Sulis Consultants
CE Marking and Product Approvals

Frequency Stability Measurements

of

"Smartlink"

SC_TR_171_B

Prepared for:

Chemring Technology Solutions
Old Salisbury Lane
Romsey
SO51 0ZN
UK

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Contents

Tables

Figures

1 Revision History

Revision	Originator	Date	Comment	Signature
A	C Blackham Director, Sulis Consultants Ltd	02 Oct 2015	1st release	
B	C Blackham Director, Sulis Consultants Ltd	03 Nov 2015	Updated section 3.4	

2 Associated Documents

[1]	47CFR2	Title 47 of FCC Rules Part 2
[2]	ANSI / TIA-603-D	TIA Standard: Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards

3 Summary

3.1 Client and manufacturer

Chemring Technology Solutions

Old Salisbury Lane

Romsey

SO51 0ZN

UK

3.2 Test personnel and location

By Peter Wilkinson of Chemring Technology Solutions and Charlie Blackham of Sulis Consultants Ltd on 29th and 30th September 2015 at Chemring Technology Solutions, Romsey.

3.3 Test sample

The results herein only refer to sample detailed in section 4

3.4 Test equipment

Item	Manufacturer	Model	Serial Number	Calibration cert no. and date	Measurement uncertainty
Spectrum Analyser	Keysight	MXA N9020A	MY54500132	4129341-4925987-1 Dated 15/12/2014	± 5Hz
Temperature chamber	Votsch	VT7010	SN58566004350010	Not calibrated.	n/a
Multimeter	Fluke	45	4837103	2117502/01/001, dated 25/02/2015	± 0.03%
Thermocouple	Fluke	25II	79270085	Roke, Dated 28/042015	± 0.3deg

Table 1: Test Equipment

4 Test Configuration

Equipment was arranged as shown in figure 1:

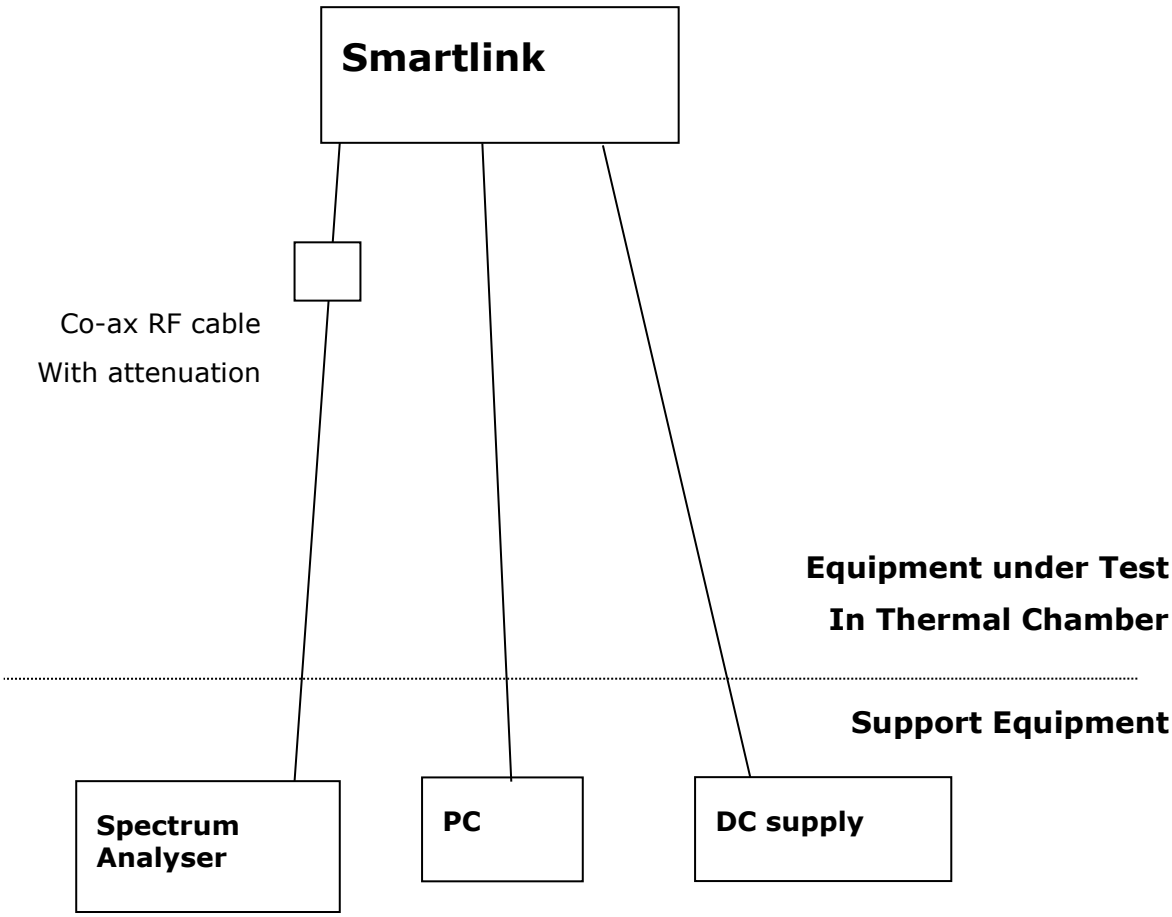

Figure 1: Test Configuration

Manufacturer	Name	Model Number	Serial Number
Chemring Technology Solutions	Smartlink	X72-1-9317-219	124485

Table 2: Equipment under test

4.1 Measurement method

- The EUT was placed into the thermal chamber and connected to a DC supply and measuring receiver outside the chamber
- The EUT was placed into commissioning mode and set to transmit a test waveform on Channel 1587, 2122.4 MHz.
- The Analyser is fitted with the 3G option and was set to reported frequency error in Hz relative to expected frequency of 2122.4 MHz
- The Temperature of the chamber was varied between -30°C and +50°C in 10°C steps and the EUT temperature allowed to stabilise for one hour at each temperature.
- Measurements were recorded using ATE software
- Supply voltage was also varied when chamber was at 20°C.
- Frequency error was measured by the Analyser and the results shown below in section 5.

5 Test Results

Voltage (V)	Temp (°C)	Freq Error (Hz)	Freq Error (ppm)
24.0	-30.0	-53	-0.02497
24.0	-20.0	-53	-0.02497
24.0	-10.0	-43	-0.02026
24.0	0.0	-42	-0.01979
24.0	+10.0	-44	-0.02073
24.0	+20.0	-42	-0.01979
20.4	+20.0	-44	-0.02073
27.6	+20.0	-43	-0.02026
24.0	+30.0	-42.7	-0.02012
24.0	+40.0	-41	-0.01932
24.0	+50.0	-39	-0.01838

Table 3: Test results