

HANDS-FREE MODE TEST SETUP

Ear-Microphone Jack

Portable transmitting devices which have an Ear-Microphone jack must be evaluated for RF exposure in a body-worn configuration. The testing is performed with the use of a torso phantom filled with muscle equivalent tissue. The EUT is positioned with the keypad facing away from the phantom, and the Ear-Microphone wire attached to the phone jack, simulating the device placed in a shirt pocket or attached to a body holster. The SAR tests are then performed in both the antenna in and antenna out positions using the low, middle, and high channels to investigate the worst case SAR value (see figure 11). Body-worn configurations that have not been SAR tested may result in operating conditions that could exceed FCC RF exposure limits, therefore, users are cautioned to use tested and/or approved accessories.



**Figure 11.
Ear-Microphone
Jack**

Shirt Pocket Configuration

The shirt pocket configuration is used for devices designed to be body-worn, and small enough to be placed inside a shirt pocket. To simulate the worst-case configuration, the EUT is placed in a torso position on the phantom with the keypad facing away from the phantom, and the Ear-Microphone wire connected to the phone to simulate hands-free operation in a shirt-pocket configuration (see figure 12).



**Figure 12.
Shirt Pocket
Configuration**

Body Holster Configuration

The body holster configuration is used for body-worn devices which have a body holster accessory. Typically, a holster or carrying case is provided or available as an accessory item for supporting headset and body-worn operations. SAR may vary depending on the body separation distance provided by the type of holster and batteries supplied for a phone. In most cases, the antenna may become closer to the user's body than next to the head. The design of the holster permits the phone to be positioned only with the keypad facing away from the phantom. Proper usage of the holster restricts the antenna to a specified distance away from the surface of the body. For this test the EUT is placed into the holster and the holster is positioned against the torso of the phantom in a normal operating position. The Ear-Microphone wire is then connected to the phone to simulate hands-free operation in a body holster configuration. (see figure 13)

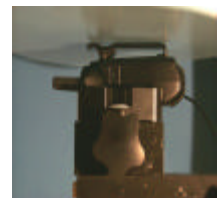


**Figure 13.
Body Holster
Configuration**

Other Configurations

If other operating configurations are possible (i.e.: pants pocket, car adapter kit, etc), it will be indicated to users in the instruction manual about untested conditions and the possibility of exceeding FCC exposure limits for such use or the use of third-party accessories. If there is a high potential for exceeding limits in certain unintended configurations, a warning statement will be included in the manual, warning the user to avoid such operating conditions.

TEST DATA SUMMARY

Ambient TEMPERATURE (°C) 23.0
Relative HUMIDITY (%) 49.0
Atmospheric PRESSURE (kPa) 99.0

Mixture Type: Muscle

Dielectric Constant: 56.2

Conductivity: 0.95 S/m

Closest Distance (between E-Probe & Phone Antenna): 2.54 cm

Measurement Results (Body-Worn Configuration)

FREQUENCY		Modulation	POWER (dBm)	Test Configuration	Antenna Position	SAR (W/kg)
MHz	Ch.					
824.04	1011	CDMA	24.0	Holster	IN	1.31
824.04	1011	CDMA	24.0	Holster	OUT	1.11
836.49	363	CDMA	24.0	Holster	IN	1.06
836.49	363	CDMA	24.0	Holster	OUT	0.827
848.97	779	CDMA	24.0	Holster	IN	1.20
848.97	779	CDMA	24.0	Holster	OUT	1.17
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak (Muscle) Uncontrolled Exposure/General Population				1.6 W/kg (mW/g)		

NOTES:

1. All modes of operation were investigated and the worst-case are reported.
2. Battery condition is fully charged for all readings.
3. Power Measured: ☒ Conducted ☐ ERP ☐ EIRP
4. The phone was tested using the Standard-life battery, which has the least separation distance between the phone antenna and the body.


Randy Ortanez
President & Chief Engineer

PCTEST SEAL