



UNIVERSIDADE FEDERAL DA PARAÍBA
CENTRO DE TECNOLOGIA
DEPARTAMENTO DE ENGENHARIA DE PRODUÇÃO
LABORATÓRIO DE ANÁLISE DO TRABALHO

AVALIAÇÃO DA EXPOSIÇÃO A NÍVEIS DE RADIAÇÃO NÃO IONIZANTE EM POSTOS DE TRABALHO DE FUNCIONÁRIOS DE UMA UNIVERSIDADE PÚBLICA

Sonaly de Lima Silva, PPGEP/UFPB

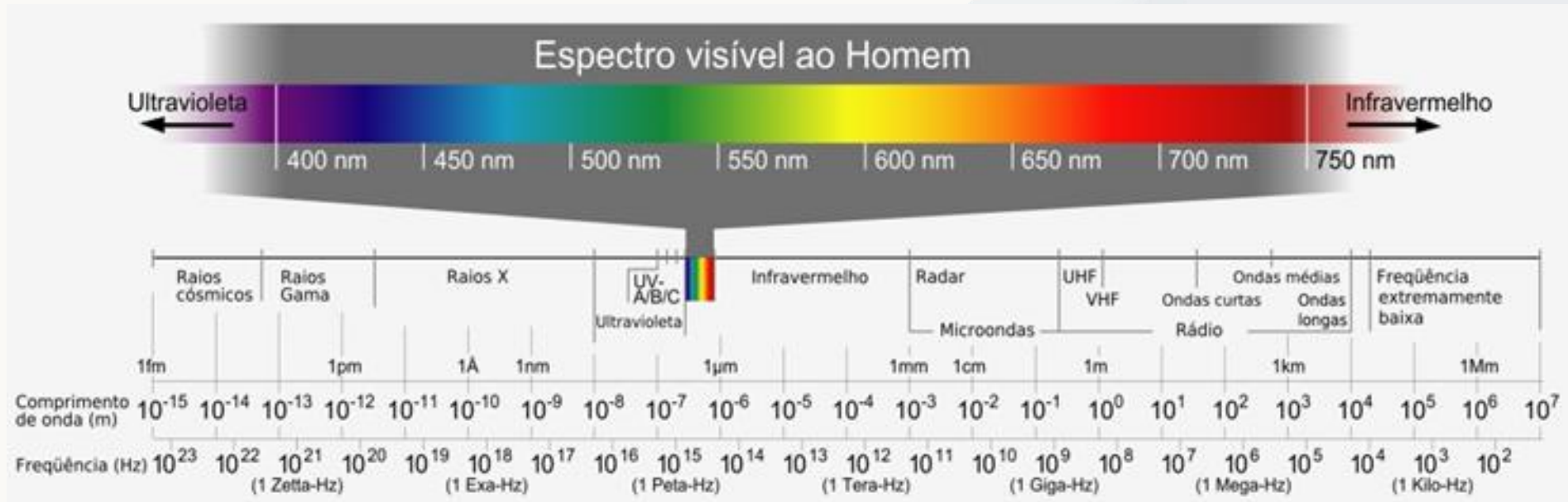
Luiz Bueno da Silva, PPGEP/UFPB



CESET
GRUPO DE PESQUISA EM
CONFORTO, EFICIÊNCIA E
SEGURANÇA NO TRABALHO

O QUE É?

A Radiação Não Ionizante (RNI) é aquela que não gera ionizações, compreende as ondas de rádio, a luz visível, o infravermelho, o micro-ondas e o campo de frequência extremamente baixa (MÁSCULO, 2008);

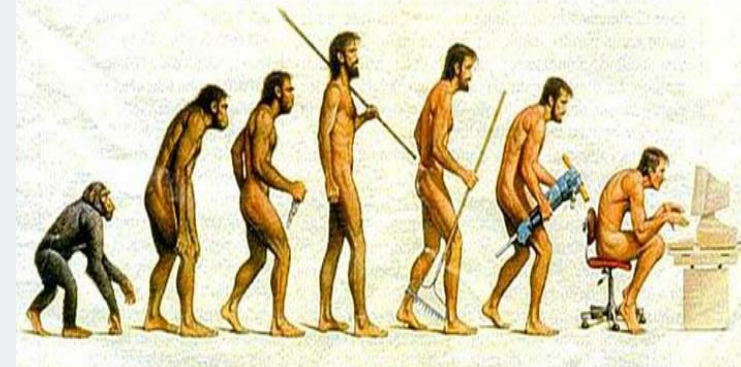


Fonte: Griffiths (2011)



POR QUE ESTUDAR ESSA RADIAÇÃO?

- Desenvolvimento e crescente inserção de tecnologias nos postos de trabalho;
- Soluções de demanda, comunicação, praticidade, conforto entre outros benefícios;
- Malefícios – Exposição à RNI ;



PROBLEMA ENCONTRADO

- 1993- Início dos estudos de radiação não ionizante e seus efeitos sobre a saúde;
- Poucos estudos realizados em ambientes de trabalho informatizados.
- Crescente número de usuários de computadores.

- Os estudos em ambientes informatizados têm uma abordagem voltada para antropometria, iluminação, mobiliários, problemas osteomusculares.



Quais fatores podem auxiliar na redução da exposição diária à radiação não ionizante durante o horário de trabalho?



OBJETIVOS

Objetivo Geral

Analisar quais os fatores que podem auxiliar na redução da exposição diária à radiação não ionizante em postos de trabalho informatizados.

Objetivos Específicos

- Analisar o posto de trabalho sob a ótica da ergonomia de concepção;
- Realizar medições dos níveis de radiação não ionizante no posto de trabalho;
- Identificar sintomas relatados pelos usuários de computador;
- Comparar os níveis de radiação entre os postos de trabalho;
- Estudar a relação entre o *layout* e os níveis de radiação.



METODOLOGIA DO ESTUDO

COLETA DE DADOS

➤ **Levantamento de dados**

Dados sociodemográficos, histórico geral de saúde e sintomatologia relatada.

➤ **Análise ergonômica**

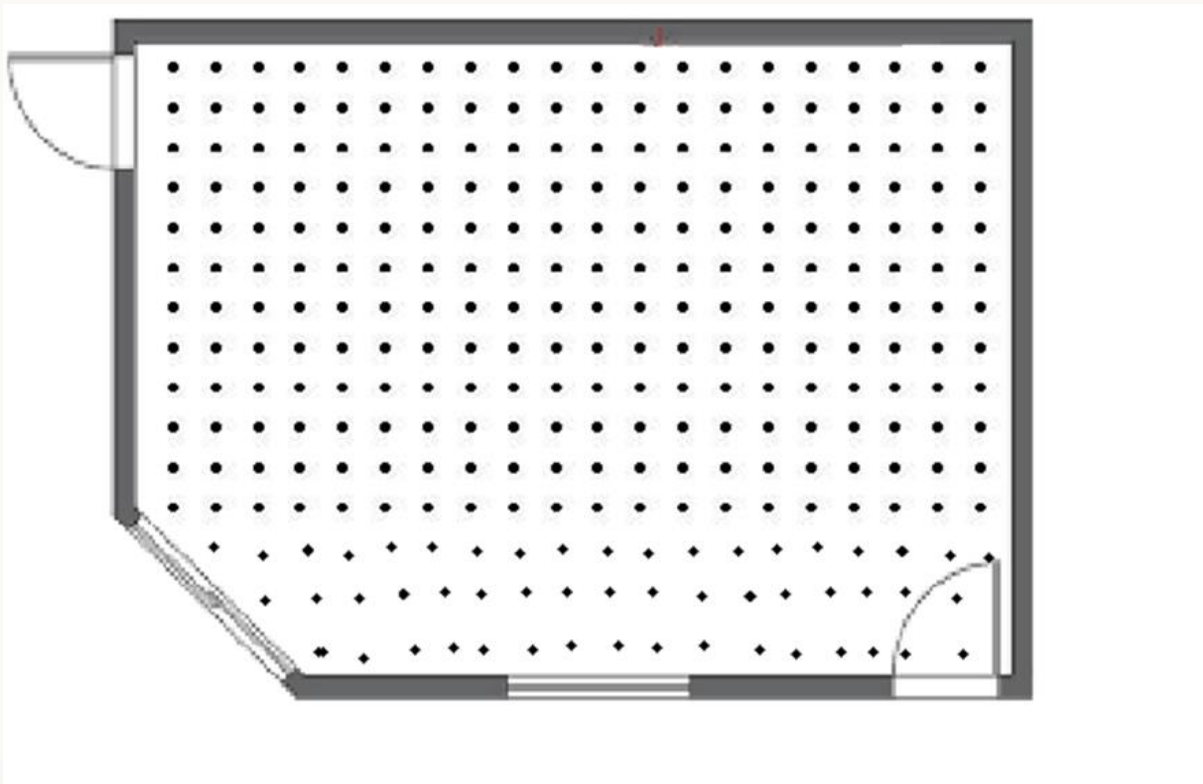
Estudo das dimensões, da distribuição dos equipamentos no posto de trabalho e da atividade do técnico, verificando a aplicação de normas e especificações ergonômicas nos postos de trabalho.



METODOLOGIA DO ESTUDO

COLETA DE DADOS

➤ Medição da radiação não ionizante



➤ Faixas de frequência:

1-50Hz

50-400 Hz

400-3kHz

3-30kHz



METODOLOGIA DO ESTUDO

COLETA DE DADOS

➤ Obtenção de termogramas



RESULTADOS PARCIAIS

análise dados duca 1-50 - Excel

BEM VINDO A PLANILHA DE CONSOLIDAÇÃO DOS DADOS 0 - 50 Hz

Endereço dos Arquivos: op\medições para análise\MEDICOES DUCA ATUAL\1-50
Selecione o arquivo: ponto 24.csv

COPIAR DADOS

IR A PÁGINA DE GRÁFICOS

Insira abaixo o nome das planilhas

ponto 1
ponto 2
ponto 3
ponto 4
ponto 5
ponto 6
ponto 7
ponto 8
ponto 9
ponto 10
ponto 11
ponto 12
ponto 13
ponto 14
ponto 15
ponto 16
ponto 17
ponto 18

Gama de frequências	Densidade de fluxo magnético
1Hz-8Hz	$4 \times 10^2 / f^2$
8Hz-25Hz	$5 \times 10^3 / f$
25Hz-50Hz	2×10^4
50Hz-400Hz	2×10^4
400Hz-3kHz	$8 \times 10^2 / f$
3kHz-10MHz	$2,7 \times 10^5$



RESULTADOS PARCIAIS

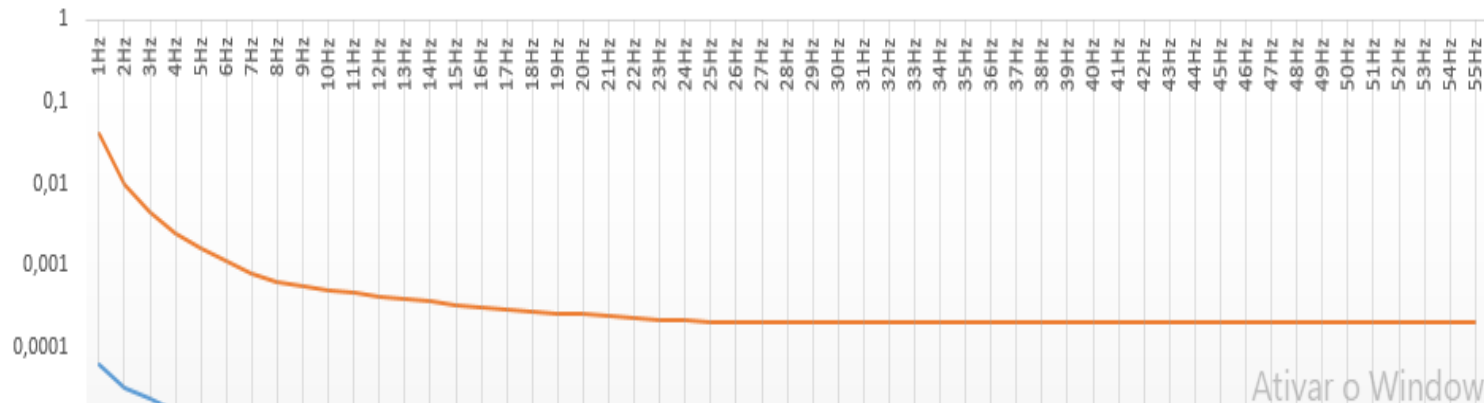
PLANILHA DE GRÁFICOS 0 - 50 Hz

Selecione o Ponto	FREQUENCIA - HZ																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ponto 24.csv	6,11705E-05	3,07E-05	2,33E-05	1,59E-05	1,42E-05	1,1E-05	9,22E-06	8,95E-06	7,09E-06	7,23E-06	6,03E-06	5,5E-06	5,53E-06	4,57E-06	4,91E-06	4,17E-06	3,93E-06
STATUS	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

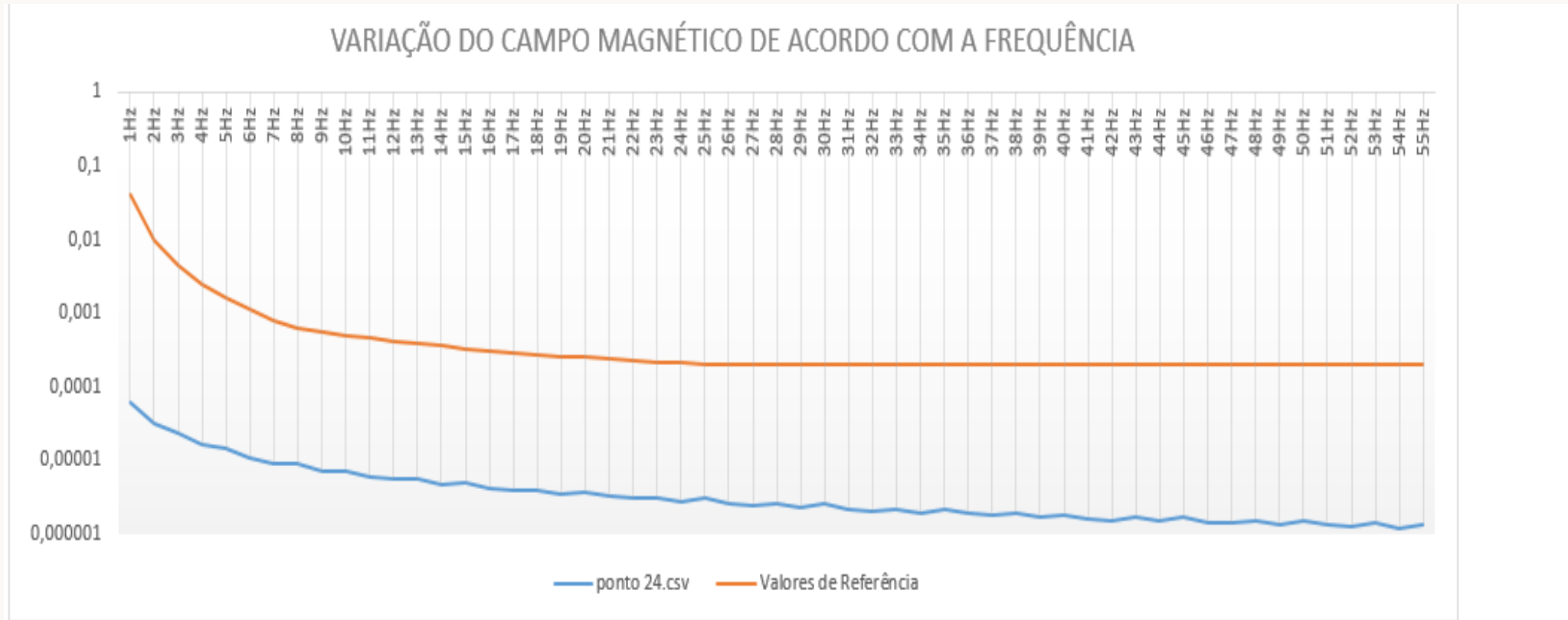
RETORNAR AO MENU

VALORES DE REFERÊNCIA																
0,04	0,01	0,004444	0,0025	0,0016	0,001111	0,000816	0,000625	0,000556	0,0005	0,000455	0,000417	0,000385	0,000357	0,000333	0,000313	0,000294

VARIAÇÃO DO CAMPO MAGNÉTICO DE ACORDO COM A FREQUÊNCIA



RESULTADOS PARCIAIS



RESULTADOS PARCIAIS

- Faixa de 1-50Hz
- Ambiente 1; 88pontos

PLANILHA LAT 1-50 Hz amb 1 - Excel (Falha na Ativação do Produto)

Arquivo Página Inicial Inserir Layout da Página Fórmulas Dados Revisão Exibir Desenvolvedor FOXIT PDF O que você deseja fazer... Entrar Compartilhar

Colar Fonte Alinhamento Número Estilo Formatar como Tabela Estilos de Célula Inserir Excluir Formatar Células Classificar e Filtrar Localizar e Selecionar Edição

BJ1 PONTO

	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL
1	35	36	37	37	38	39	40	41	42	43	44	45	46	46	47	48	49	média	maximo	Minimo	x	Y	PONTO		
2	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	4,8559E-06	5,3681E-05	1,1199E-06	0	0	1		
3	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,7981E-06	5,3091E-05	1,1047E-06	1	0	2		
4	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,834E-06	5,3604E-05	1,1116E-06	2	0	3		
5	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,3549E-06	5,9424E-05	1,2316E-06	3	0	4		
6	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,3321E-06	5,9209E-05	1,227E-06	4	0	5		
7	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,3271E-06	5,9101E-05	1,2256E-06	5	0	6		
8	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	5,1711E-06	5,7378E-05	1,1885E-06	6	0	7		
9	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,3083E-06	5,9136E-05	1,2116E-06	7	0	8		
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2	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,4162E-06	6,0092E-05	1,2448E-06	10	0	11		
3	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,834E-06	5,3497E-05	1,1113E-06	0	1	12		
4	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,8762E-06	5,4047E-05	1,1201E-06	1	1	13		
5	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	4,8881E-06	5,4264E-05	1,1224E-06	2	1	14		
6	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,8771E-06	5,4156E-05	1,12E-06	3	1	15		
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9	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	5,1696E-06	5,7424E-05	1,1861E-06	6	1	18		
0	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	5,1972E-06	5,7738E-05	1,1929E-06	7	1	19		
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3	1,7E-06	1,7E-06	1,6E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,4418E-06	6,0457E-05	1,2488E-06	10	1	22		
4	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,9003E-06	5,4425E-05	1,1253E-06	0	2	23		
5	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	4,906E-06	5,4401E-05	1,1281E-06	1	2	24		
6	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	4,9071E-06	5,448E-05	1,1267E-06	2	2	25		
7	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,8597E-06	5,3959E-05	1,116E-06	3	2	26		
8	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,8757E-06	5,4138E-05	1,1196E-06	4	2	27		
9	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	1,2E-06	1,2E-06	1,1E-06	1,1E-06	1,1E-06	4,8761E-06	5,4132E-05	1,1197E-06	5	2	28		

RESULTADOS PARCIAIS

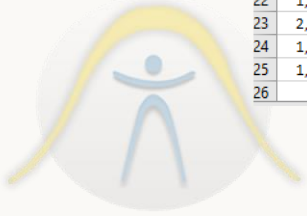
- Faixa de 1-50Hz
- Ambiente 2; 49 pontos

	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK
1	43	44	45	46	47	48	49	50	51	52	53	54	55	media	maximo	minimo	x	y	PONTO	
2	1,53E-06	1,5E-06	1,46E-06	1,42E-06	1,39E-06	1,38E-06	1,36E-06	1,32E-06	1,29E-06	1,27E-06	1,26E-06	1,25E-06	1,22E-06	5,28115E-06	5,86564E-05	1,21664E-06	0	0	1	
3	1,51E-06	1,47E-06	1,43E-06	1,39E-06	1,36E-06	1,35E-06	1,34E-06	1,3E-06	1,27E-06	1,25E-06	1,24E-06	1,23E-06	1,2E-06	5,20044E-06	5,7768E-05	1,20086E-06	1	0	2	
4	3,26E-06	3,3E-06	3,31E-06	3,07E-06	3,32E-06	2,77E-06	2,97E-06	2,84E-06	2,9E-06	2,93E-06	2,59E-06	2,9E-06	2,39E-06	1,17317E-05	0,000140557	2,39128E-06	2	0	3	
5	1,45E-06	1,42E-06	1,38E-06	1,34E-06	1,31E-06	1,3E-06	1,28E-06	1,24E-06	1,22E-06	1,2E-06	1,19E-06	1,18E-06	1,15E-06	4,99741E-06	5,54223E-05	1,14642E-06	3	0	4	
6	1,43E-06	1,4E-06	1,36E-06	1,32E-06	1,3E-06	1,29E-06	1,27E-06	1,23E-06	1,21E-06	1,19E-06	1,18E-06	1,17E-06	1,14E-06	4,95529E-06	5,49794E-05	1,13885E-06	4	0	5	
7	1,43E-06	1,39E-06	1,35E-06	1,31E-06	1,29E-06	1,28E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,17E-06	1,15E-06	1,12E-06	4,88236E-06	5,39412E-05	1,1204E-06	5	0	6	
8	1,44E-06	1,41E-06	1,37E-06	1,33E-06	1,3E-06	1,29E-06	1,27E-06	1,24E-06	1,21E-06	1,19E-06	1,18E-06	1,16E-06	1,13E-06	4,9361E-06	5,4635E-05	1,13124E-06	6	0	7	
9	1,5E-06	1,47E-06	1,43E-06	1,39E-06	1,36E-06	1,35E-06	1,34E-06	1,3E-06	1,28E-06	1,25E-06	1,24E-06	1,23E-06	1,2E-06	5,18664E-06	5,75838E-05	1,19864E-06	0	1	8	
10	1,58E-06	1,56E-06	1,48E-06	1,46E-06	1,44E-06	1,4E-06	1,39E-06	1,36E-06	1,31E-06	1,31E-06	1,28E-06	1,27E-06	1,25E-06	5,4237E-06	5,98168E-05	1,25278E-06	1	1	9	
11	1,53E-06	1,5E-06	1,45E-06	1,42E-06	1,39E-06	1,38E-06	1,36E-06	1,32E-06	1,29E-06	1,26E-06	1,25E-06	1,23E-06	1,21E-06	5,25587E-06	5,81208E-05	1,20715E-06	2	1	10	
12	1,44E-06	1,4E-06	1,35E-06	1,33E-06	1,3E-06	1,29E-06	1,27E-06	1,23E-06	1,21E-06	1,2E-06	1,19E-06	1,18E-06	1,15E-06	5,0178E-06	5,54884E-05	1,15084E-06	3	1	11	
13	1,44E-06	1,4E-06	1,35E-06	1,31E-06	1,29E-06	1,28E-06	1,26E-06	1,21E-06	1,19E-06	1,18E-06	1,18E-06	1,15E-06	1,13E-06	4,94599E-06	5,44449E-05	1,12503E-06	4	1	12	
14	1,44E-06	1,4E-06	1,36E-06	1,32E-06	1,3E-06	1,29E-06	1,26E-06	1,22E-06	1,2E-06	1,18E-06	1,17E-06	1,15E-06	1,13E-06	4,93061E-06	5,43079E-05	1,126E-06	5	1	13	
15	1,43E-06	1,4E-06	1,35E-06	1,31E-06	1,29E-06	1,29E-06	1,27E-06	1,22E-06	1,19E-06	1,18E-06	1,17E-06	1,15E-06	1,11E-06	4,87184E-06	5,40033E-05	1,10994E-06	6	1	14	
16	1,51E-06	1,47E-06	1,43E-06	1,39E-06	1,36E-06	1,35E-06	1,33E-06	1,28E-06	1,26E-06	1,23E-06	1,23E-06	1,2E-06	1,17E-06	5,1525E-06	5,67343E-05	1,174E-06	0	2	15	
17	1,53E-06	1,5E-06	1,45E-06	1,41E-06	1,38E-06	1,37E-06	1,36E-06	1,32E-06	1,29E-06	1,26E-06	1,26E-06	1,24E-06	1,21E-06	5,24918E-06	5,82037E-05	1,20753E-06	1	2	16	
18	1,44E-06	1,4E-06	1,34E-06	1,3E-06	1,29E-06	1,28E-06	1,26E-06	1,21E-06	1,19E-06	1,19E-06	1,19E-06	1,17E-06	1,13E-06	4,98183E-06	5,51052E-05	1,13162E-06	2	2	17	
19	1,43E-06	1,39E-06	1,34E-06	1,31E-06	1,29E-06	1,29E-06	1,27E-06	1,23E-06	1,21E-06	1,21E-06	1,21E-06	1,19E-06	1,15E-06	5,0158E-06	5,61037E-05	1,15493E-06	3	2	18	
20	1,45E-06	1,4E-06	1,35E-06	1,32E-06	1,3E-06	1,29E-06	1,26E-06	1,22E-06	1,2E-06	1,19E-06	1,19E-06	1,17E-06	1,14E-06	5,00802E-06	5,50742E-05	1,14235E-06	4	2	19	
21	1,46E-06	1,42E-06	1,37E-06	1,33E-06	1,32E-06	1,31E-06	1,29E-06	1,24E-06	1,22E-06	1,21E-06	1,2E-06	1,18E-06	1,14E-06	4,99614E-06	5,53431E-05	1,14194E-06	5	2	20	
22	1,46E-06	1,42E-06	1,38E-06	1,34E-06	1,32E-06	1,31E-06	1,29E-06	1,25E-06	1,22E-06	1,2E-06	1,2E-06	1,18E-06	1,14E-06	4,989E-06	5,52876E-05	1,14369E-06	6	2	21	
23	1,5E-06	1,46E-06	1,41E-06	1,38E-06	1,35E-06	1,33E-06	1,32E-06	1,28E-06	1,26E-06	1,24E-06	1,23E-06	1,22E-06	1,19E-06	5,13623E-06	5,69639E-05	1,18988E-06	0	3	22	

RESULTADOS PARCIAIS

- Faixa de 1-50Hz
- Ambiente 3; 24 pontos

	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK
1	37	37	38	39	40	41	42	43	44	45	46	46	47	48	49	MÉDIA	MÍNIMO	MÁXIMO	x	Y	PONTO	
2	4E-06	1,9E-06	2,8E-06	2,5E-06	1,5E-06	3,4E-06	1,8E-06	2,5E-06	2,4E-06	1,4E-06	3,2E-06	1,6E-06	2,3E-06	2,1E-06	1,3E-06	9,3748E-06	1,2964E-06	0,00014341	0	0	1	
3	2,9E-06	1,7E-06	2,3E-06	1,9E-06	1,7E-06	2,5E-06	1,5E-06	2,1E-06	1,7E-06	1,5E-06	2,3E-06	1,4E-06	1,9E-06	1,5E-06	1,4E-06	7,6613E-06	1,4033E-06	0,00010581	1	0	2	
4	1,9E-06	1,6E-06	1,8E-06	1,6E-06	1,6E-06	1,7E-06	1,4E-06	1,6E-06	1,4E-06	1,4E-06	1,5E-06	1,3E-06	1,5E-06	1,3E-06	1,3E-06	5,9627E-06	1,2977E-06	7,0081E-05	2	0	3	
5	1,6E-06	1,6E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,3E-06	1,2E-06	5,3589E-06	1,2319E-06	5,9504E-05	3	0	4	
6	1,8E-06	1,6E-06	1,7E-06	1,6E-06	1,6E-06	1,6E-06	1,4E-06	1,6E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,718E-06	1,2838E-06	6,5388E-05	4	0	5	
7	1,7E-06	1,6E-06	1,7E-06	1,5E-06	1,5E-06	1,6E-06	1,4E-06	1,6E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,6722E-06	1,2685E-06	6,4694E-05	5	0	6	
8	1,8E-06	1,6E-06	1,8E-06	1,6E-06	1,6E-06	1,6E-06	1,4E-06	1,6E-06	1,4E-06	1,4E-06	1,5E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,7708E-06	1,2949E-06	6,6156E-05	0	1	7	
9	1,7E-06	1,6E-06	1,7E-06	1,6E-06	1,6E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,6394E-06	1,3002E-06	6,2368E-05	1	1	8	
10	1,6E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,5074E-06	1,2565E-06	6,0997E-05	2	1	9	
11	1,6E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,2E-06	5,4788E-06	1,2499E-06	6,0627E-05	3	1	10	
12	1,7E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,5631E-06	1,2675E-06	6,1588E-05	4	1	11	
13	1,7E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,5604E-06	1,2687E-06	6,1518E-05	5	1	12	
14	1,6E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,2E-06	5,4481E-06	1,2499E-06	6,0173E-05	0	2	13	
15	1,6E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,5037E-06	1,2563E-06	6,0996E-05	1	2	14	
16	1,7E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	5,5386E-06	1,2645E-06	6,1405E-05	2	2	15	
17	1,7E-06	1,6E-06	1,7E-06	1,6E-06	1,5E-06	1,5E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,4E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,5503E-06	1,2681E-06	6,1525E-05	3	2	16	
18	1,6E-06	1,6E-06	1,7E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,4499E-06	1,2543E-06	5,966E-05	4	2	17	
19	1,6E-06	1,6E-06	1,7E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,4528E-06	1,2531E-06	5,9742E-05	5	2	18	
20	1,6E-06	1,5E-06	1,7E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,2E-06	1,2E-06	5,416E-06	1,2474E-06	5,9287E-05	0	3	19	
21	1,6E-06	1,6E-06	1,7E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,2E-06	1,2E-06	5,4238E-06	1,2482E-06	5,9415E-05	1	3	20	
22	1,6E-06	1,6E-06	1,7E-06	1,5E-06	1,5E-06	1,4E-06	1,4E-06	1,5E-06	1,4E-06	1,4E-06	1,3E-06	1,3E-06	1,4E-06	1,3E-06	1,3E-06	5,467E-06	1,2586E-06	5,9746E-05	2	3	21	
23	2,4E-06	1,7E-06	2,1E-06	1,9E-06	1,6E-06	2,1E-06	1,5E-06	1,9E-06	1,7E-06	1,5E-06	1,9E-06	1,4E-06	1,7E-06	1,6E-06	1,4E-06	6,8932E-06	1,3723E-06	8,8059E-05	3	3	22	
24	1,7E-06	1,5E-06	1,7E-06	1,2E-06	2,1E-06	1,5E-06	1,5E-06	1,1E-06	1,9E-06	1,4E-06	1,3E-06	1,4E-06	1E-06	1,7E-06	1,7E-06	5,6768E-06	1,0025E-06	6,4102E-05	4	3	23	
25	1,6E-06	1,5E-06	1,7E-06	1,5E-06	1,6E-06	1,5E-06	1,4E-06	1,5E-06	1,3E-06	1,5E-06	1,3E-06	1,3E-06	1,4E-06	1,2E-06	1,4E-06	5,5075E-06	1,205E-06	6,1171E-05	5	3	24	
26																						



MEDIÇÕES RADIAÇÃO NÃO IONIZANTE

- Faixa de 1-50Hz
- Ambiente 4

PLANILHA SEC 1-50 amb 4 - Excel (Falha na Ativação do Produto)

Arquivo | Página Inicial | Inserir | Layout da Página | Fórmulas | Dados | Revisão | Exibir | Desenvolvedor | FOXIT PDF | O que você deseja fazer... | Entrar | Compartilhar

Calibri | 11 | Quebrar Texto Automaticamente | Geral

Fonte | Alinhamento | Número | Formatação Condicional | Estilos de Tabela | Estilos de Célula | Inserir | Excluir | Formatar | Células | Edição

	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK
1	43	44	45	46	47	48	49	50	51	52	53	54	55	media	maximo	minimo	x	y	PONTO	
2	1,38E-06	1,36E-06	1,32E-06	1,28E-06	1,25E-06	1,24E-06	1,23E-06	1,2E-06	1,17E-06	1,14E-06	1,14E-06	1,13E-06	1,1E-06	4,77598E-06	5,29261E-05	1,09772E-06	0	0	1	
3	1,39E-06	1,37E-06	1,33E-06	1,29E-06	1,26E-06	1,25E-06	1,24E-06	1,2E-06	1,17E-06	1,15E-06	1,14E-06	1,13E-06	1,1E-06	4,79312E-06	5,31545E-05	1,10251E-06	1	0	2	
4	1,41E-06	1,38E-06	1,34E-06	1,3E-06	1,27E-06	1,26E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,15E-06	1,14E-06	1,11E-06	4,84411E-06	5,37407E-05	1,11448E-06	2	0	3	
5	1,4E-06	1,38E-06	1,34E-06	1,3E-06	1,27E-06	1,26E-06	1,25E-06	1,21E-06	1,19E-06	1,16E-06	1,15E-06	1,14E-06	1,11E-06	4,83906E-06	5,36849E-05	1,11295E-06	3	0	4	
6	1,39E-06	1,37E-06	1,33E-06	1,29E-06	1,26E-06	1,25E-06	1,24E-06	1,2E-06	1,17E-06	1,15E-06	1,14E-06	1,13E-06	1,1E-06	4,79845E-06	5,3157E-05	1,10343E-06	4	0	5	
7	1,4E-06	1,37E-06	1,33E-06	1,29E-06	1,26E-06	1,25E-06	1,24E-06	1,21E-06	1,18E-06	1,15E-06	1,15E-06	1,13E-06	1,11E-06	4,80527E-06	5,32597E-05	1,10555E-06	5	0	6	
8	1,39E-06	1,37E-06	1,33E-06	1,29E-06	1,26E-06	1,25E-06	1,24E-06	1,2E-06	1,18E-06	1,15E-06	1,15E-06	1,13E-06	1,11E-06	4,80822E-06	5,33027E-05	1,1056E-06	0	1	7	
9	1,4E-06	1,37E-06	1,33E-06	1,3E-06	1,27E-06	1,26E-06	1,24E-06	1,21E-06	1,18E-06	1,15E-06	1,15E-06	1,13E-06	1,11E-06	4,81251E-06	5,33327E-05	1,10655E-06	1	1	8	
10	1,4E-06	1,38E-06	1,34E-06	1,3E-06	1,27E-06	1,26E-06	1,25E-06	1,21E-06	1,18E-06	1,16E-06	1,15E-06	1,14E-06	1,11E-06	4,83005E-06	5,35327E-05	1,11007E-06	2	1	9	
11	1,42E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,87593E-06	5,40936E-05	1,12141E-06	3	1	10	
12	1,41E-06	1,38E-06	1,34E-06	1,3E-06	1,28E-06	1,27E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,16E-06	1,14E-06	1,12E-06	4,85072E-06	5,38255E-05	1,1157E-06	4	1	11	
13	1,4E-06	1,38E-06	1,34E-06	1,3E-06	1,27E-06	1,26E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,16E-06	1,15E-06	1,12E-06	4,85236E-06	5,38956E-05	1,11683E-06	5	1	12	
14	1,41E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,16E-06	1,15E-06	1,12E-06	4,85925E-06	5,38658E-05	1,11695E-06	0	2	13	
15	1,41E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,86015E-06	5,38846E-05	1,11686E-06	1	2	14	
16	1,41E-06	1,38E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,87686E-06	5,4119E-05	1,12105E-06	2	2	15	
17	1,41E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,87203E-06	5,40398E-05	1,12009E-06	3	2	16	
18	1,41E-06	1,38E-06	1,34E-06	1,3E-06	1,28E-06	1,27E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,16E-06	1,14E-06	1,12E-06	4,84875E-06	5,37802E-05	1,11523E-06	4	2	17	
19	1,41E-06	1,38E-06	1,34E-06	1,3E-06	1,27E-06	1,27E-06	1,25E-06	1,21E-06	1,19E-06	1,16E-06	1,16E-06	1,15E-06	1,12E-06	4,862E-06	5,40034E-05	1,11975E-06	5	2	18	
20	1,42E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,87043E-06	5,39986E-05	1,11928E-06	0	3	19	
21	1,41E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,86666E-06	5,39553E-05	1,11807E-06	1	3	20	
22	1,42E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,27E-06	1,25E-06	1,22E-06	1,19E-06	1,16E-06	1,15E-06	1,14E-06	1,11E-06	4,87114E-06	5,38573E-05	1,11441E-06	2	3	21	
23	1,42E-06	1,39E-06	1,35E-06	1,31E-06	1,28E-06	1,28E-06	1,26E-06	1,22E-06	1,19E-06	1,17E-06	1,16E-06	1,15E-06	1,12E-06	4,87047E-06	5,40127E-05	1,11733E-06	3	3	22	

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