

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3279

### Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-6.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3279

### Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth (mm) <sup>G</sup>	Unc (k=2)
750	41.9	0.89	6.58	6.58	6.58	0.80	1.19	± 12.0 %
835	41.5	0.90	6.38	6.38	6.38	0.80	1.21	± 12.0 %
1750	40.1	1.37	5.59	5.59	5.59	0.64	1.37	± 12.0 %
1900	40.0	1.40	5.35	5.35	5.35	0.57	1.45	± 12.0 %
2000	40.0	1.40	5.25	5.25	5.25	0.80	1.22	± 12.0 %
2300	39.5	1.67	5.02	5.02	5.02	0.78	1.30	± 12.0 %
2450	39.2	1.80	4.77	4.77	4.77	0.67	1.44	± 12.0 %
2600	39.0	1.96	4.58	4.58	4.58	0.73	1.39	± 12.0 %

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3279

### Calibration Parameter Determined in Body Tissue Simulating Media

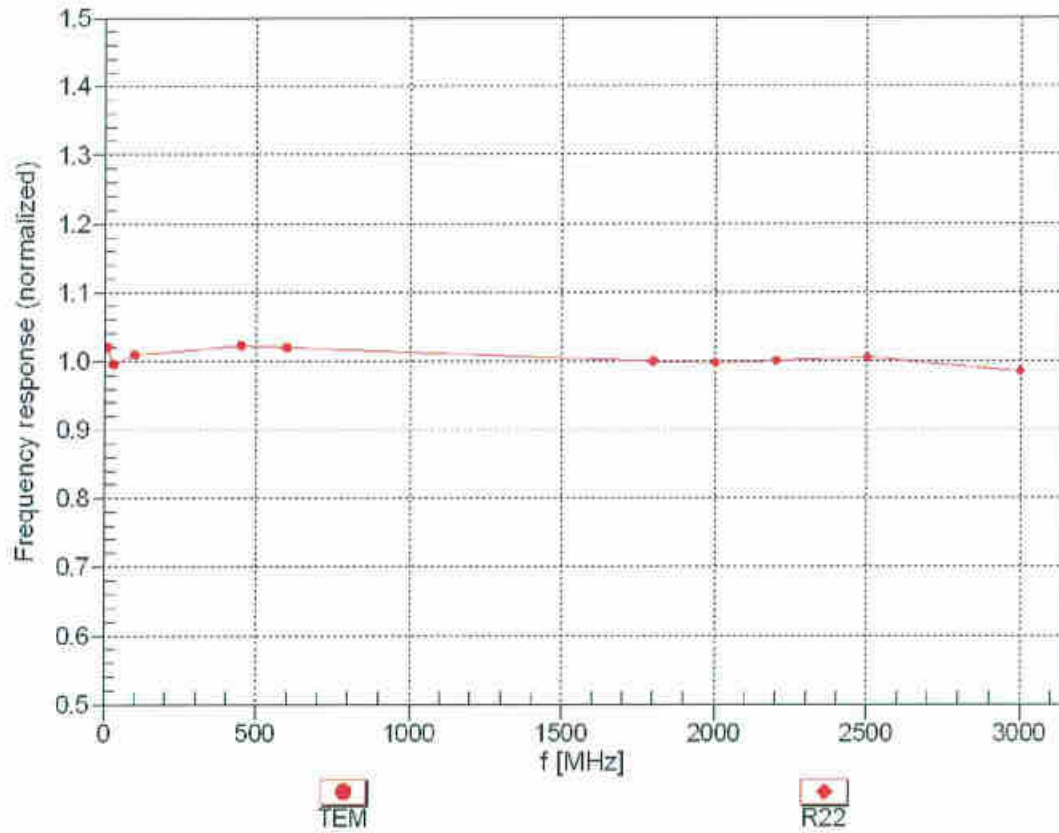
f (MHz) <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unc (k=2)
750	55.5	0.96	6.40	6.40	6.40	0.68	1.25	± 12.0 %
835	55.2	0.97	6.23	6.23	6.23	0.70	1.22	± 12.0 %
1750	53.4	1.49	5.08	5.08	5.08	0.61	1.42	± 12.0 %
1900	53.3	1.52	4.85	4.85	4.85	0.41	1.84	± 12.0 %
2300	52.9	1.81	4.66	4.66	4.66	0.80	1.24	± 12.0 %
2450	52.7	1.95	4.50	4.50	4.50	0.80	1.25	± 12.0 %
2600	52.5	2.16	4.34	4.34	4.34	0.80	1.25	± 12.0 %

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

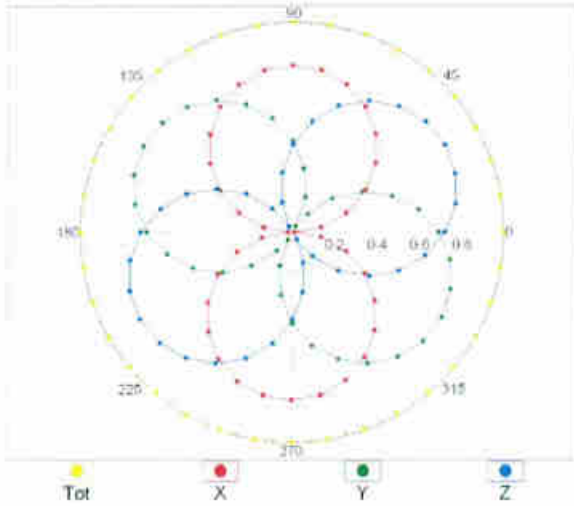
## Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



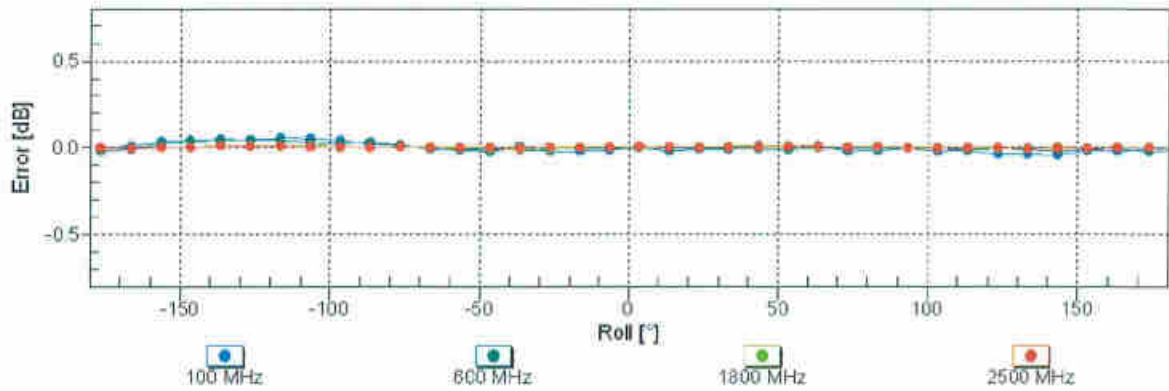
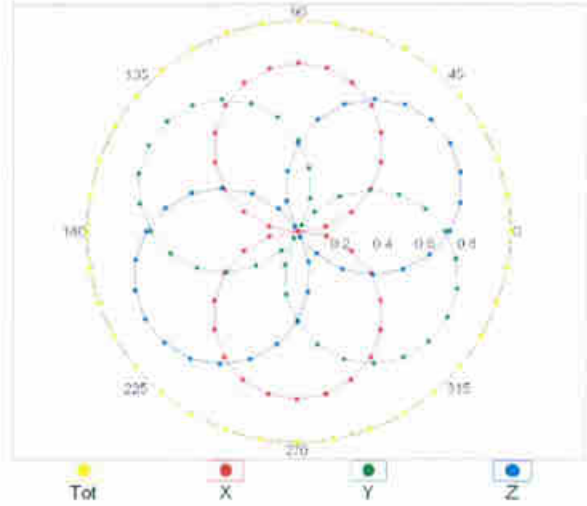
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

### Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$

f=600 MHz,TEM

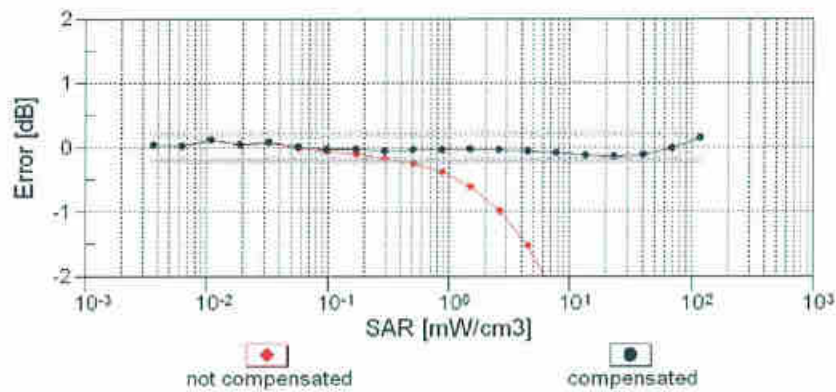
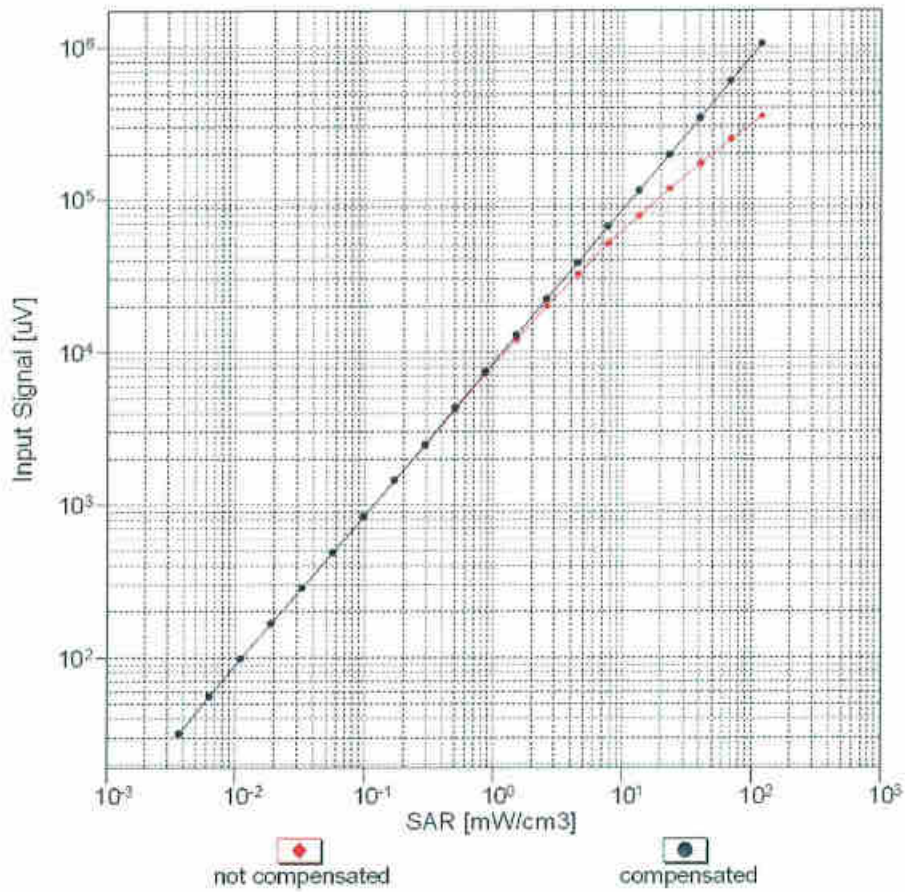


f=1800 MHz,R22



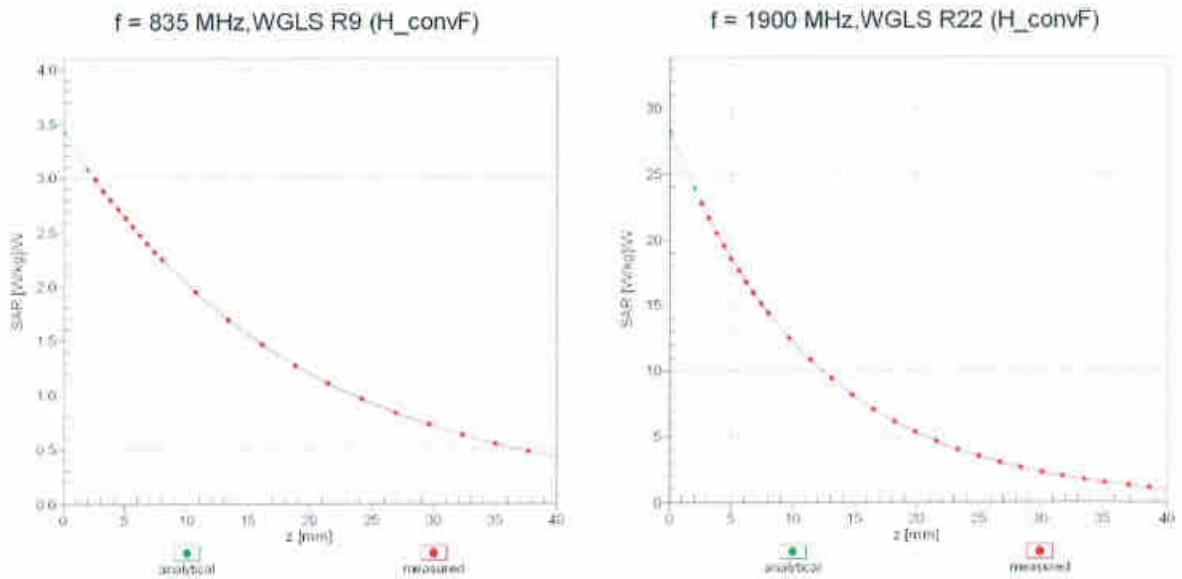
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

### Dynamic Range $f(SAR_{head})$ (TEM cell, $f_{eval} = 1900$ MHz)



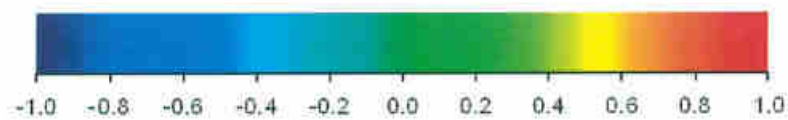
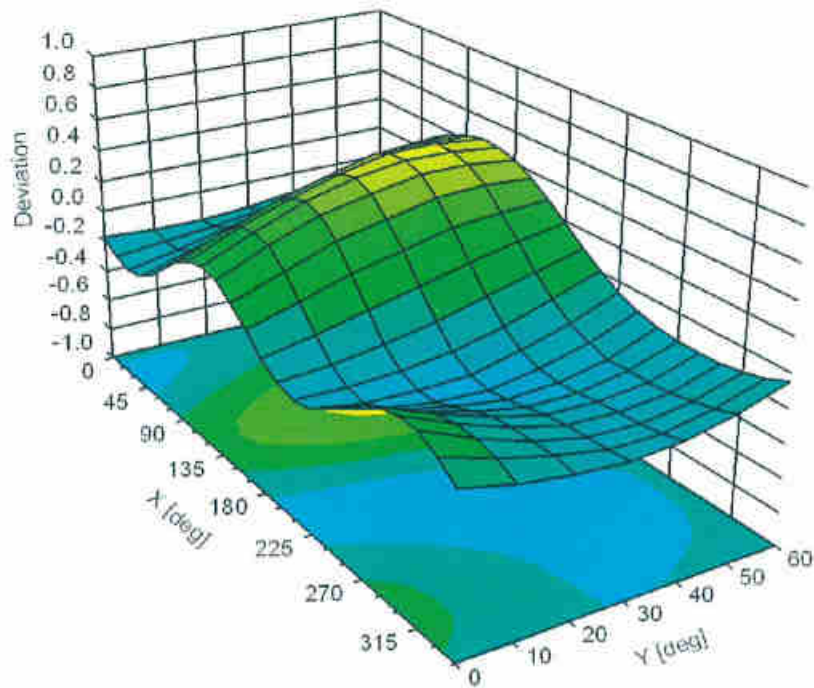
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \theta$ ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)



## ***Appendix E. Conducted RF Output Power Table***

The detailed power table are shown as follows.



GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.48	32.48	32.43	33.50	23.48	23.48	23.43	24.50
GPRS 1 Tx slot	32.47	32.47	32.41	33.50	23.47	23.47	23.41	24.50
GPRS 2 Tx slots	30.52	30.47	30.39	31.00	24.52	24.47	24.39	25.00
GPRS 3 Tx slots	29.42	29.39	29.30	30.00	25.16	25.13	25.04	25.74
GPRS 4 Tx slots	28.48	28.42	28.34	29.00	25.48	25.42	25.34	26.00
EDGE 1 Tx slot	26.15	26.13	26.11	27.00	17.15	17.13	17.11	18.00
EDGE 2 Tx slots	24.65	24.57	24.60	25.00	18.65	18.57	18.60	19.00
EDGE 3 Tx slots	23.50	23.49	23.41	24.00	19.24	19.23	19.15	19.74
EDGE 4 Tx slots	22.35	22.32	22.30	23.00	19.35	19.32	19.30	20.00

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.20	1880.00	1909.80		1850.20	1880.00	1909.80	
GSM 1 Tx slot	29.28	29.43	29.69	30.50	20.28	20.43	20.69	21.50
GPRS 1 Tx slot	29.27	29.42	29.68	30.50	20.27	20.42	20.68	21.50
GPRS 2 Tx slots	26.88	27.00	27.29	28.00	20.88	21.00	21.29	22.00
GPRS 3 Tx slots	25.78	25.94	26.23	27.00	21.52	21.68	21.97	22.74
GPRS 4 Tx slots	24.81	24.97	25.30	26.00	21.81	21.97	22.30	23.00
EDGE 1 Tx slot	25.86	25.65	25.77	26.50	16.86	16.65	16.77	17.50
EDGE 2 Tx slots	24.00	23.81	23.98	24.00	18.00	17.81	17.98	18.00
EDGE 3 Tx slots	22.60	22.43	22.56	23.00	18.34	18.17	18.30	18.74
EDGE 4 Tx slots	21.17	21.13	21.20	22.00	18.17	18.13	18.20	19.00

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel	9262	9400	9538	1312		1413	1513	4132		4182	4233		
Rx Channel	9662.00	9800.00	9938.00	1537.00		1638.00	1738.00	4357.00		4407.00	4458.00		
Frequency (MHz)	1852.40	1880.00	1907.60	1712.40	1732.60	1752.60	826.40	836.40	846.60				
3GPP Rel 99	AMR 12.2Kbps	22.61	22.63	22.67	24.00	22.50	22.52	22.53	24.00	24.31	24.32	24.34	25.00
3GPP Rel 99	RMC 12.2Kbps	22.62	22.65	22.70	24.00	22.51	22.53	22.54	24.00	24.32	24.33	24.36	25.00
3GPP Rel 6	HSDPA Subtest-1	22.46	22.48	22.47	24.00	22.49	22.51	22.54	24.00	24.19	24.21	24.23	25.00
3GPP Rel 6	HSDPA Subtest-2	22.41	22.43	22.43	24.00	22.42	22.53	22.42	24.00	24.13	24.16	24.15	25.00
3GPP Rel 6	HSDPA Subtest-3	21.87	21.93	21.92	23.50	21.86	22.05	21.93	23.50	23.69	23.65	23.70	24.50
3GPP Rel 6	HSDPA Subtest-4	21.86	21.92	21.88	23.50	21.85	22.04	21.86	23.50	23.60	23.62	23.62	24.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.49	22.51	22.50	24.00	22.47	22.52	22.51	24.00	24.22	24.24	24.26	25.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.38	22.48	22.41	24.00	22.41	22.53	22.40	24.00	24.10	24.21	24.13	25.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.84	21.98	21.90	23.50	21.84	22.04	21.95	23.50	23.66	23.70	23.68	24.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.83	21.97	21.86	23.50	21.84	22.02	21.87	23.50	23.57	23.67	23.60	24.50
3GPP Rel 6	HSUPA Subtest-1	20.76	20.76	20.82	22.00	21.02	21.03	21.08	22.00	22.15	22.18	22.20	23.00
3GPP Rel 6	HSUPA Subtest-2	20.42	20.47	20.50	22.00	20.44	20.41	20.44	22.00	21.81	21.86	21.86	23.00
3GPP Rel 6	HSUPA Subtest-3	21.45	21.50	21.52	23.00	21.43	21.45	21.48	23.00	22.61	22.66	22.72	24.00
3GPP Rel 6	HSUPA Subtest-4	20.04	20.04	20.10	21.50	20.06	20.04	20.12	21.50	21.24	21.29	21.35	22.50
3GPP Rel 6	HSUPA Subtest-5	22.43	22.40	22.40	23.00	22.34	22.40	22.30	23.00	23.31	23.41	23.51	24.00

Table 1

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low, Power Middle, Power High, Turn-on Time (min), and LPR (dB). It lists various channel configurations for frequencies 18700, 18900, and 19100 MHz, including QPSK and 16QAM modulations.

Table 2

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low, Power Middle, Power High, Turn-on Time (min), and LPR (dB). It lists various channel configurations for frequencies 20000, 20170, and 20300 MHz, including QPSK and 16QAM modulations.

Table 3

Table with columns: BW (MHz), Modulation, RB Size, RB Offset, Power Low, Power Middle, Power High, Turn-on Time (min), and LPR (dB). It lists various channel configurations for frequencies 20400, 20500, and 20600 MHz, including QPSK and 16QAM modulations.



171 Band 07

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

171 Band 08

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

Table with columns: BW MHz, Modulation, RB Size, RB Offset, Power Low Ch, Power Mid Ch, Power High Ch, Turn-up (dB), MPR (dB). Rows include Channel, Frequency (MHz), and various modulation types (QPSK, HQAM) with their respective parameters.

LTE Band 38									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq	Power Middle Ch. / Freq	Power High Ch. / Freq	Tune-up limit [dBm]	MPR [dB]	
Channel				37850.00	38000.00	38150.00			
Frequency (MHz)				38000.00	38000.00	38150.00			
20.00	QPSK	1.00	0.00	22.30	22.50	22.14			
20.00	QPSK	1.00	49.00	22.52	22.50	22.54	23.50	0.00	
20.00	QPSK	1.00	99.00	22.25	22.20	22.27			
20.00	QPSK	50.00	0.00	21.33	21.40	21.38			
20.00	QPSK	50.00	24.00	21.32	21.32	21.34			
20.00	QPSK	50.00	50	21.29	21.30	21.37	22.50	1.00	
20.00	QPSK	100.00	0.00	21.35	21.45	21.42			
20.00	16QAM	1.00	0.00	21.39	21.36	21.43			
20.00	16QAM	1.00	49.00	21.82	21.63	21.63	22.50	1.00	
20.00	16QAM	1.00	99.00	21.33	21.30	21.34			
20.00	16QAM	50.00	0.00	20.35	20.35	20.41			
20.00	16QAM	50.00	24.00	20.36	20.33	20.42	21.50	2.00	
20.00	16QAM	50.00	50	20.36	20.35	20.40			
20.00	16QAM	100.00	0.00	20.39	20.38	20.48			
20.00	64QAM	1.00	0.00	21.13	21.09	21.14			
20.00	64QAM	1.00	49.00	21.35	21.39	21.38	21.50	2.00	
20.00	64QAM	1.00	99.00	21.05	21.05	21.08			
20.00	64QAM	50.00	0.00	20.31	20.29	20.37			
20.00	64QAM	50.00	24.00	20.29	20.30	20.37	20.50	3.00	
20.00	64QAM	50.00	50	20.30	20.30	20.37			
20.00	64QAM	100.00	0.00	20.45	20.45	20.30			
Channel				37825.00	38000.00	38175.00			
Frequency (MHz)				38175.00	38000.00	38175.00			
15.00	QPSK	1.00	0.00	22.37	22.34	22.39			
15.00	QPSK	1.00	37.00	22.46	22.53	22.53	23.50	0.00	
15.00	QPSK	1.00	74.00	22.28	22.27	22.35			
15.00	QPSK	36.00	0.00	21.43	21.41	21.44			
15.00	QPSK	36.00	20.00	21.43	21.44	21.47	22.50	1.00	
15.00	QPSK	36.00	39.00	21.43	21.39	21.43			
15.00	QPSK	75.00	0.00	21.38	21.34	21.38			
15.00	16QAM	1.00	0.00	21.40	21.40	21.45			
15.00	16QAM	1.00	37.00	21.53	21.60	21.61	22.50	1.00	
15.00	16QAM	1.00	74.00	21.34	21.36	21.41			
15.00	16QAM	36.00	0.00	20.37	20.34	20.41			
15.00	16QAM	36.00	20.00	20.33	20.37	20.40	21.50	2.00	
15.00	16QAM	36.00	39.00	20.34	20.33	20.42			
15.00	16QAM	75.00	0.00	20.42	20.37	20.42			
15.00	64QAM	1.00	0.00	21.18	21.15	21.18			
15.00	64QAM	1.00	37.00	21.31	21.29	21.36	21.50	2.00	
15.00	64QAM	1.00	74.00	21.12	21.09	21.17			
15.00	64QAM	36.00	0.00	20.41	20.37	20.41			
15.00	64QAM	36.00	20.00	20.41	20.39	20.47	20.50	3.00	
15.00	64QAM	36.00	39.00	20.38	20.37	20.40			
15.00	64QAM	75.00	0.00	20.40	20.36	20.39			
Channel				37800.00	38000.00	38200.00			
Frequency (MHz)				38200.00	38000.00	38200.00			
10.00	QPSK	1.00	0.00	22.51	22.48	22.48			
10.00	QPSK	1.00	25	22.56	22.55	22.56	23.50	0.00	
10.00	QPSK	1.00	49	22.47	22.43	22.45			
10.00	QPSK	25.00	0.00	21.51	21.50	21.55			
10.00	QPSK	25.00	12.00	21.48	21.55	21.57	22.50	1.00	
10.00	QPSK	25.00	25	21.53	21.51	21.57			
10.00	QPSK	50.00	0.00	21.43	21.46	21.52			
10.00	16QAM	1.00	0.00	21.57	21.54	21.54			
10.00	16QAM	1.00	25	21.65	21.61	21.63	22.50	1.00	
10.00	16QAM	1.00	49	21.57	21.51	21.56			
10.00	16QAM	25.00	0.00	20.55	20.51	20.56			
10.00	16QAM	25.00	12.00	20.51	20.46	20.58	21.50	2.00	
10.00	16QAM	25.00	25	20.52	20.50	20.60			
10.00	16QAM	50.00	0.00	20.50	20.49	20.54			
10.00	64QAM	1.00	0.00	21.30	21.24	21.27			
10.00	64QAM	1.00	25	21.39	21.35	21.33	21.50	2.00	
10.00	64QAM	1.00	49	21.29	21.25	21.27			
10.00	64QAM	25.00	0.00	20.43	20.45	20.34			
10.00	64QAM	25.00	12.00	20.46	20.42	20.43	20.50	3.00	
10.00	64QAM	25.00	25	20.48	20.47	20.30			
10.00	64QAM	50.00	0.00	20.41	20.42	20.45			
Channel				31775.00	32000.00	32225.00			
Frequency (MHz)				32225.00	32000.00	32225.00			
5.00	QPSK	1.00	0.00	22.36	22.31	22.39			
5.00	QPSK	1.00	12.00	22.50	22.55	22.58	23.50	0.00	
5.00	QPSK	1.00	24.00	22.35	22.31	22.38			
5.00	QPSK	12.00	0.00	21.53	21.45	21.54			
5.00	QPSK	12.00	7	21.57	21.50	21.58	22.50	1.00	
5.00	QPSK	12.00	13	21.57	21.54	21.58			
5.00	QPSK	25.00	0.00	21.53	21.50	21.56			
5.00	16QAM	1.00	0.00	21.51	21.43	21.50			
5.00	16QAM	1.00	12.00	21.79	21.63	21.68	22.50	1.00	
5.00	16QAM	1.00	24.00	21.48	21.42	21.48			
5.00	16QAM	12.00	0.00	20.46	20.40	20.50			
5.00	16QAM	12.00	7	20.51	20.45	20.52	21.50	2.00	
5.00	16QAM	12.00	13	20.52	20.49	20.53			
5.00	16QAM	25.00	0.00	20.54	20.50	20.57			
5.00	64QAM	1.00	0.00	21.27	21.16	21.25			
5.00	64QAM	1.00	12.00	21.40	21.38	21.42	21.50	2.00	
5.00	64QAM	1.00	24.00	21.25	21.15	21.22			
5.00	64QAM	12.00	0.00	20.48	20.41	20.48			
5.00	64QAM	12.00	7	20.31	20.42	20.34	20.50	3.00	
5.00	64QAM	12.00	13	20.25	20.47	20.35			
5.00	64QAM	25.00	0.00	20.30	20.44	20.32			

2.4GHz WLAN						
2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11b 1Mbps	1.00	2412.00	16.22	17.50	100.00
		6.00	2437.00	16.31	17.50	
		11.00	2462.00	16.53	17.50	
	802.11g 6Mbps	1.00	2412.00	13.16	14.50	96.94
		6.00	2437.00	15.80	16.00	
		11.00	2462.00	13.30	14.50	
	802.11n-HT20 MCS0	1.00	2412.00	12.70	14.00	96.72
		6.00	2437.00	15.26	16.00	
		11.00	2462.00	12.83	14.00	

## BT 2.0

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402.00	9.15	8.06	8.30
	CH 39	2441.00	9.99	7.99	8.04
	CH 78	2480.00	9.55	8.01	8.13
Tune-up Limit			11.00	10.00	10.00

## BT 4.0

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE	CH 00	2402.00	4.09
	CH 19	2440.00	5.42
	CH 39	2480.00	4.27
Tune-up Limit			7.00

## BT 5.0

Mode	Channel	Frequency (MHz)	Average power (dBm)
LE	CH 00	2402.00	4.76
	CH 19	2440.00	5.99
	CH 39	2480.00	4.80
Tune-up Limit			7.00