	(S/N)o (dB)	Mj = J/S (dB)	Lsys (dB)	Jammer (dBm)	Lvl (dBm)	FER
2453.50	27.6097	16.4	9.209697164	2	-11.79030284	-21	7.4
2453.55	27.11436	16.4	8.714360987	2	-12.28563901	-21	5.8
2453.60	27.22361	16.4	8.823606956	2	-12.17639304	-21	6.2
2453.65	26.76947	16.4	8.369468808	2	-12.63053119	-21	6.4
2453.70	26.7051	16.4	8.305104608	2	-12.69489539	-21	6.3
2453.75	26.24813	16.4	7.84813169	2	-13.15186831	-21	5.8
2453.80	26.56071	16.4	8.160707771	2	-12.83929223	-21	6.5
2453.85	31.01747	16.4	12.61747158	2	-8.382528416	-21	6.9
2453.90	25.83283	16.4	7.432830017	2	-13.56716998	-21	7.8
2453.95	29.95815	16.4	11.55814707	2	-9.441852929	-21	7.2
2454.00	25.27181	16.4	6.871807457	2	-14.12819254	-21	7.8
2454.05	29.36538	16.4	10.96538045	2	-10.03461955	-21	5.8
2454.10	25.15106	16.4	6.751060137	2	-14.24893986	-21	5.3
2454.15	24.90078	16.4	6.500778667	2	-14.49922133	-21	6.2
2454.20	24.50678	16.4	6.106781082	2	-14.89321892	-21	5.8
2454.25	24.61063	16.4	6.210627194	2	-14.78937281	-21	6.2
2454.30	24.12266	16.4	5.722656232	2	-15.27734377	-21	5.1
2454.35	23.71726	16.4	5.317257463	2	-15.68274254	-21	6.2
2454.40	28.33438	16.4	9.934376691	2	-11.06562331	-21	5.8
2454.45	23.75423	16.4	5.354233846	2	-15.64576615	-21	5.8
2454.50	23.34592	16.4	4.945920353	2	-16.05407965	-21	7.5
2454.55	23.2884	16.4	4.8884033	2	-16.1115967	-21	6.3
2454.60	22.93237	16.4	4.532371241	2	-16.46762876	-21	6.5
2454.65	23.15569	16.4	4.755693099	2	-16.2443069	-21	5.8
2454.70	23.16289	16.4	4.76289094	2	-16.23710906	-21	8.3
2454.75	27.68934	16.4	9.289341796	2	-11.7106582	-21	6.2
2454.80	23.09829	16.4	4.698294698	2	-16.3017053	-21	5.6
2454.85	22.57918	16.4	4.179176715	2	-16.82082328	-21	6.8
2454.90	22.50821	16.4	4.108214581	2	-16.89178542	-21	7.5
2454.95	22.08268	16.4	3.682683818	2	-17.31731618	-21	6.8
2455.00	21.99187	16.4	3.591869013	2	-17.40813099	-21	7.8
2455.05	21.74786	16.4	3.347858815	2	-17.65214118	-21	6.5
2455.10	21.74295	16.4	3.342953272	2	-17.65704673	-21	6
2455.15	21.59564	16.4	3.195642587	2	-17.80435741	-21	6.8
2455.20	21.55852	16.4	3.158516634	2	-17.84148337	-21	7
2455.25	25.61713	16.4	7.217128745	2	-13.78287125	-21	6.5
2455.30	25.42447	16.4	7.024465942	2	-13.97553406	-21	6.3
2455.35	24.96028	16.4	6.560284495	2	-14.43971551	-21	6.8
2455.40	21.80152	16.4	3.401516123	2	-17.59848388	-21	7.7
2455.45	25.53136	16.4	7.131364533	2	-13.86863547	-21	5.8

2455.50	21.91152	16.4	3.511515554	2	-17.48848445	-21	6.2
2455.55	21.29531	16.4	2.895310159	2	-18.10468984	-21	6.8
2455.60	21.16713	16.4	2.767127401	2	-18.2328726	-21	5.2
2455.65	21.00534	16.4	2.605338562	2	-18.39466144	-21	5.6
2455.70	20.89211	16.4	2.492108906	2	-18.50789109	-21	6.3
2455.75	20.24233	16.4	1.842326477	2	-19.15767352	-21	5.8
2455.80	20.58123	16.4	2.181227833	2	-18.81877217	-21	6.8
2455.85	20.61036	16.4	2.210356459	2	-18.78964354	-21	5.2
2455.90	20.63304	16.4	2.233038718	2	-18.76696128	-21	6.2
2455.95	20.33093	16.4	1.930926511	2	-19.06907349	-21	6.4
2456.00	20.39344	16.4	1.993435205	2	-19.00656479	-21	5.8
2456.05	24.11851	16.4	5.718513694	2	-15.28148631	-21	6.2
2456.10	20.46599	16.4	2.065985956	2	-18.93401404	-21	5.9
2456.15	20.25498	16.4	1.854983764	2	-19.14501624	-21	5.8
2456.20	23.17719	16.4	4.777190158	2	-16.22280984	-21	6.2
2456.25	19.27768	16.4	0.877681168	2	-20.12231883	-21	5.6
2456.30	20.22238	16.4	1.82238135	2	-19.17761865	-21	4.2
2456.35	24.06661	16.4	5.666607468	2	-15.33339253	-21	5.1
2456.40	23.79403	16.4	5.394026016	2	-15.60597398	-21	6.3
2456.45	19.88848	16.4	1.48847608	2	-19.51152392	-21	4.9
2456.50	19.86456	16.4	1.46455738	2	-19.53544262	-21	5.1
2456.55	20.01605	16.4	1.616053435	2	-19.38394657	-21	5.8
2456.60	23.68084	16.4	5.280841626	2	-15.71915837	-21	6.4
2456.65	19.80886	16.4	1.408859627	2	-19.59114037	-21	5.9
2456.70	19.71959	16.4	1.319587797	2	-19.6804122	-21	5.6
2456.75	19.80406	16.4	1.404057545	2	-19.59594246	-21	6.1
2456.80	19.7574	16.4	1.357397442	2	-19.64260256	-21	7
2456.85	22.79463	16.4	4.394625831	2	-16.60537417	-21	6
2456.90	22.14502	16.4	3.745021639	2	-17.25497836	-21	5.9
2456.95	19.3364	16.4	0.936402394	2	-20.06359761	-21	5.8
2457.00	19.14424	16.4	0.74423507	2	-20.25576493	-21	6
2457.05	18.38134	16.4	-0.018659967	2	-21.01865997	-21	7.5
2457.10	18.21218	16.4	-0.187824299	2	-21.1878243	-21	7.2
2457.15	18.17464	16.4	-0.225359766	2	-21.22535977	-21	6.8
2457.20	17.09024	16.4	-1.309760968	2	-22.30976097	-21	7.1
2457.25	17.36265	16.4	-1.037353311	2	-22.03735331	-21	6.3
2457.30	17.2998	16.4	-1.100204439	2	-22.10020444	-21	5.6
2457.35	17.46486	16.4	-0.935135999	2	-21.935136	-21	4.5
2457.40	17.60259	16.4	-0.797407485	2	-21.79740749	-21	6.6
2457.45	17.39344	16.4	-1.006557498	2	-22.0065575	-21	7.4
2457.50	18.14632	16.4	-0.25368194	2	-21.25368194	-21	7
2457.55	18.61018	16.4	0.2101832	2	-20.7898168	-21	7.4
2457.60	17.85157	16.4	-0.548429582	2	-21.54842958	-21	9
2457.65	18.38331	16.4	-0.016687256	2	-21.01668726	-21	5.3
2457.70	18.08364	16.4	-0.316358191	2	-21.31635819	-21	5.6

2457.75	17.84905	16.4	-0.550954092	2	-21.55095409	-21	5.2
2457.80	17.62357	16.4	-0.776433635	2	-21.77643364	-21	5.9
2457.85	16.30425	16.4	-2.095751981	2	-23.09575198	-21	6.2
2457.90	15.81879	16.4	-2.581213678	2	-23.58121368	-21	7.2
2457.95	16.35363	16.4	-2.046368495	2	-23.04636849	-21	6.7
2458.00	21.4198	16.4	3.019796001	2	-17.980204	-21	6.7
2458.05	14.76039	16.4	-3.639614158	2	-24.63961416	-21	6.7
2458.10	16.23023	16.4	-2.169769887	2	-23.16976989	-21	6.1
2458.15	15.44633	16.4	-2.9536748	2	-23.9536748	-21	5.7
2458.20	13.9258	16.4	-4.474197208	2	-25.47419721	-21	7.2
2458.25	12.91876	16.4	-5.481235241	2	-26.48123524	-21	6.6
2458.30	14.18889	16.4	-4.21111411	2	-25.21111411	-21	6.4
2458.35	15.53467	16.4	-2.865330912	2	-23.86533091	-21	6.6
2458.40	15.74894	16.4	-2.651060901	2	-23.6510609	-21	5.2
2458.45	14.19951	16.4	-4.200487544	2	-25.20048754	-21	5.6
2458.50	14.87156	16.4	-3.528439493	2	-24.52843949	-21	5.4
2458.55	14.98982	16.4	-3.410182149	2	-24.41018215	-21	6
2458.60	12.24235	16.4	-6.157649997	2	-27.15765	-21	5.7
2458.65	17.12556	16.4	-1.274435199	2	-22.2744352	-21	6
2458.70	15.9646	16.4	-2.435401508	2	-23.43540151	-21	5.8
2458.75	15.81216	16.4	-2.58783958	2	-23.58783958	-21	6.2
2458.80	15.21133	16.4	-3.188669682	2	-24.18866968	-21	7.1
2458.85	16.31573	16.4	-2.084267635	2	-23.08426764	-21	5.6
2458.90	15.06358	16.4	-3.33642413	2	-24.33642413	-21	4.8
2458.95	13.97205	16.4	-4.427954404	2	-25.4279544	-21	6.7
2459.00	13.18331	16.4	-5.216688565	2	-26.21668856	-21	7.2
2459.05	13.20381	16.4	-5.196193918	2	-26.19619392	-21	6.8
2459.10	5.424906	16.4	-12.97509418	2	-33.97509418	-21	6.3
2459.15	14.37698	16.4	-4.02301655	2	-25.02301655	-21	6.5
2459.20	9.114324	16.4	-9.285676285	2	-30.28567628	-21	7.2
2459.25	10.57185	16.4	-7.828152882	2	-28.82815288	-21	6.6
2459.30	12.28975	16.4	-6.110250001	2	-27.11025	-21	4.8
2459.35	11.0576	16.4	-7.342400369	2	-28.34240037	-21	6.8
2459.40	14.53417	16.4	-3.865833029	2	-24.86583303	-21	5.8
2459.45	11.42962	16.4	-6.970383492	2	-27.97038349	-21	6.3
2459.50	12.23535	16.4	-6.164651342	2	-27.16465134	-21	5.3
2459.55	15.36257	16.4	-3.037426782	2	-24.03742678	-21	7.2
2459.60	8.590995	16.4	-9.809005315	2	-30.80900532	-21	6.6
2459.65	11.16476	16.4	-7.235238718	2	-28.23523872	-21	6.5
2459.70	15.01413	16.4	-3.385870992	2	-24.38587099	-21	6.4
2459.75	12.89102	16.4	-5.508976307	2	-26.50897631	-21	7.2
2459.80	-9.42741	16.4	-27.82740855	2	-48.82740855	-21	6.8
2459.85	13.22295	16.4	-5.177045567	2	-26.17704557	-21	7.1
2459.90	12.75429	16.4	-5.645709618	2	-26.64570962	-21	6.8
2459.95	13.1763	16.4	-5.223702558	2	-26.22370256	-21	5.3

2460.00	12.13783	16.4	-6.262168905	2	-27.2621689	-21	7.7
2460.05	10.4333	16.4	-7.966703928	2	-28.96670393	-21	4.8
2460.10	13.76146	16.4	-4.638540252	2	-25.63854025	-21	6.2
2460.15	12.26308	16.4	-6.13691501	2	-27.13691501	-21	5.6
2460.20	9.483528	16.4	-8.916472256	2	-29.91647226	-21	4.6
2460.25	13.12547	16.4	-5.274532829	2	-26.27453283	-21	6.5
2460.30	9.289453	16.4	-9.110546615	2	-30.11054662	-21	5.5
2460.35	8.489877	16.4	-9.910122627	2	-30.91012263	-21	6.5
2460.40	10.16552	16.4	-8.23448195	2	-29.23448195	-21	6.3
2460.45	9.12272	16.4	-9.27728048	2	-30.27728048	-21	6.7
2460.50	13.99189	16.4	-4.408106546	2	-25.40810655	-21	5.4
2460.55	2.84364	16.4	-15.55636003	2	-36.55636003	-21	5.6
2460.60	12.94223	16.4	-5.457770098	2	-26.4577701	-21	3.6
2460.65	10.39871	16.4	-8.001289232	2	-29.00128923	-21	5.6
2460.70	11.35168	16.4	-7.048318745	2	-28.04831875	-21	6.1
2460.75	12.7438	16.4	-5.656204605	2	-26.65620461	-21	5.9
2460.80	12.06894	16.4	-6.331058614	2	-27.33105861	-21	6
2460.85	10.22992	16.4	-8.170084666	2	-29.17008467	-21	5.8
2460.90	12.01848	16.4	-6.381519926	2	-27.38151993	-21	4.3
2460.95	6.017216	16.4	-12.38278369	2	-33.38278369	-21	5.2
2461.00	-26.8516	16.4	-45.25162949	2	-66.25162949	-21	5.8
2461.05	-26.9958	16.4	-45.39580376	2	-66.39580376	-21	4.7
2461.10	-7.25794	16.4	-25.65794382	2	-46.65794382	-21	5.4
2461.15	-27.8367	16.4	-46.23671673	2	-67.23671673	-21	5.2
2461.20	3.568763	16.4	-14.83123652	2	-35.83123652	-21	4.6
2461.25	10.92087	16.4	-7.479126533	2	-28.47912653	-21	4.8
2461.30	3.978819	16.4	-14.42118076	2	-35.42118076	-21	4.5
2461.35	-27.7953	16.4	-46.19530512	2	-67.19530512	-21	5.8
2461.40	-27.793	16.4	-46.19303524	2	-67.19303524	-21	5.5
2461.45	-27.8189	16.4	-46.21885723	2	-67.21885723	-21	6.4
2461.50	-27.5476	16.4	-45.94760438	2	-66.94760438	-21	6.8
2461.55	-27.8036	16.4	-46.20359957	2	-67.20359957	-21	6
2461.60	-27.649	16.4	-46.04897065	2	-67.04897065	-21	5.8
2461.65	15.28832	16.4	-3.111677638	2	-24.11167764	-21	6.4
2461.70	15.56083	16.4	-2.839165949	2	-23.83916595	-21	7.5
2461.75	15.8203	16.4	-2.579700941	2	-23.57970094	-21	7.2
2461.80	17.0008	16.4	-1.399204101	2	-22.3992041	-21	7.8
2461.85	17.2118	16.4	-1.188195667	2	-22.18819567	-21	6.7
2461.90	16.92241	16.4	-1.477594811	2	-22.47759481	-21	7.6
2461.95	17.63029	16.4	-0.769705872	2	-21.76970587	-21	6.2
2462.00	17.23174	16.4	-1.168255794	2	-22.16825579	-21	5.8
2462.05	17.31979	16.4	-1.080206228	2	-22.08020623	-21	6.5
2462.10	17.11872	16.4	-1.281283371	2	-22.28128337	-21	5.7
2462.15	16.26583	16.4	-2.134170152	2	-23.13417015	-21	5.8
2462.20	15.78568	16.4	-2.614323519	2	-23.61432352	-21	6.2

2462.25	15.11779	16.4	-3.28221343	2	-24.28221343	-21	6.4
2462.30	5.332591	16.4	-13.06740855	2	-34.06740855	-21	6.2
2462.35	-27.8037	16.4	-46.20372717	2	-67.20372717	-21	5.7
2462.40	-12.4321	16.4	-30.83211562	2	-51.83211562	-21	4.5
2462.45	-28.0281	16.4	-46.42814743	2	-67.42814743	-21	6.8
2462.50	5.416112	16.4	-12.98388812	2	-33.98388812	-21	7.4
2462.55	-27.7252	16.4	-46.1251659	2	-67.1251659	-21	6.5
2462.60	-28.0776	16.4	-46.47762233	2	-67.47762233	-21	6.3
2462.65	9.26359	16.4	-9.136409877	2	-30.13640988	-21	6.7
2462.70	10.94926	16.4	-7.450742306	2	-28.45074231	-21	5.8
2462.75	-3.08181	16.4	-21.48180985	2	-42.48180985	-21	5.8
2462.80	-27.9209	16.4	-46.32086538	2	-67.32086538	-21	6.8
2462.85	11.32862	16.4	-7.071376775	2	-28.07137678	-21	5.4
2462.90	6.002158	16.4	-12.39784222	2	-33.39784222	-21	4.8
2462.95	-15.5842	16.4	-33.98424481	2	-54.98424481	-21	5.8
2463.00	1.422803	16.4	-16.9771973	2	-37.9771973	-21	6
2463.05	14.64522	16.4	-3.754775241	2	-24.75477524	-21	6.9
2463.10	-26.6356	16.4	-45.03559297	2	-66.03559297	-21	7.3
2463.15	5.205759	16.4	-13.19424085	2	-34.19424085	-21	5.7
2463.20	13.96309	16.4	-4.436913894	2	-25.43691389	-21	5.9
2463.25	8.134347	16.4	-10.26565258	2	-31.26565258	-21	6.2
2463.30	-27.7318	16.4	-46.13175876	2	-67.13175876	-21	5.6
2463.35	12.47701	16.4	-5.922988379	2	-26.92298838	-21	6.2
2463.40	11.94522	16.4	-6.454779903	2	-27.4547799	-21	5.2
2463.45	11.31816	16.4	-7.0818442	2	-28.0818442	-21	6.2
2463.50	-0.22191	16.4	-18.62190737	2	-39.62190737	-21	7.5
2463.55	2.983631	16.4	-15.41636891	2	-36.41636891	-21	6.3
2463.60	11.1106	16.4	-7.289395528	2	-28.28939553	-21	5.8
2463.65	5.100931	16.4	-13.29906932	2	-34.29906932	-21	6.3
2463.70	8.304589	16.4	-10.09541148	2	-31.09541148	-21	7.9
2463.75	5.265136	16.4	-13.13486398	2	-34.13486398	-21	6.4
2463.80	14.14004	16.4	-4.25996049	2	-25.25996049	-21	7.2
2463.85	14.66334	16.4	-3.736659241	2	-24.73665924	-21	5.5
2463.90	13.33176	16.4	-5.068242246	2	-26.06824225	-21	6.9
2463.95	10.11067	16.4	-8.28932614	2	-29.28932614	-21	6.8
2464.00	7.102777	16.4	-11.29722293	2	-32.29722293	-21	5.5
2464.05	11.59452	16.4	-6.805481553	2	-27.80548155	-21	5.6
2464.10	14.363	16.4	-4.037003285	2	-25.03700328	-21	5.3
2464.15	9.231602	16.4	-9.168398409	2	-30.16839841	-21	6.8
2464.20	13.50929	16.4	-4.890707549	2	-25.89070755	-21	7.5
2464.25	13.10985	16.4	-5.290149796	2	-26.2901498	-21	5.4
2464.30	13.99113	16.4	-4.40887492	2	-25.40887492	-21	4.5
2464.35	13.3876	16.4	-5.012396496	2	-26.0123965	-21	6.8
2464.40	12.74265	16.4	-5.657348149	2	-26.65734815	-21	6.4
2464.45	10.15167	16.4	-8.248331242	2	-29.24833124	-21	6.3

2464.50	11.7987	16.4	-6.601301847	2	-27.60130185	-21	6.2
2464.55	11.98509	16.4	-6.414907349	2	-27.41490735	-21	6.4
2464.60	9.289955	16.4	-9.110045007	2	-30.11004501	-21	6.8
2464.65	-28.0292	16.4	-46.42922111	2	-67.42922111	-21	5.8
2464.70	14.37767	16.4	-4.022329667	2	-25.02232967	-21	5.2
2464.75	1.492194	16.4	-16.90780567	2	-37.90780567	-21	5.4
2464.80	10.14027	16.4	-8.259733725	2	-29.25973373	-21	4.3
2464.85	13.27893	16.4	-5.12106678	2	-26.12106678	-21	5.7
2464.90	11.01904	16.4	-7.380958305	2	-28.3809583	-21	6.8
2464.95	13.60819	16.4	-4.791811907	2	-25.79181191	-21	6.8
2465.00	10.16364	16.4	-8.236357016	2	-29.23635702	-21	7.2
2465.05	15.19334	16.4	-3.206663286	2	-24.20666329	-21	6.3
2465.10	14.39463	16.4	-4.005370509	2	-25.00537051	-21	6.5
2465.15	16.0099	16.4	-2.390096984	2	-23.39009698	-21	6.9
2465.20	14.25395	16.4	-4.146053749	2	-25.14605375	-21	7.1
2465.25	14.53151	16.4	-3.868494365	2	-24.86849437	-21	7.2
2465.30	13.50378	16.4	-4.896222951	2	-25.89622295	-21	7
2465.35	15.11964	16.4	-3.280355021	2	-24.28035502	-21	7.4
2465.40	15.29385	16.4	-3.106148471	2	-24.10614847	-21	6.6
2465.45	15.23391	16.4	-3.166090682	2	-24.16609068	-21	7
2465.50	15.01552	16.4	-3.384479164	2	-24.38447916	-21	6.5
2465.55	14.55358	16.4	-3.846416345	2	-24.84641634	-21	7.4
2465.60	14.53524	16.4	-3.864757512	2	-24.86475751	-21	7
2465.65	16.369	16.4	-2.031001785	2	-23.03100179	-21	6.8
2465.70	14.25112	16.4	-4.148875007	2	-25.14887501	-21	7.1
2465.75	15.91156	16.4	-2.488438311	2	-23.48843831	-21	7.1
2465.80	12.66677	16.4	-5.733234112	2	-26.73323411	-21	6.6
2465.85	15.5901	16.4	-2.809897533	2	-23.80989753	-21	6.7
2465.90	14.97167	16.4	-3.428328447	2	-24.42832845	-21	6.9
2465.95	16.00047	16.4	-2.399534885	2	-23.39953488	-21	7.2
2466.00	12.9036	16.4	-5.49639921	2	-26.49639921	-21	7.3
2466.05	14.51343	16.4	-3.886566219	2	-24.88656622	-21	6.9
2466.10	16.50889	16.4	-1.891113296	2	-22.8911133	-21	6.8
2466.15	16.09509	16.4	-2.304914118	2	-23.30491412	-21	7
2466.20	15.12411	16.4	-3.275889287	2	-24.27588929	-21	6.7
2466.25	17.11795	16.4	-1.282049995	2	-22.28204999	-21	6.2
2466.30	17.42057	16.4	-0.979433781	2	-21.97943378	-21	6.5
2466.35	17.12826	16.4	-1.271735724	2	-22.27173572	-21	7.3
2466.40	17.06427	16.4	-1.33573046	2	-22.33573046	-21	7.8
2466.45	16.91634	16.4	-1.483664885	2	-22.48366489	-21	6.8
2466.50	16.56496	16.4	-1.835042675	2	-22.83504267	-21	6.3
2466.55	16.95496	16.4	-1.445036706	2	-22.44503671	-21	7.3
2466.60	16.3651	16.4	-2.034902978	2	-23.03490298	-21	6.6
2466.65	16.90963	16.4	-1.490374912	2	-22.49037491	-21	6.5
2466.70	16.22917	16.4	-2.170827222	2	-23.17082722	-21	7.3

2466.75	16.91932	16.4	-1.480681662	2	-22.48068166	-21	7.9
2466.80	17.13979	16.4	-1.260212924	2	-22.26021292	-21	6.6
2466.85	17.93747	16.4	-0.462532395	2	-21.4625324	-21	7.4
2466.90	21.61125	16.4	3.211254831	2	-17.78874517	-21	6.2
2466.95	18.35236	16.4	-0.047638651	2	-21.04763865	-21	6.9
2467.00	23.1066	16.4	4.706596265	2	-16.29340373	-21	6.8
2467.05	18.92744	16.4	0.527438091	2	-20.47256191	-21	6.5
2467.10	19.10252	16.4	0.702520822	2	-20.29747918	-21	7.3
2467.15	19.3283	16.4	0.928299774	2	-20.07170023	-21	5.7
2467.20	22.90614	16.4	4.506139007	2	-16.49386099	-21	5.8
2467.25	19.79241	16.4	1.392414455	2	-19.60758554	-21	5.2
2467.30	22.02625	16.4	3.626248716	2	-17.37375128	-21	6.1
2467.35	23.1259	16.4	4.72590257	2	-16.27409743	-21	6.3
2467.40	19.33424	16.4	0.934241808	2	-20.06575819	-21	6.4
2467.45	19.66227	16.4	1.262267637	2	-19.73773236	-21	7.1
2467.50	19.15459	16.4	0.754586277	2	-20.24541372	-21	5.8
2467.55	19.3915	16.4	0.991502984	2	-20.00849702	-21	6.3
2467.60	24.05521	16.4	5.655213766	2	-15.34478623	-21	6.5
2467.65	19.74499	16.4	1.344993867	2	-19.65500613	-21	7.3
2467.70	20.16187	16.4	1.761871624	2	-19.23812838	-21	5.9
2467.75	23.81862	16.4	5.418622485	2	-15.58137751	-21	5.8
2467.80	20.14769	16.4	1.747691835	2	-19.25230816	-21	6.3
2467.85	24.03626	16.4	5.63625672	2	-15.36374328	-21	6.7
2467.90	19.66265	16.4	1.262651374	2	-19.73734863	-21	6.5
2467.95	19.91029	16.4	1.510293474	2	-19.48970653	-21	7.3
2468.00	23.73733	16.4	5.337328838	2	-15.66267116	-21	6.2
2468.05	20.07269	16.4	1.6726878	2	-19.3273122	-21	5.1
2468.10	19.71898	16.4	1.31898336	2	-19.68101664	-21	5.5
2468.15	20.20994	16.4	1.809942831	2	-19.19005717	-21	5.7
2468.20	20.17795	16.4	1.777952636	2	-19.22204736	-21	6
2468.25	20.15615	16.4	1.756152548	2	-19.24384745	-21	5.9
2468.30	20.60995	16.4	2.209953404	2	-18.7900466	-21	6.1
2468.35	20.92917	16.4	2.529172811	2	-18.47082719	-21	7.3
2468.40	20.60564	16.4	2.205640165	2	-18.79435983	-21	7.1
2468.45	24.13931	16.4	5.739307117	2	-15.26069288	-21	6.5
2468.50	20.9015	16.4	2.501503805	2	-18.4984962	-21	6.3
2468.55	20.7121	16.4	2.312096297	2	-18.6879037	-21	6.1
2468.60	20.97264	16.4	2.572641108	2	-18.42735889	-21	5.5
2468.65	20.86158	16.4	2.461579153	2	-18.53842085	-21	5.8
2468.70	24.9646	16.4	6.564598765	2	-14.43540124	-21	5.6
2468.75	21.60873	16.4	3.208725604	2	-17.7912744	-21	5.7
2468.80	21.81278	16.4	3.412775849	2	-17.58722415	-21	5.7
2468.85	21.50752	16.4	3.10751882	2	-17.89248118	-21	5.9
2468.90	21.40283	16.4	3.002834444	2	-17.99716556	-21	5.6
2468.95	21.86902	16.4	3.469015279	2	-17.53098472	-21	6.1

2469.00	21.31695	16.4	2.916946534	2	-18.08305347	-21	6.4
2469.05	21.78841	16.4	3.388410532	2	-17.61158947	-21	6.3
2469.10	26.51393	16.4	8.113931165	2	-12.88606884	-21	5.6
2469.15	21.99499	16.4	3.594994755	2	-17.40500525	-21	6.4
2469.20	22.63365	16.4	4.233648089	2	-16.76635191	-21	7.4
2469.25	26.68044	16.4	8.280436127	2	-12.71956387	-21	6.9
2469.30	22.39705	16.4	3.997048161	2	-17.00295184	-21	6.7
2469.35	22.59141	16.4	4.191405485	2	-16.80859451	-21	6.7
2469.40	23.20323	16.4	4.803229912	2	-16.19677009	-21	6.7
2469.45	22.81006	16.4	4.41006002	2	-16.58993998	-21	7.6
2469.50	27.31733	16.4	8.917327457	2	-12.08267254	-21	7.7
2469.55	23.65736	16.4	5.257364853	2	-15.74263515	-21	7.1
2469.60	23.88312	16.4	5.483119871	2	-15.51688013	-21	6.3
2469.65	24.0205	16.4	5.620501579	2	-15.37949842	-21	6.9
2469.70	24.08495	16.4	5.684948925	2	-15.31505107	-21	6.7
2469.75	24.40188	16.4	6.001881802	2	-14.9981182	-21	6.5
2469.80	24.71837	16.4	6.318365215	2	-14.68163479	-21	7.1
2469.85	25.22731	16.4	6.827306919	2	-14.17269308	-21	7.8
2469.90	25.30751	16.4	6.907506723	2	-14.09249328	-21	7.4
2469.95	24.24861	16.4	5.848607107	2	-15.15139289	-21	6.5
2470.00	24.36976	16.4	5.969756457	2	-15.03024354	-21	6.5
2470.05	24.12489	16.4	5.724892168	2	-15.27510783	-21	7
2470.10	24.88336	16.4	6.483364333	2	-14.51663567	-21	6.7
2470.15	24.68156	16.4	6.281561238	2	-14.71843876	-21	6.6
2470.20	31.32426	16.4	12.92425868	2	-8.075741324	-21	7.8
2470.25	24.90249	16.4	6.502493346	2	-14.49750665	-21	6.9
2470.30	25.90009	16.4	7.500094904	2	-13.4999051	-21	6.5
2470.35	31.81442	16.4	13.4144211	2	-7.585578897	-21	6.9
2470.40	25.90197	16.4	7.501973049	2	-13.49802695	-21	6.7
2470.45	26.21114	16.4	7.811135818	2	-13.18886418	-21	6.3
2470.50	31.7922	16.4	13.39220114	2	-7.607798864	-21	7.1

Processing Gain (dB) @20th Percentile= 11.5945

