

## VERIFICATION WAS PERFORMED

### using standard samples:

State standard samples of composition of copper, № on the State Register 10054-2011 (set VSM02).

### at the following values the influencing factors:

The temperature – 296,0 K

Relative humidity – 48%

Atmospheric pressure – 96,2 kPa

Supply voltage – (220±5) V

### Visual inspection.

Emission Spectrometer "SPAS-02", № 132 complies technical documentation (TY 4434-003-54296209-07 and Operating instructions ЦИА.002.00.000.06 PЭ), defects are absent.

### Testing.

Testing. The device is functioning properly, - according to the requirements TY 4434-003-54296209-07.

### Metrological characteristics:

Metrological characteristic	The value of the metrological characteristics			
	Requirements of regulatory documents		The actual value of metrological characteristics	
Working spectral range, nm	174-449		174-449	
Spectral resolution (on line Fe 440,475 nm), nm	not more than 0,05		0,022	
Uncompensated drift for a set of control lines	not more than 0,05		0,015	
Divergence between the greatest and the smallest results of the single analysis, characterizing repeatability of these results (in unit shares)	not more			
	Ag – 0,00018	Ni – 0,00013	Ag – 0,00004	Ni – 0,00010
	As – 0,00011	P – 0,00051	As – 0,00007	P – 0,00026
	Bi – 0,00020	Pb – 0,00078	Bi – 0,00004	Pb – 0,00042
	Cd – 0,00016	Sb – 0,00079	Cd – 0,000034	Sb – 0,00033
	Co – 0,00015	Se – 0,00045	Co – 0,00013	Se – 0,00043
	Cr – 0,00085	Si – 0,00126	Cr – 0,00070	Si – 0,00017
	Fe – 0,0012	Sn – 0,00033	Fe – 0,00105	Sn – 0,00025
Divergence between results of the analysis and the content of elements in the state standard sample (in unit shares)	not more than			
	Ag – 0,00018	Ni – 0,00013	Ag – 0,00005	Ni – 0,000047
	As – 0,00011	P – 0,00051	As – 0,0000007	P – 0,00014
	Bi – 0,00020	Pb – 0,00078	Bi – 0,000078	Pb – 0,00062
	Cd – 0,00016	Sb – 0,00079	Cd – 0,000022	Sb – 0,00038
	Co – 0,00015	Se – 0,00045	Co – 0,00010	Se – 0,000005
	Cr – 0,00085	Si – 0,00126	Cr – 0,000006	Si – 0,000093
	Fe – 0,0012	Sn – 0,00033	Fe – 0,000017	Sn – 0,00021

**The conclusion:** Metrological characteristics of Emission Spectrometer "SPAS-02", № 132, don't exceed the limits, normalized in the technical documentation (TY 4434-003-54296209-07 and Operating instructions ЦИА.002.00.000.06 PЭ) and comply with the requirements the authorized Technique of Verification МИИ-242-0418-2006.

Verificator

Meshalkin M.A.

December 17, 2014.