




## Annex E. Calibration Certificates

Device	Type/Model	Serial Number	Manufacturer	Calibration Certificate
Dosimetric E-field Probe	EX3DV4	3978	SPEAG	
2450MHz System Validation Dipole	D2450V2	937	SPEAG	
5GHz System Validation Dipole	D5GHZv2	1164	SPEAG	

### Dipole calibration

According to the KDB 865664 D01, a dipole must be calibrated using a fully validated SAR system according to the tissue dielectric parameters and SAR probe calibration frequency required for device testing. However, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements.

1. When the most recent return-loss result, measured at least annually, deviates by more than 20% from the previous measurement (i.e. value in dB  $\times$  0.2) or not meeting the required 20 dB minimum return-loss requirement.
2. When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5  $\Omega$  from the previous measurement

The below results show the latest return loss and impedance measurements for each dipole performed by the lab:

Dipole 2450MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-30.10	51.6 + 2.7 j	2014-12-15
Last	-29.60	49.65 + 0.44 j	2015-12-18
Difference	-12.20%	-1.95 – 2.26 j	
Dipole 5200MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-21.57	48.59 – 8.14 j	2015-06-18
Last	-21.05	47.30 – 6.14 j	2016-06-16
Difference	-12.72%	1.29 + 2 j	
Dipole 5300MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-24.37	48.26 – 5.69 j	2015-06-18
Last	-25.01	51.32 – 5.38 j	2016-06-16
Difference	13.70%	3.06 + 0.31 j	
Dipole 5500MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-30.27	51.60 – 2.67 j	2015-06-18
Last	-30.29	48.37 – 3.07 j	2016-06-16
Difference	0.45%	-3.23 – 0.4 j	
Dipole 5600MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-26.79	53.32 – 3.37 j	2015-06-18
Last	-26.35	49.61 – 2.33 j	2016-06-16
Difference	-10.66%	3.71 + 1.04 j	
Dipole 5800MHz Body TSL			
	Return Loss [dB]	Impedance [ $\Omega$ ]	Date
Previous	-23.97	55.20 – 4.16 j	2015-06-18
Last	-23.45	52.30 – 2.62 j	2016-06-16
Difference	-12.71%	- 2.9 + 1.54 j	