



Total Quality. Assured.

Intertek
731 Enterprise Drive
Lexington, KY 40510

Tel 859 226 1000
Fax 859 226 1040

www.intertek.com

Alcohol Monitoring Systems, Inc. MPE REPORT

SCOPE OF WORK

MPE CALCULATION
ON THE BS600 US BASE STATION

REPORT NUMBER

103705988LEX-001b

ISSUE DATE

4/4/2019

PAGES

5

DOCUMENT CONTROL NUMBER

Non-Specific EMC Report Shell Rev. December 2017
© 2017 INTERTEK



MPE TEST REPORT

Report Number: 103705988LEX-001b

Project Number: G103705988

Report Issue Date: 4/4/2019

Product Name: US Base Station

Model: BS600

FCC Standards: FCC Part 1.1310 Limits for Maximum Permissible Exposure (MPE)

Industry Canada Standards: RSS-102 Issue 5

Tested by:

Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510

Client:

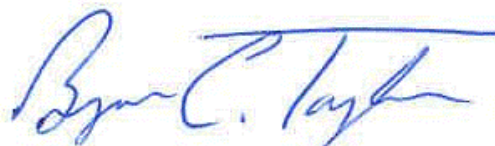
Alcohol Monitoring Systems, Inc.
1241 W Mineral Ave
Suite 200
Littleton, CO 80120
USA

Report prepared by



Brian Lackey, Project Engineer

Report reviewed by



Bryan Taylor, Team Leader

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.





MPE Calculation

§ 1.1310: The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Part 1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

**RSS-102 Issue 5 Exposure Limits:****Table 4: RF Field Strength Limits for Devices Used by the General Public
(Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ <i>f</i> ^{0.25}	0.1540/ <i>f</i> ^{0.25}	8.944/ <i>f</i> ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> ^{0.3417}	0.008335 <i>f</i> ^{0.3417}	0.02619 <i>f</i> ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> ^{1.2}
150000-300000	0.158 <i>f</i> ^{0.5}	4.21 x 10 ⁻⁴ <i>f</i> ^{0.5}	6.67 x 10 ⁻⁵ <i>f</i>	616000/ <i>f</i> ^{1.2}
Note: <i>f</i> is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

1.1 Test Procedure

An MPE evaluation for was performed in order to show that the device was compliant with §2.1091 and RSS-102. The maximum power density was calculated at a separation distance of 20cm. The calculation was performed using the maximum gain from the internal antenna declared by the manufacturer.

The maximum RF exposure at a 20 cm distance using the formula:

$$ConductedPower_{mW} = 10^{ConductedPower(dBm)/10}$$

$$PowerDensity = \frac{ConductedPower_{mW} \times Ant.Gain}{4\pi \times (20_{cm})^2}$$

**1.2 Results (FCC):**

Duty Cycle	100 (%)						
Separation Dist.	20 (cm)						
		Declared Max Cond. Power (Inc. Tolerance)					
		(dBm)					
Operating Mode	Frequency (MHz)		Antenna Gain (dBi)	MPE Value (mW/cm²)	Limit (mW/cm²)	Margin to Limit (mW/cm²)	MPE / Limit Ratio (for Co- Location)
FHSS Radio	903.3	7.52	-0.5	0.0010	0.60	0.6012	0.0017

The calculated maximum power density at 20cm distance is less than the limit for general population / uncontrolled exposure.

1.3 Results (IC):

Duty Cycle	100 (%)						
Separation Dist.	20 (cm)						
		Declared Max Cond. Power (Inc. Tolerance)					
		(dBm)					
Operating Mode	Frequency (MHz)		Antenna Gain (dBi)	MPE Value (W/m²)	Limit (W/m²)	Margin to Limit (W/m²)	MPE / Limit Ratio (for Co- Location)
FHSS Radio	903.3	7.52	-0.5	0.000001	2.74	2.742527	0.000000

The calculated maximum power density at 20cm distance is less than the limit for general population / uncontrolled exposure.