

Appendix 5. Simulated Tissues

The body mixture consists of water, Polysorbate (Tween 20) and salt. Visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

Ingredient (% by weight)	Frequency 750/835/850/900 MHz
	Body
De-Ionized Water	71.30
Polysorbate 20	28.00
Salt	0.70

Ingredient (% by weight)	Frequency 1800/1900 MHz
	Body
De-Ionized Water	71.50
Polysorbate 20	28.00
Salt	0.50

Ingredient (% by weight)	Frequency 2450/2600 MHz
	Body
De-Ionized Water	71.70
Polysorbate 20	28.00
Salt	0.30

Appendix 6. System Check and Dielectric Parameters

Dielectric Property Measurements: The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 to 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

System Performance Check: Prior to the assessment, the system was verified in the flat region of the phantom, 900 MHz, 1900 MHz and 2450 MHz dipoles were used. A forward power of 250 mW was applied to the 900 MHz, 1900 MHz and 2450 MHz, and the system was verified to a tolerance of $\pm 5\%$ for the 900MHz, 1900MHz and 2450 MHz dipoles.

The applicable verification normalised to 1 Watt.

Site 56**System Check 900 Body**

Date: 11/08/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	23.0	ϵ_r	55.00	55.90	1.64	5.00
				ϵ_r	1.05	1.03	-1.71	5.00
				ϵ_r	10.40	10.44	-2.69	5.00
				ϵ_r	6.73	6.72	-0.15	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
128	GSM850	824.2	ϵ_r	56.30
			σ	0.98
190		836.6	ϵ_r	56.20
			σ	0.99
251		848.8	ϵ_r	56.2
			σ	1.00

Date: 14/08/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	24.0	ϵ_r	55.00	55.57	1.04	5.00
				ϵ_r	1.05	1.03	-2.33	5.00
				ϵ_r	10.40	10.24	-1.54	5.00
				ϵ_r	6.73	6.84	1.63	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
128	GSM850	824.2	ϵ_r	55.91
			σ	0.98
190		836.6	ϵ_r	55.90
			σ	0.98
251		848.8	ϵ_r	55.81
			σ	0.99
4132	WCDMA FDD 5	826.4	ϵ_r	55.90
			σ	0.98
4183		836.6	ϵ_r	55.90
			σ	0.98
4233		846.6	ϵ_r	55.82
			σ	0.99

Site 56 (Continued)

Date: 18/08/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	24.0	ϵ_r	55.00	54.90	-0.18	5.00
				σ	1.05	1.00	4.48	5.00
				ϵ_r	10.40	10.12	2.69	5.00
				σ	6.73	6.72	-0.15	5.00

Channel Number	Band	Frequency (MHz)	Parameters
4132	WCDMA FDD 5	826.4	ϵ_r 55.24
			σ 0.96
4183		836.6	ϵ_r 55.20
			σ 0.97
4233		846.6	ϵ_r 55.16
			σ 0.97

System Check 1900 Body

Date: 14/08/2014

Validation Dipole and Serial Number: D1900V2 SN: 537

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.0	24.0	ϵ_r	53.30	51.96	-2.51	5.00
				σ	1.52	1.47	-3.13	5.00
				1g SAR	40.20	40.00	-0.50	5.00
				10g SAR	21.10	21.52	1.99	5.00

Channel Number	Band	Frequency (MHz)	Parameters
512	PCS1900	1850.2	ϵ_r 54.06
			σ 1.46
661		1880.0	ϵ_r 54.00
			σ 1.49
810		1909.8	ϵ_r 53.94
			σ 1.43
9262	WCDMA FDD 2	1852.4	ϵ_r 54.14
			σ 1.45
9400		1880.0	ϵ_r 52.70
			σ 1.53
9538		1907.6	ϵ_r 54.01
			σ 1.49

Site 57**System Check 900 Body**

Date: 30/06/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	22.6	ϵ_r	55.00	53.42	-2.87	5.00
				σ	1.05	1.01	-3.62	5.00
				1g SAR	10.40	10.52	1.15	5.00
				10g SAR	6.73	6.88	2.23	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
4132	WCDMA FDD 5	826.4	ϵ_r	53.60
			σ	0.97
4183		836.6	ϵ_r	53.60
			σ	0.98
4233		846.6	ϵ_r	53.50
			σ	0.98

Date: 10/07/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	22.0	ϵ_r	55.00	52.60	-4.36	5.00
				ϵ_r	1.05	1.01	-3.48	5.00
				ϵ_r	10.40	10.28	-1.15	5.00
				ϵ_r	6.73	6.88	2.23	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
4132	WCDMA FDD 5	826.4	ϵ_r	52.93
			σ	0.97
4183		836.6	ϵ_r	52.90
			σ	0.98
4233		846.6	ϵ_r	52.84
			σ	0.98

Site 57 (Continued)

Date: 06/08/2014

Validation Dipole and Serial Number: D900V2 SN: 035

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	900	23.0	23.0	ϵ_r	55.00	53.34	-3.02	5.00
				ϵ_r	1.05	1.02	-3.19	5.00
				ϵ_r	10.40	10.12	-2.69	5.00
				ϵ_r	6.73	6.72	-0.15	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
4132	WCDMA FDD 5	826.4	ϵ_r	54.00
			σ	0.97
4183		836.6	ϵ_r	53.95
			σ	0.97
4233		846.6	ϵ_r	53.90
			σ	0.98

Site 60**System Check 2450 Body**

Date: 15/07/2014

Validation Dipole and Serial Number: D2440V2 SN: 701

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	2450	24.0	24.0	ϵ_r	52.70	52.43	-0.51	5.00
				σ	1.95	2.03	3.93	5.00
				1g SAR	51.40	50.40	-1.95	5.00
				10g SAR	23.90	23.80	-0.42	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
1	WiFi 2.4 GHz	2412.0	ϵ_r	52.45
			σ	1.97
6		2437.0	ϵ_r	52.44
			σ	2.01
11		2462.0	ϵ_r	52.41
			σ	2.04

Site 61**System Check 1900 Body**

Date: 26/06/2014

Validation Dipole and Serial Number: D1900V2 SN: 537

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.2	23.4	ϵ_r	53.30	54.23	1.74	5.00
				σ	1.52	1.53	0.69	5.00
				1g SAR	40.20	42.00	4.48	5.00
				10g SAR	21.10	21.80	3.32	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
9262	WCDMA FDD 2	1852.4	ϵ_r	54.35
			σ	1.48
9400		1880.0	ϵ_r	54.28
			σ	1.51
9538		1907.6	ϵ_r	54.21
			σ	1.54

Date: 07/07/2014

Validation Dipole and Serial Number: D1900V2 SN: 537

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	24.0	24.0	ϵ_r	53.30	51.97	-2.50	5.00
				σ	1.52	1.51	-0.56	5.00
				1g SAR	40.20	39.08	-2.79	5.00
				10g SAR	21.10	20.52	-2.75	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
9262	WCDMA FDD 2	1852.4	ϵ_r	52.25
			σ	1.44
9400		1880.0	ϵ_r	52.45
			σ	1.44
9538		1907.6	ϵ_r	54.00
			σ	1.49

Site 61 (Continued)

Date: 10/07/2014

Validation Dipole and Serial Number: D1900V2 SN: 537

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.0	24.0	ϵ_r	53.30	52.36	-1.76	5.00
				σ	1.52	1.45	-4.51	5.00
				1g SAR	40.20	39.44	-1.89	5.00
				10g SAR	21.10	20.36	-3.51	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
9262	WCDMA FDD 2	1852.4	ϵ_r	52.58
			σ	1.42
9400		1880.0	ϵ_r	52.45
			σ	1.44
9538		1907.6	ϵ_r	52.35
			σ	1.46

Date: 08/08/2014

Validation Dipole and Serial Number: D1900V2 SN: 537

Simulant	Frequency (MHz)	Room Temp	Liquid Temp	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.0	23.2	ϵ_r	53.30	51.48	-3.41	5.00
				σ	1.52	1.53	0.42	5.00
				1g SAR	40.20	40.40	0.50	5.00
				10g SAR	21.10	21.00	-0.47	5.00

Channel Number	Band	Frequency (MHz)	Parameters	
9262	WCDMA FDD 2	1852.4	ϵ_r	52.58
			σ	1.42
9400		1880.0	ϵ_r	52.45
			σ	1.44
9538		1907.6	ϵ_r	54.00
			σ	1.49

Appendix 7. Measurement Uncertainty Table

Measurement uncertainty tables for technologies tested.

A.7.1. GSM / GPRS / EDGE 850 / WCDMA FDD 5 Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (1g)	Standard Uncertainty		u _i or u _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration /Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.510	2.510	normal (k=1)	1.0000	1.0000	2.510	2.510	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	2.000	2.000	normal (k=1)	1.0000	0.6400	1.280	1.280	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	1.560	1.560	normal (k=1)	1.0000	0.6000	0.936	0.936	5
	Combined standard uncertainty			t-distribution			9.37	9.37	>500
	Expanded uncertainty			k = 1.96			18.36	18.36	>500

A.7.2. PCS / GPRS / EDGE 1900 / WCDMA FDD 2 Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (1g)	Standard Uncertainty		u _i or u _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	1.860	1.860	normal (k=1)	1.0000	1.0000	1.860	1.860	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	2.610	2.610	normal (k=1)	1.0000	0.6400	1.670	1.670	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	2.140	2.140	normal (k=1)	1.0000	0.6000	1.284	1.284	5
	Combined standard uncertainty			t-distribution			9.32	9.32	>500
	Expanded uncertainty			k = 1.96			18.26	18.26	>500

A.7.3. WiFi 2450 MHz Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (1g)	Standard Uncertainty		u _i or u _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.440	2.440	normal (k=1)	1.0000	1.0000	2.440	2.440	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	2.260	2.260	normal (k=1)	1.0000	0.6400	1.446	1.446	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	2.150	2.150	normal (k=1)	1.0000	0.6000	1.290	1.290	5
	Combined standard uncertainty			t-distribution			9.36	9.36	>500
	Expanded uncertainty			k = 1.96			18.35	18.35	>500

Appendix 8. 3G Test set-up

3G (12.K RMC / HSDPA / HSUPA) setup

To switch from 2G to 3G, on the system config screen choose Format Switch and select WCDMA. The Call Setup Screen as shown in figure 1 pops up.

Call Setup Screen									
Call Control		Active Cell Operating Mode						Call Params	
Operating Mode		UE Information						Cell Power	
Active Cell		IMSI: IMEI(SV): (---) Power Class:						-35.00	
								dBm/3.84 MHz	
		UE Expected Open Loop Transmit Power						Channel Type	
		Initial PRACH TX Power: -60.00 dBm Initial DPCH TX Power: -11.55 dBm						12.2k RMC	
Originate Call		Call Processing Status						Paging Service	
		Current Service Type: None MM Status: None GMM State: None Current DPCH Offset: 0 chips						RB Test Mode	
Paging Parameters ▾								HSPA Parameters	
Handovers		HSUPA Information			HSDPA Information			34.121 Preset Call Configs ▾	
		Rep EDCH Cat/Ext: Unrep/Unrep			Cur UE HS-DSCH Cat: ----				
		Last received E-TFCI: ----			Block Error Ratio: ---- %				
		Throughput: ---- kbps			Throughput: ---- kbps				
Clear UE Info		Acks Transmitted: ----			Blocks Transmitted: ----			Channel (UARFCN) Params	
		Active Cell				Sys Type: UTRA FDD			
		Idle							
1 of 5		IntRef						1 of 3	

Figure 1: 3G Call Setup Screen

For a 12.2k RMC call follow the steps below.

8.1. Steps for 12.2k RMC

1. Ensure that the Operating Mode of the cell is off before setting up the instrument.
2. On the Call Setup Screen, under Call Parameters, press the button against Cell Power. The Cell Power value is set to about -35dBm to account for all the losses and ensure sufficient signal strength to the EUT.
3. The Channel Type is selected to 12.2k RMC. Press button against Channel (UARFCN) Params select the correct Downlink Channel for the required WCDMA FDD Band.
4. On the Call Setup Screen, under Call Parameters, press the button against HSPA Parameters. Under HSDPA Parameters on page 1, press HSDPA Uplink parameters and set the Delta ACK, Delta NACK, Delta CQI values to 8. Under HSDPA Params itself, press HSDPA RB Test Mode Setup button and then the HSDPA RB Test Mode Settings and change HS-DSCH Data Pattern to All Ones.

Call Setup Screen									
Call Control	Active Cell Operating Mode						HSDPA Parms		
	UE Information IMSI: IMEI(SV): (---) Power Class:						HSDPA RB Test Mode Setup		
	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCH TX Power: -11.55 dBm								
	HSDPA Uplink Parameters						Value		
	DeltaACK						8		
	DeltaNACK						8		
	DeltaCQI						8		
	Ack-Nack Repetition Factor						1		
	CQI Feedback Cycle (k)						2 ms		
	CQI Repetition Factor						1		
	Close Menu							Return	
		Active Cell				Sys Type: UTRA FDD			
		Idle							
		IntRef						1 of 2	

Figure 2: HSDPA Parameters

5. On the Call Setup Screen, under Call Parameters, on page 2, check if the DL DTCH Data is set to All Ones. On page 3, ensure that the Receiver is set to Manual. On page 3 itself, under UL CL Power Ctrl Parameters, UL CL Power Ctrl Mode is set to All Up Bits.

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parms		
Operating Mode							DL DTCH Data		
Active Cell	UE Information IMSI: IMEI(SV): (---) Power Class:						All Ones		
	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCH TX Power: -11.55 dBm						RLC Reestablish		
							Auto		
Originate Call	Call Processing Status Current Service Type: None MM Status: None GMM State: None Current DPCH Offset: 0 chips						Call Limit State		
Paging Parameters							Off		
Handovers	HSUPA Information Rep EDCH Cat/Ext: Unrep/Unrep Last received E-TFCI: ---- Throughput: ---- kbps Acks Transmitted: ----						Call Drop Timer		
	HSDPA Information Cur UE HS-DSCH Cat: ---- Block Error Ratio: ---- % Throughput: ---- kbps Blocks Transmitted: ----						On		
Clear UE Info							SRB Parameters		
		Active Cell				Sys Type: UTRA FDD			
		Idle							
		IntRef						2 of 3	
1 of 5									

Figure 3: DL DTCH Data Parms

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parm		
	UE Information IMSI: IMEI(SV): (---) Power Class:						UE Target Power -5 dBm		
	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCCCH TX Power: -11.55 dBm						UL CL Power Ctrl Parameters		
	UL CL Power Ctrl Parameters						Value		
	UL CL Power Ctrl Mode						All Up bits		
	UL CL Power Ctrl Algorithm						Two		
	UL CL Power Ctrl Stepsize						1 dB		
Close Menu							Receiver Control		
		Active Cell		Sys Type: UTRA FDD					
		Idle							
		IntRef							
						3 of 3			

Figure 4: UL CL Power Ctrl Parameters

6. On the Call Setup Screen, under Call Control, page 2, Cell Parameters, it is ensured that PS Domain information is kept as Absent for RMC.

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parm		
Additional Screens	UE Information IMSI: IMEI(SV): (---) Power Class:						Cell Power -35.00		
	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCCCH TX Power: -11.55 dBm						dBm/3.84 MHz		
Cell Parameters	Cell Parameters						Value		
	BCCH Update Page						Inhibit		
Generator Info	PS Domain Information						Absent		
	HCC (Mobile Country Code)						1		
Uplink Parameters	HNC (Mobile Network Code)						1		
	HNC (Mobile Network Code) Length						Auto		
UE Rep Neas	LAC (Local Area Code)						1		
	RAC (Routing Area Code)						1		
Close Menu	Cell Identity						1		
		Active Cell		Sys Type: UTRA FDD					
		Idle							
		IntRef							
						1 of 3			

Figure 5: Cell Parameters

7. On the same page under Uplink Parameters the maximum Uplink Transmit Power is made 24dBm. Uplink DPCH Bc/Bd Control Settings are kept at Auto for RMC. These vary according for HSDPA and HSUPA as per the values given in KDB 941225 D01 SAR test for 3G devices v02.

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parm		
Additional Screens	UE Information IMSI: IMEI(SV): Power Class:						Cell Power		
							-35.00		
Cell Parameters							dBm/3.84 MHz		
							Channel Type		
							12.2k RMC		
Generator Info	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCH TX Power: -11.55 dBm						Paging Service		
							RB Test Mode		
Uplink Parameters	Uplink Parameters				Value				
	PRACH Preambles				64		HSPA Parameters		
	PRACH Ramping Cycles(MAX)				2				
	Available Subchannels (Bit Mask)				000000000001				
	UE Rep Meas	Uplink DPCH Scrambling Code				0		34,121 Preset Call Configs	
Uplink DPCH Bc/Bd Control				Auto					
Close Menu	Manual Uplink DPCH Bc				8		Channel (UARFCN) Parm		
	Manual Uplink DPCH Bd				15				
	Maximum Uplink Transmit Power Level				24 dBm				
	Active Cell				Sys Type: UTRA FDD				
	Idle								
2 of 5				IntRef					1 of 3

Figure 6: Uplink Parameters

8. On page 3 under Call Control, for the RB Test Mode setup, Asymmetric RMC CN Domain is ensured to be in CS Domain for RMC call.

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parm		
	UE Information IMSI: IMEI(SV): Power Class:						Cell Power		
							-35.00		
							dBm/3.84 MHz		
							Channel Type		
							12.2k RMC		
							Paging Service		
							RB Test Mode		
							HSPA Parameters		
							34,121 Preset Call Configs		
Voice Call	RB Test Mode Settings				Value		Channel (UARFCN) Parm		
	Uplink DTCH RMC CRC Presence				Present				
	Uplink Dummy DCCH Data				Off				
	UE Loopback Type				Type 1				
	Asymmetric RMC Loopback Messaging				Close/Open				
Close Menu	Asymmetric RMC CN Domain				CS Domain				
	Active Cell				Sys Type: UTRA FDD				
	Idle								
3 of 5				IntRef					1 of 3

Figure 7: RB Test Mode Settings

9. After the test set has been set up, change the cell Operating Mode to Active Cell and originate a call.

8.2. Steps for 12.2k RMC + HSDPA/HSUPA

1. Most of the steps to be followed are as in the case of 12.2k RMC however, some of the settings need to be changed. The Channel Type is changed to 12.2k RMC+HSDPA or 12.2k RMC+HSUPA as required.

- For HSDPA and HSUPA, the settings remain same as the case for RMC but the PS Domain is made Present for Cell Parameters (Figure 5) and RB Test Mode Setup (Figure 7).
- The following tables taken from FCC 3G SAR procedures (KDB 941225 D01 SAR test for 3G devices v02) below were applied to the Agilent 8960 series 10 wireless communications test set which supports 3G / HSDPA release 5 / HSUPA release 6.

Sub-test 1 Setup for Release 5 HSDPA

Sub-test	β_c	β_d	B_d (SF)	$\beta_c \beta_d$	$\beta_{hs}^{(1)}$	SM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c \beta_d = 12/15$, $B_{hs}/\beta_c = 24/15$

Note 3: For subtest 2 the $\beta_c \beta_d$ ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

Sub-test 5 Setup for Release 6 HSUPA

Sub-test	β_c	β_d	B_d (SF)	$\beta_c \beta_d$	$\beta_{hs}^{(1)}$	B_{oc}	B_{od}	B_{od} (SF)	B_{od} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	31/15	$B_{dl1}: 47/15$ $B_{dl2}: 47/15$	4	1	2.0	1.0	15	92
4	2/15	15/15	64	2/15	2/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	24/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c \beta_d = 12/15$, $B_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH AND E-DPCCH for the MPR is based on the relative CM difference.

Note 3: For subtest 1 the $\beta_c \beta_d$ ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the $\beta_c \beta_d$ ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: B_{od} can not be set directly; it is set by Absolute Grant Value.

Call Setup Screen									
Call Control		Active Cell Operating Mode						Serving Grant	
Operating Mode		UE Information INSI: INEI(SV): (---) Power Class:						AG Mode	
Active Cell								Single Shot	
Originate Call		UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCCH TX Power: -11.55 dBm						Single Shot AG	
								21: (134/15)^2	
Paging Parameters		Call Processing Status Current Service Type: None MM Status: Abs Single Shot AG GMM State: Index 18: (95/15)^2 Current DPCCH: Index 19: (106/15)^2 HSUPA In: Index 20: (119/15)^2 Rep EDCH Cat: Index 21: (134/15)^2 Last received: Index 22: (150/15)^2 Throughput: Index 23: (168/15)^2 Acks Transmitted:						Send Single Shot Absolute Grant	
Handovers		Information DSCH Cat: ---- Ratio: ---- % : ---- kbps nsmitted: ----						RB Setup AG	
Clear UE Info		Active Cell Sys Type: UTRA FDD Idle						AG Pattern Parameters	
1 of 5		IntRef						33: 4(134/15)^2	
								Return	
								1 of 2	

Call Setup Screen									
Call Control		Active Cell Operating Mode						Call Params	
Additional Screens		UE Information INSI: INEI(SV): (---) Power Class:						Cell Power	
Cell Parameters								-35.00	
Generator Info		UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCCH TX Power: -22.58 dBm						dBm/3.84 MHz	
								Channel Type	
Uplink Parameters		Uplink Parameters PRACH Preambles: 64 PRACH Ramping Cycles(MAX): 2 Available Subchannels (Bit Mask): 000000000001 Uplink DPCCH Scrambling Code: 0 Uplink DPCCH Bc/Bd Control: Manual Manual Uplink DPCCH Bc: 2 Manual Uplink DPCCH Bd: 15 Maximum Uplink Transmit Power Level: 24 dBm						12.2k + HSDPA	
UE Rep Params								Paging Service	
Close Menu		Cell Off Sys Type: UTRA FDD						RB Test Mode	
2 of 5		IntRef						HSPA Parameters	
								34.121 Preset Call Configs	
								Channel (UARFCN) Params	
								1 of 3	

4. For HSUPA the Serving Grant Parameter needs to be set. On the Call Setup Screen, under Call Parameters, press the button against HSPA Parameters. On the new screen that pops up, press HSUPA and Serving Grant. The Serving Grant is set according to the table for HSPA in the KDB (AG Index). The correct AG is chosen from the Single Shot AG. Consecutively, the RG Setup AG is set as per the ratio set on Single Shot AG.

Call Setup Screen									
Call Control	Active Cell Operating Mode							Serving Grant	
Operating Mode	UE Information IMSI: IMEI(SV): Power Class:							AG Mode	
Active Cell								Single Shot	
	UE Expected Open Loop Transmit Power Initial PRACH TX Power: -60.00 dBm Initial DPCCH TX Power: -11.55 dBm							Single Shot AG	
								31: 6(168/15)^2	
Originate Call	Call Processing Status Current Service Type: None MM Status: None GMM State: None Current DPCH Offset: 0 chips							Send Single Shot Absolute Grant	
Paging Parameters ▾								RB Setup AG	
								37: 6(168/15)^2	
Handovers	HSUPA Information Rep EDCH Cat/Ext: Unrep/Unrep Last received E-TFCI: ---- Throughput: ---- kbps Acks Transmitted: ----							AG Pattern Parameters ▾	
	HSDPA Information Cur UE HS-DSCH Cat: ---- Block Error Ratio: ---- % Throughput: ---- kbps Blocks Transmitted: ----								
Clear UE Info								Return	
	Active Cell Idle							Sys Type: UTRA FDD	
1 of 5	IntRef							1 of 2	

Figure 8: Serving Grant Example