BBI 321 v1.7

Final Project Guidelines for EMRS

Bringing together technology and design methods to provide the information needed to create healthy homes and workplaces.

Building Biology Institute
The science of healthy buildings

Final Project: Putting Building Biology® Principles in Practice

This final project is the home stretch for your certification as a Building Biology Electromagnetic Radiation Specialist. You are expected to demonstrate understanding of and proficiency in applying the testing protocols, analysis methods and data interpretation as taught in IBE's 212 and IBE 312 seminars as well as holistic environmental awareness of other factors that may be affecting a client's-built environment as taught in IBE 101.

You will be working with a mentor who is an experienced EMRS. IBE will assign your mentor to you, based on the best match of a mentor's established skills and your stated goals. While IBE will make every effort to accommodate student requests for a particular mentor, IBE does not guarantee that the mentor requested will be available during the time frame you have selected, and IBE reserves the right to assign an alternate mentor to you.

Your mentor has volunteered for this responsibility and is committed to devoting three to four hours aggregate of their time to your undertaking, via phone and e-mail, at no cost to you. Should your mentor agree to grant you additional time, and/or their more personalized involvement (for example, inviting you to accompany them on client house calls), with or without assessing a fee for their additional commitment, it is solely at you and your mentor's discretion.

You must pass this final project in order to become a certified Building Biology *Electromagnetic Radiation Specialist* (EMRS). Passing or failing this project rests solely on your mentor's judgment as to your ability to safely and effectively carry out the Building Biology assessment process. Please spend enough time interviewing your mentor prior to their official appointment to ensure that you and your mentor are suited to each other and that you can depend on full and accurate communications between the two of you.

We at the Institute look forward to welcoming you into our international community of certified Building Biology Environmental Consultants and Electromagnetic Radiation Specialists.

Home Assessment and Report

Conduct a home assessment and write a detailed report to your client explaining your findings and remediation plan. The sample report format recommended in the *IBE Business Support Program* (contact the Institute to gain access) will be used as your template for this report. The maximum time to complete Part A is three months from the date of your assignment to a mentor.

Based on the specifics of the home you are going to evaluate it may be necessary to consider and report on the existence of additional non-EMF environmental factors that you might become aware of based on visual and olfactory assessment. The IBE philosophy requires you to always take a holistic view of any environment you will be evaluating. All environmental factors to be aware of are listed in the IBE document: *BBEC: Assessment Procedures v3.1*.

What you need to do now:

1. Discuss your specific assessment home and the assessment elements with your mentor. (You may NOT use your own home. We want you to interact with a client.)
2. Write a proposed Home EMR Assessment Plan based on discussion with your mentor.
3. Submit proposal to your mentor for review, discussion, modification and, finally, approval.
4. Upon approval of assessment plan, conduct the assessment of the home using the IBE Protocol: *Measurement of Non-ionizing Radiation in Low-rise Residential Buildings* provided in the IBE 212 and 312 student materials.
5. Discuss any additional non-EMR findings resulting from your holistic assessment with your mentor and decide on how to handle these in your client report.
6. Specifically discuss with your mentor the mitigation options for the EMR problems identified and create a mitigation plan.
7. Write a client report following the *Business Support Program* report template. Include photos, diagrams if useful, test results and your mitigation plan. Submit the report to your mentor. Your mentor will review the report and give you feedback.
8. Follow up with the client to implement the mitigation plan and discuss the results with your mentor.

Note: You are not yet a certified EMRS; Please do not present yourself as one. You may negotiate a nominal fee with your client if you desire to do so.

If needed IBE will rent a kit with all of the test equipment needed to perform the EMR evaluation. This kit can be rented for 5 days for $150 not including return shipping. Renting the kit requires a $1600 credit card deposit. Additional details on page 6.

Electromagnetic Radiation Assessment Elements

1. **Map of Property**:
    a. Sketch a map of the lot showing footprint of the house. Show utility lines and service entrance points–water, gas, cable, electric. Indicate bedroom location relative to the utility entry points. Measurements of interest can be noted on this map to be included in the report and shared with the client.
    b. Sketch a floor plan for each floor of the house. Indicate bedroom and bed locations. Mark utility entry points. Measurements of interest can be noted on this sketch to be included in the report and shared with the client.
    c. You can examine the sketches to look for patterns and thus identify places to explore and identify sources. A picture can be taken of each sketch and included as a jpg file in the body of your report.
2. **Magnetic Field Assessment**
    a. Measurement of all rooms and property surrounding occupied building(s)
    b. Determine if the following issues exist on your screening tests:

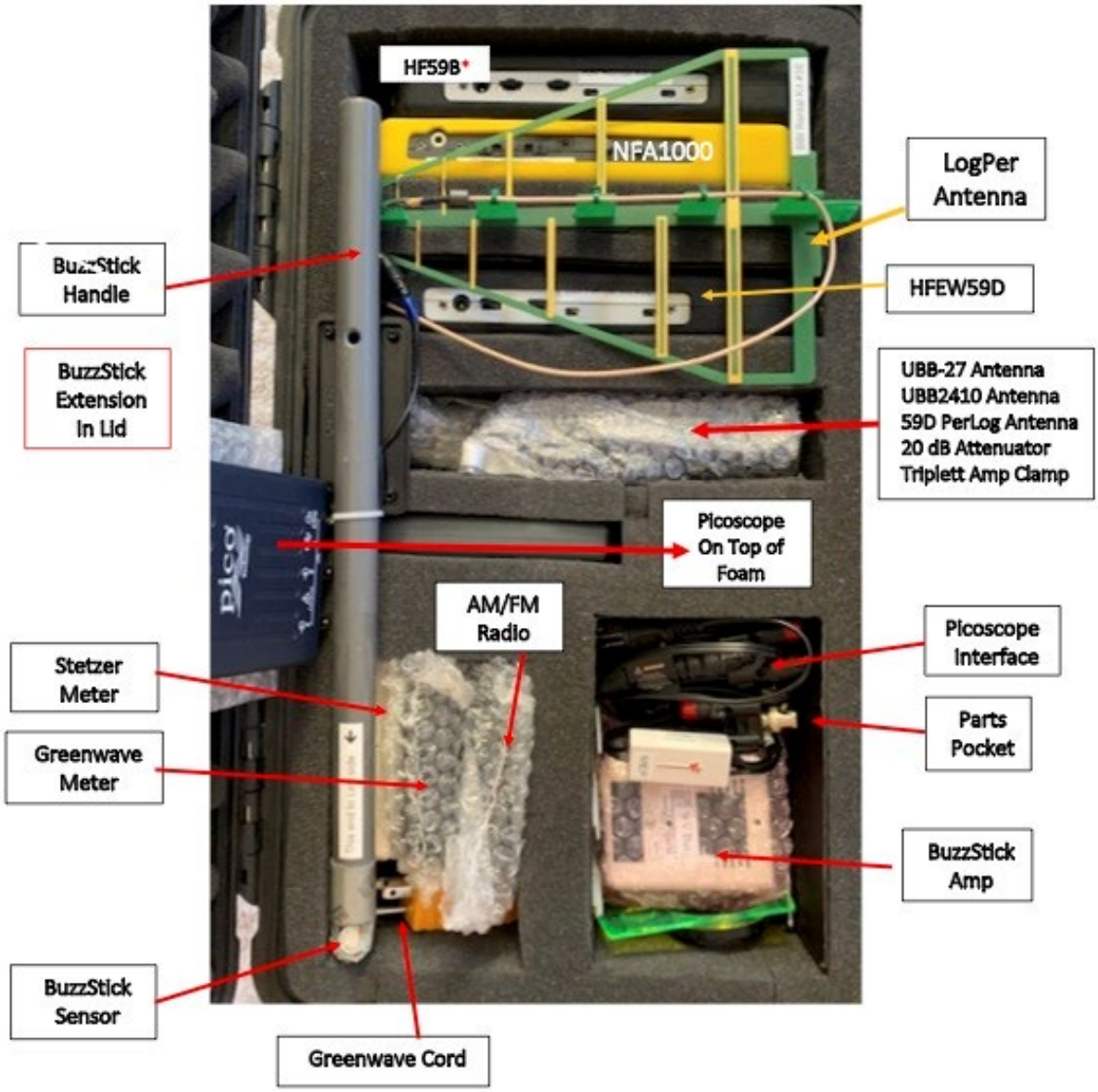
i. Wiring errors
ii. Outside field sources
iii. Electric current on parallel neutral return paths to the neighborhood transformer
iv. Point sources, including in computer/home office, sleeping areas, kitchen and other locations.

c. Record magnetic field for 15 minutes in bedroom. Comment on the DE frequency components.
d. If there are other areas with elevated fields, pick the highest and record in this area as well. Comment on the DE frequency components.
e. Develop a 9-point bed map. Comment on the DE frequency components.
f. Develop a remediation plan based on above measurements.

3. **Electric Field Assessment**
   a. Assessment of sleeping locations using 9-point bed mapping.
   b. Record the electric field for 15 minutes at a sleeping location with the highest field and comment on the DE frequency components.
   c. Develop remediation plan for each location by circuit breaker manipulation per protocol. Pinpoint outside field sources if they exist.
   d. Further assessment of other locations as dictated by client needs. Include assessment of electric field exposure at a computer and refrigerator (whether grounded or not).
   e. Develop a remediation plan based on above measurements.
4. **MEP Assessment** using a both Microsurge Meters, the Picoscope (or Owon scope).
   a. Assess initial pollution level.
   b. Assess utility power supply pollution level with house circuits off.
   c. Identify inside MEP sources.
   d. Develop remediation plan.
5. **Radio Frequency Radiation (S&S Pro 2, HF59B and HF59D)**
   a. Measure <u>exterior</u> sourced RF levels and ID probable sources & locations.
   b. Measure and data log (HF59B + NFA1000) a smart electric meter and ID beacon pulses and period. Include in a separate report (normally it's not part of the client report). Use resultant knowledge in (c).
   c. Measure <u>interior</u> RF levels; ID sources.
   d. Develop a remediation plan based on above measurements. Use the directional feature of the HF59D and HF59B to find locations for application of shielding if a more limited approach makes sense due to source location.
   e. Using a floor plan, collect dimensions of the rooms to be shielded and the window/door glass to be shielded. Calculate shielding materials and accessories required. Indicate using colored markers identify:
      a. Walls areas to be shielded.
      b. Glass areas to be shielded.

c. Indicate using a colored marker the location of single point for wall Earthing connection in each room.
d. Mark the location of the outside Earthing rod(s).

Rental Kit Packing / Contents: Kit 3E July 2023



*Load HF59B first with face toward outside wall of the Pelican case

Final Project EMR Rental Kit

Contents of Parts Pocket

1. 1-Picoscope to computer USB Cable (blue)
2. 1-Picoscope telescoping antenna
3. 1- NFA Stand
4. 1-NFA1000 / HF59B charger
5. 1-NFA to HF59 patch cord
6. 1-NFA grounding cord
7. 1-NFA to PC patch cord
8. 1-Outlet Ground Adapter
9. 1- NFA Body voltage electrode
10. 1-NFA Electrode Cord (red)
11. USB-C male to USB-A female adapter
12. SD card to USD adapter for Mac
13. 1-Outlet Tester
14. Liquid filled compass
15. Buzz Stick Amp (Put on top in bubble bag)
16. AM Radio- MEP ID (Put on top in bubble bag)
17. USB-C to USB-A adapter not shown (Return to labeled plastic bag)
18. Picoscope Interface

We require a deposit using a credit card hold for $1200 to cover the cost of damage to the equipment. Please insure your return shipment for $6900 unless you can cover the loss of the shipment out of your own pocket.

We expect you to return ship the equipment at your own expense, clean, undamaged in operating condition and packaged as delivered so as to avoid equipment damage in the return shipment. You will be billed for missing parts & equipment including time to locate and ship.

7.21.23, Parts Pocket Contents-EMR Kits_v6

IBE Rental Kit Terms

Rental Terms

Rental cost: $150 for five days in your hands (plus 4 days shipping each way)
Rent beyond 13 days total time including shipping: $60/day
Deposit: $1200 via credit card hold
Shipping: FedEx *Home Delivery* to most zip codes in the USA
Shipping Weight: 22 lbs (approximate)
Total Equipment Value: **Insuring return shipment for $6900.**

Estimate of Project Costs

Test Kit Rental	US$150
FedEx Return Shipping	US$150-$300 (depends on distance)
Total	US$300- $450

- We require a deposit using a credit card hold for US$1200 to cover potential damage to the equipment. This $1200 will be refunded after the equipment is inspected less any cost for repairs.
- Please insure your return shipment for US$6900.
- We expect you to return ship the equipment at your own expense, clean, undamaged in operating condition and packaged as delivered to avoid equipment damage in the return shipment. This way the next student renting the equipment can get it without delay.