

Daytime & Nighttime Flying Radiation Readings

These ionizing radiation readings were taken on a return trip from Tucson, Arizona, USA to the Island of Hawaii (Big Island), Hawaii, USA on November and December 2016. The highest human exposure reading is in red. All times were mountain standard time (MST) and each radiation reading was averaged over ten minutes (10m). A [Radex RD1212](#) Geiger counter was used to record the [ionizing radiation](#) readings.

Day Flight To Hawaii

The Geiger counter was placed in the breast pocket. The coat with the Geiger counter was taken off and passed through the X-Ray scanner at the airport. **The highest human exposure reading is in red.**

Product model: Radex 1212 and Radex 2510

Serial number: 04140101003009

File name: DeviceData.txt

Period From μ Sv/h

10m	11/27/2016 05:03:44	0.12	Nighttime at home in City of Tucson
10m	11/27/2016 05:13:44	0.10	Driving to airport
10m	11/27/2016 05:23:44	0.10	
10m	11/27/2016 05:33:44	0.10	Parking car
10m	11/27/2016 05:43:44	0.12	Inside Tucson International Airport
10m	11/27/2016 05:53:44	26.60	Geiger counter being scanned by X-Ray machine
10m	11/27/2016 06:03:44	0.11	Inside departure area
10m	11/27/2016 06:13:44	0.10	Daytime
10m	11/27/2016 06:23:44	0.10	
10m	11/27/2016 06:33:44	0.11	
10m	11/27/2016 06:43:44	0.10	
10m	11/27/2016 06:53:44	0.09	
10m	11/27/2016 07:03:44	0.09	On Airplane #1
10m	11/27/2016 07:13:44	0.18	Take off
10m	11/27/2016 07:23:44	1.46	
10m	11/27/2016 07:33:44	2.38	At cruising altitude
10m	11/27/2016 07:43:44	2.48	
10m	11/27/2016 07:53:44	1.93	Descending
10m	11/27/2016 08:03:44	1.26	
10m	11/27/2016 08:13:44	0.30	
10m	11/27/2016 08:23:44	0.09	
10m	11/27/2016 08:33:44	0.08	Landed at Los Angeles International Airport

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10m	11/27/2016 08:43:44	0.08	Inside airport
10m	11/27/2016 08:53:44	0.08	
10m	11/27/2016 09:03:44	0.09	On airplane #2
10m	11/27/2016 09:13:44	0.08	
10m	11/27/2016 09:23:44	0.08	
10m	11/27/2016 09:33:44	0.07	
10m	11/27/2016 09:43:44	0.08	
10m	11/27/2016 09:53:44	0.08	Take off
10m	11/27/2016 10:03:44	0.19	
10m	11/27/2016 10:13:44	1.23	
10m	11/27/2016 10:23:44	1.63	At cruising altitude of 30,000-33,000 feet
10m	11/27/2016 10:33:44	1.57	
10m	11/27/2016 10:43:44	1.55	
10m	11/27/2016 10:53:44	1.44	
10m	11/27/2016 11:03:44	1.47	
10m	11/27/2016 11:13:44	1.38	
10m	11/27/2016 11:23:44	1.34	
10m	11/27/2016 11:33:44	1.26	
10m	11/27/2016 11:43:44	1.23	
10m	11/27/2016 11:53:44	1.20	
10m	11/27/2016 12:03:44	1.26	
10m	11/27/2016 12:13:44	1.27	
10m	11/27/2016 12:23:44	1.42	Half way to Hawaii
10m	11/27/2016 12:33:44	1.39	
10m	11/27/2016 12:43:44	1.25	
10m	11/27/2016 12:53:44	1.29	
10m	11/27/2016 13:03:44	1.32	
10m	11/27/2016 13:13:44	1.20	
10m	11/27/2016 13:23:44	1.10	
10m	11/27/2016 13:33:44	1.11	
10m	11/27/2016 13:43:44	1.11	
10m	11/27/2016 13:53:44	1.28	
10m	11/27/2016 14:03:44	1.35	
10m	11/27/2016 14:13:44	1.36	
10m	11/27/2016 14:23:44	1.41	
10m	11/27/2016 14:33:44	1.40	
10m	11/27/2016 14:43:44	0.90	Descending
10m	11/27/2016 14:53:44	0.12	
10m	11/27/2016 15:03:44	0.08	
10m	11/27/2016 15:13:44	0.07	Landed at Honolulu International Airport
10m	11/27/2016 15:23:44	0.07	
10m	11/27/2016 15:33:44	0.07	Inside airport
10m	11/27/2016 15:43:44	0.08	
10m	11/27/2016 15:53:44	0.07	
10m	11/27/2016 16:03:44	0.08	

10m	11/27/2016 16:13:44	0.08	
10m	11/27/2016 16:23:44	0.08	
10m	11/27/2016 16:33:44	0.08	
10m	11/27/2016 16:43:44	0.08	
10m	11/27/2016 16:53:44	0.07	On airplane #3
10m	11/27/2016 17:03:44	0.07	
10m	11/27/2016 17:13:44	0.07	Take off
10m	11/27/2016 17:23:44	0.11	Climbing
10m	11/27/2016 17:33:44	0.26	Descending
10m	11/27/2016 17:43:44	0.08	Landed at Kona International Airport
10m	11/27/2016 17:53:44	0.08	
10m	11/27/2016 18:03:44	0.09	Renting car
10m	11/27/2016 18:13:44	0.08	
10m	11/27/2016 18:23:44	0.08	
10m	11/27/2016 18:33:44	0.07	
10m	11/27/2016 18:43:44	0.07	Left airport
10m	11/27/2016 18:53:44	0.07	
10m	11/27/2016 19:03:44	0.08	At Costco
10m	11/27/2016 19:13:44	0.08	
10m	11/27/2016 19:23:44	0.08	
10m	11/27/2016 19:33:44	0.08	
10m	11/27/2016 19:43:44	0.08	
10m	11/27/2016 19:53:44	0.07	
10m	11/27/2016 20:03:44	0.09	Arrived at hotel in Kona, Island of Hawaii

Night Flight from Hawaii

The Geiger counter was placed in the breast pocket. The coat with the Geiger counter was taken off and passed through the X-Ray scanner at the airport. **The highest human exposure reading is in red.**

Product model: Radex 1212 and Radex 2510

Serial number: 04140101003009

File name: DeviceData.txt

Period From μ Sv/h

10m	12/09/2016 21:46:08	0.07	Nighttime At Costco
10m	12/09/2016 21:56:08	0.09	
10m	12/09/2016 22:06:08	0.08	
10m	12/09/2016 22:16:08	0.08	
10m	12/09/2016 22:26:08	0.09	
10m	12/09/2016 22:36:08	0.08	
10m	12/09/2016 22:46:08	0.08	

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10m	12/09/2016 22:56:08	0.07	Left Costco
10m	12/09/2016 23:06:08	0.08	Returning car rental
10m	12/09/2016 23:16:08	0.08	
10m	12/09/2016 23:26:08	0.09	At Kona International Airport check in
10m	12/09/2016 23:36:08	81.70	Geiger counter being scanned by X-Ray machine
10m	12/09/2016 23:46:08	0.10	In waiting area for plane
10m	12/09/2016 23:56:08	0.10	
10m	12/10/2016 00:06:08	0.09	
10m	12/10/2016 00:16:08	0.09	
10m	12/10/2016 00:26:08	0.09	
10m	12/10/2016 00:36:08	0.09	
10m	12/10/2016 00:46:08	0.09	
10m	12/10/2016 00:56:08	0.09	
10m	12/10/2016 01:06:08	0.09	
10m	12/10/2016 01:16:08	0.12	Walked past agriculture X-ray machine
10m	12/10/2016 01:26:08	0.07	
10m	12/10/2016 01:36:08	0.08	On airplane #4
10m	12/10/2016 01:46:08	0.09	Take off
10m	12/10/2016 01:56:08	0.37	
10m	12/10/2016 02:06:08	1.04	
10m	12/10/2016 02:16:08	1.27	
10m	12/10/2016 02:26:08	1.28	
10m	12/10/2016 02:36:08	1.34	Reached 32,000 feet cruising altitude
10m	12/10/2016 02:46:08	1.38	
10m	12/10/2016 02:56:08	1.41	
10m	12/10/2016 03:06:08	1.39	
10m	12/10/2016 03:16:08	1.44	
10m	12/10/2016 03:26:08	1.45	
10m	12/10/2016 03:36:08	1.44	
10m	12/10/2016 03:46:08	1.44	
10m	12/10/2016 03:56:08	1.51	Halfway between Hawaii and Los Angeles
10m	12/10/2016 04:06:08	1.51	
10m	12/10/2016 04:16:08	1.97	Climbed to 35,000 feet and cruising
10m	12/10/2016 04:26:08	2.02	
10m	12/10/2016 04:36:08	2.05	
10m	12/10/2016 04:46:08	2.17	
10m	12/10/2016 04:56:08	2.27	
10m	12/10/2016 05:06:08	2.27	
10m	12/10/2016 05:16:08	2.23	
10m	12/10/2016 05:26:08	2.37	
10m	12/10/2016 05:36:08	2.35	
10m	12/10/2016 05:46:08	2.36	
10m	12/10/2016 05:56:08	2.32	Started descent
10m	12/10/2016 06:06:08	0.64	
10m	12/10/2016 06:16:08	0.12	

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10m	12/10/2016 06:26:08	0.09	Landed Los Angeles International Airport
10m	12/10/2016 06:36:08	0.08	Daytime
10m	12/10/2016 06:46:08	0.08	In airport waiting area
10m	12/10/2016 06:56:08	0.10	
10m	12/10/2016 07:06:08	0.09	
10m	12/10/2016 07:16:08	0.10	
10m	12/10/2016 07:26:08	0.09	
10m	12/10/2016 07:36:08	0.09	
10m	12/10/2016 07:46:08	0.11	
10m	12/10/2016 07:56:08	0.10	
10m	12/10/2016 08:06:08	0.10	
10m	12/10/2016 08:16:08	0.11	
10m	12/10/2016 08:26:08	0.10	
10m	12/10/2016 08:36:08	0.10	
10m	12/10/2016 08:46:08	0.09	
10m	12/10/2016 08:56:08	0.11	
10m	12/10/2016 09:06:08	0.09	
10m	12/10/2016 09:16:08	0.10	
10m	12/10/2016 09:26:08	0.09	
10m	12/10/2016 09:36:08	0.09	
10m	12/10/2016 09:46:08	0.09	
10m	12/10/2016 09:56:08	0.10	On Airplane #5
10m	12/10/2016 10:06:08	0.09	
10m	12/10/2016 10:16:08	0.09	
10m	12/10/2016 10:26:08	0.10	
10m	12/10/2016 10:36:08	0.09	Take off
10m	12/10/2016 10:46:08	0.37	
10m	12/10/2016 10:56:08	2.43	
10m	12/10/2016 11:06:08	3.27	
10m	12/10/2016 11:16:08	2.55	Descending
10m	12/10/2016 11:26:08	0.51	
10m	12/10/2016 11:36:08	0.10	
10m	12/10/2016 11:46:08	0.09	Landed at Tucson International Airport
10m	12/10/2016 11:56:08	0.12	Walked past X-Ray scanners
10m	12/10/2016 12:06:08	0.09	Left airport to collect car
10m	12/10/2016 12:16:08	0.11	At Costco
10m	12/10/2016 12:26:08	0.10	Driving home
10m	12/10/2016 12:36:08	0.11	
10m	12/10/2016 12:46:08	0.10	Arrived home in the City of Tucson

Summary

The differences that were observed between the two trips were:

- The X-ray scanner at Kona Airport gave a much higher X-Ray radiation dose than the one at Tucson Airport. The X-Ray scanning was not observed and it is unknown if the bag spent longer inside the scanner at Kona Airport.
- The peak human exposure radiation reading occurred on the Tucson to Los Angeles return flights where it is thought that the aircraft were at 40,000 feet.
- The midday flight gave a higher peak radiation reading than the early morning flight.

Notable points:

- [Solar rainbow interference radiation rings](#) were observed around the airplane's shadow when over clouds during climbing and at cruising altitude.
- Nighttime radiation readings were comparable to daytime readings.
- The Geiger counter could detect the X-Ray leakage from the X-Ray Scanners when near to them.
- Background radiation levels in the cities that were passed through were different:
 - Tucson: 0.09 – 0.12 $\mu\text{Sv/h}$
 - Los Angeles: 0.08 – 0.11 $\mu\text{Sv/h}$
 - Honolulu: 0.07 – 0.08 $\mu\text{Sv/h}$
 - Kona: 0.07 – 0.10 $\mu\text{Sv/h}$
 - Southwest USA is radioactively hotter than Hawaii.
- The highest human radiation exposure was 3.27 $\mu\text{Sv/h}$ and occurred on the Los Angeles to Tucson flight.
- Severe vertigo was experienced on the first night in Hawaii and it was not clear if it was an affect of [breathing volcanic smog \(VOG\) pollution](#) or from the flights.
- Two days of headaches on arrival to Hawaii cleared up after it started to rain and the wind changed direction, causing the volcanic smog (VOG) pollution to dissipate.
- The radiation exposures change with the model of aircraft.
- The [electromagnetic interference \(EMI\)](#) radiation exposures change depending on the aircraft cabin lighting, in-flight entertainment systems, the power outlets installed into the seats, the electronic devices that the surrounding passengers are using, location of WiFi routers, and the location of the seat within the cabin.
- The Hawaii flights had flat screen televisions installed into the headrests that may dose the brain with electromagnetic interference (EMI) radiation exposures.
- The Hawaii flights had AC electrical sockets and USB chargers installed into the seats which may generate [dirty electricity emissions](#).
- [Extremely poor sleep](#) was experienced on the overnight flight, which was amplified by cramped seating and poor seat cushions.
- All flights had [WiFi](#).
- The adverse health symptoms on arriving home from the overnight flight were:
 - I had to go to bed by 16:00 due to extreme fatigue and woke up at 19:00.

- During that sleep period my mating cycle was triggered, a known affect of adverse radiation exposures.
- Sleep deprivation seems to amplify the triggering of the human mating cycle.

Interesting Quotes & Internet Links

- “A mathematical model constructed by researchers at Imperial College London predicts the risk of cardiovascular disease (heart attacks, stroke) associated with low background levels of radiation. The model shows that the risk would vary almost in proportion with dose.”
<https://www.sciencedaily.com/releases/2009/10/091022202710.htm>
- “A roundtrip flight to California at 35,000 feet exposes one to about 5 millirems of cosmic radiation. The EPA’s exposure standard is 15 millirems. Above that level they recommend cleanup, since 15 millirems a year increases one’s lifetime cancer risk by 3 in 10,000.”
<http://www.waterburyobserver.org/node/586>
- “Absorption (electromagnetic radiation)”
[https://en.wikipedia.org/wiki/Absorption_\(electromagnetic_radiation\)](https://en.wikipedia.org/wiki/Absorption_(electromagnetic_radiation))
- “Airplane Interference Radiation Rainbow Rings” <http://environmentalradiation.com/Airplane%20shadow%20interference%20ring%20titled%20environmentalradiation.jpg>
- “Airplane Radiation Reading at 30,036 Feet” https://youtu.be/CL1pz7PD_qs
- “Airplane Shadow Interference Radiation Ring” <https://youtu.be/xQnRi-pS6CY>
- “Altitude” <https://en.wikipedia.org/wiki/Altitude>
- “Atmosphere of Earth” https://en.wikipedia.org/wiki/Atmosphere_of_Earth
- “Background radiation” https://en.wikipedia.org/wiki/Background_radiation
- “Big Island of Hawaii Vog From Airplane” <https://youtu.be/ywfh8KerseA>
- “Chernobyl Exclusion Zone...the "Black Zone" (over 200 $\mu\text{Sv/h}$), to which evacuees were never to return; the "Red Zone" (50–200 $\mu\text{Sv/h}$) where evacuees might return once radiation levels normalized; the "Blue Zone" (30–50 $\mu\text{Sv/h}$) where children and pregnant women were evacuated starting in the summer of 1986”
https://en.wikipedia.org/wiki/Chernobyl_Exclusion_Zone
- “Cornet ED88T meter on airplane” https://www.youtube.com/watch?v=7Pt4Du_2vf4
- “Delayed Radiation Injury (Soft Tissue and Bony Necrosis)” <https://www.uhms.org/11-delayed-radiation-injury-soft-tissue-and-bony-necrosis.html>
- “Dirty Electricity on airplane” <https://youtu.be/pp7stpsi9B8>
- “Dirty Electricity under passenger seat of airplane” <https://www.youtube.com/watch?v=Iwh30hLjnyY>
- “Drugs Associated with the Development of Interstitial Lung Disease...Aspirin, Oxygen, Radiation”
<http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/pulmonary/interstitial->

[lung-disease/](#)

- “Early X-ray machines needed to be set and repeatedly adjusted. To achieve this, radiographers would place their hands between the actively radiating tube and the film plate to check if the apparatus was functioning and that it was well focused on the film. By practicing this for 12 years, Dr. Kells was the first victim of dental X-ray radiation with numerous cancerous tumors on his fingers.” <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4319329/>
- “Electromagnetic interference” https://en.wikipedia.org/wiki/Electromagnetic_interference
- “experimental evidence supported low-dose ionizing radiation exposure causes a significant long-term alterations in lipid metabolisms and endothelial function” <http://info.cfimedical.com/blog/hypertension-and-high-cholesterol-linked-to-radiation-exposure>
- “How Dirty Electricity Causes Diseases” <http://articles.mercola.com/sites/articles/archive/2010/08/31/how-dirty-electricity-causes-diseases.aspx>
- “Information for Radiation Workers” <http://www.nrc.gov/about-nrc/radiation/health-effects/info.html>
- “Ionizing radiation” https://en.wikipedia.org/wiki/Ionizing_radiation
- “Long-term side effects of radiation therapy” USA <http://www.cancer.org/treatment/treatmentsandsideeffects/treatmenttypes/radiation/understandingradiationtherapyaguideforpatientsandfamilies/understanding-radiation-therapy-long-term-side-effects>
- “Long term side effects of radiotherapy” UK <http://www.cancerresearchuk.org/about-cancer/cancers-in-general/treatment/radiotherapy/follow-up/long-term-side-effects-of-radiotherapy>
- “Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer, associated with wireless phone use.” World Health Organization http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf
- “Magnetic field exposure on airplane” <https://www.youtube.com/watch?v=Zjq17nO8On0>
- “Muscle/joint pain after radiation?” <https://community.breastcancer.org/forum/70/topics/733288>
- “Navajo Uranium Workers and the Effects of Occupational Illnesses” <http://faculty.washington.edu/stevehar/Dawson.pdf>
- “Nuclear Witnesses: Insiders Speak Out by Leslie J. Freeman” <https://amzn.com/0393300331>
- “Radiation” <https://en.wikipedia.org/wiki/Radiation>
- “Radiation Exposure Compensation Act (RECA) was passed by the U.S. Congress in 1990 to make partial restitution to individuals harmed by radiation exposure resulting from underground uranium mining and above-ground nuclear tests in Nevada.” <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240251/>
- “Radiation health effects” https://en.wikipedia.org/wiki/Category:Radiation_health_effects
- “Radiation: How much is harmful?” http://quartarad.com/index.php?option=com_content&view=article&id=150:radiation-article&catid=36:demo-articles

- “Radiation-induced lung injury” <http://www.uptodate.com/contents/radiation-induced-lung-injury>
- “Radiation-Induced Lung Injury: Assessment, Management, and Prevention” <http://www.cancernetwork.com/lung-cancer/radiation-induced-lung-injury-assessment-management-and-prevention/page/0/1>
- “Radiation poisoning (disambiguation)” [https://en.wikipedia.org/wiki/Radiation_poisoning_\(disambiguation\)](https://en.wikipedia.org/wiki/Radiation_poisoning_(disambiguation))
- “Radiation Poisoning Remedies” <http://www.earthclinic.com/cures/radiation.html>
- “Radiation Protection with miso and seaweed - Japanese Nuclear Reactor Meltdown” <http://melaniegrimes.com/radiation-protection-with-miso-and-seaweed/>
- RFR & DE measurement on airplane: get a safe seat. <https://www.youtube.com/watch?v=Q4utCmHgNDM>
- “She was a dental technician in the Navy and also worked for years in pediatric dental offices and orthodontics as an assistant, calming nervous children, helping them to have good dental experiences, and when she was exposing radiographs, sometimes she admits that she would make it easier on everyone if she would stay with the child while the x-rays were beaming through her hand...Even though the tumor was benign, because of the damage done, the possibility of regrowth and other factors, the decision was made for my friend to have her ring finger amputated.” <http://www.dentalbuzz.com/2013/03/15/fingers-in-the-picture/>
- “Side Effects of Radiation Therapy” <http://news.cancerconnect.com/side-effects-of-radiation-therapy/>
- “Sievert” <https://en.wikipedia.org/wiki/Sievert>
- “studies have associated chronic radiation exposure with poor long-term heart health.” <http://www.medicalnewstoday.com/articles/308881.php>
- “The dose limit to non-radiation workers and members of the public are two percent of the annual occupational dose limit. Therefore, a non-radiation worker can receive a whole body dose of no more than 0.1 rem/year from industrial ionizing radiation. This exposure would be in addition to the 0.3 rem/year from natural background radiation and the 0.05 rem/year from man-made sources such as medical x-rays.” https://www.nde-ed.org/EducationResources/CommunityCollege/RadiationSafety/safe_use/exposure.htm
- “The effects of radiation on the long-term trends of the total serum cholesterol levels of the Hiroshima and Nagasaki atomic bomb survivors were examined using data collected in the Adult Health Study over a 28-year period (1958-1986)... We showed that the mean growth curve of cholesterol levels for the irradiated subjects were significantly higher than that for the unirradiated subjects, and that the increase was greater for women than for men... This increase may also partially explain the increased rate of coronary heart disease seen in the atomic bomb survivors.” <https://www.ncbi.nlm.nih.gov/pubmed/10360794>
- “The longer a white miner was exposed to radon gas, the greater the risk of lung cancer.” <http://www.cdc.gov/niosh/pgms/worknotify/uranium.html>
- “Time Lapse Of Kona Hawaii VOG Sunset With Refraction (Flicker)” <https://youtu.be/6uKPM5X9oTY>
- “Treatment for Radiation-Induced Pulmonary Late Effects: Spoiled for Choice or Looking in

- the Wrong Direction?” <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2948640/>
- “Vog” <https://en.wikipedia.org/wiki/Vog>
 - “VOG or Volcano Smog in Kona, Hilo, Oahu, Kauai Health Affects”
<https://youtu.be/66Diq5HyODo>
 - “Why Can’t I Stay Asleep?” <http://www.webmd.com/sleep-disorders/features/surprising-sleep-wreckers#1>
 - “we concluded that the predominant injurious agent in these cases was alpha particles from radon progeny. This disease, after a long latent period, usually results in pulmonary hypertension, shortness of breath, and death by cardiopulmonary failure.”
<http://www.ncbi.nlm.nih.gov/pubmed/9604184>
 - “WiFi radiation exposure on airplane” <https://www.youtube.com/watch?v=sbBNtu-x7ag&t=2s>
 - “Wireless Radiofrequency Radiation in Schools” <https://aaemonline.org/pdf/WiredSchools.pdf>
 - “workers who were exposed to radiation for a median of 10 years had: 2.8 times higher odds of having skin lesion: 7.1 times higher odds of having orthopedic (back/neck/knee) problems; and 6.3 times higher odds of having cataracts.” <http://newsroom.heart.org/news/healthcare-workers-radiation-exposure-tied-to-range-of-health-problems>
 - “WW2 veteran tells how seaweed saved him from the atom bomb”
http://www.thisiswiltshire.co.uk/news/8212772.WW2_veteran_tells_how_seaweed_saved_him_from_the_atom_bomb/
 - “X-Ray” <https://en.wikipedia.org/wiki/X-ray>

“Flying in a modern jet airplane doses the human with levels of radiation comparable to those found in nuclear disaster zones”

Steven Magee CENG MIET BEng Hons – Author of Health Forensics