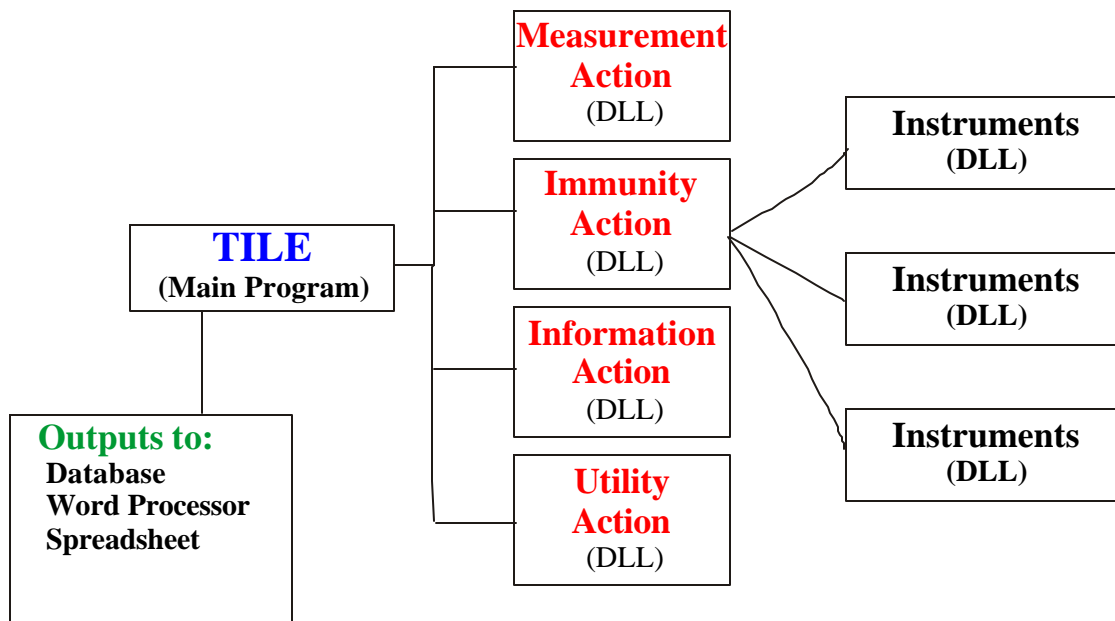


## **T**otal **I**ntegrated **L**aboratory **E**nvironment System

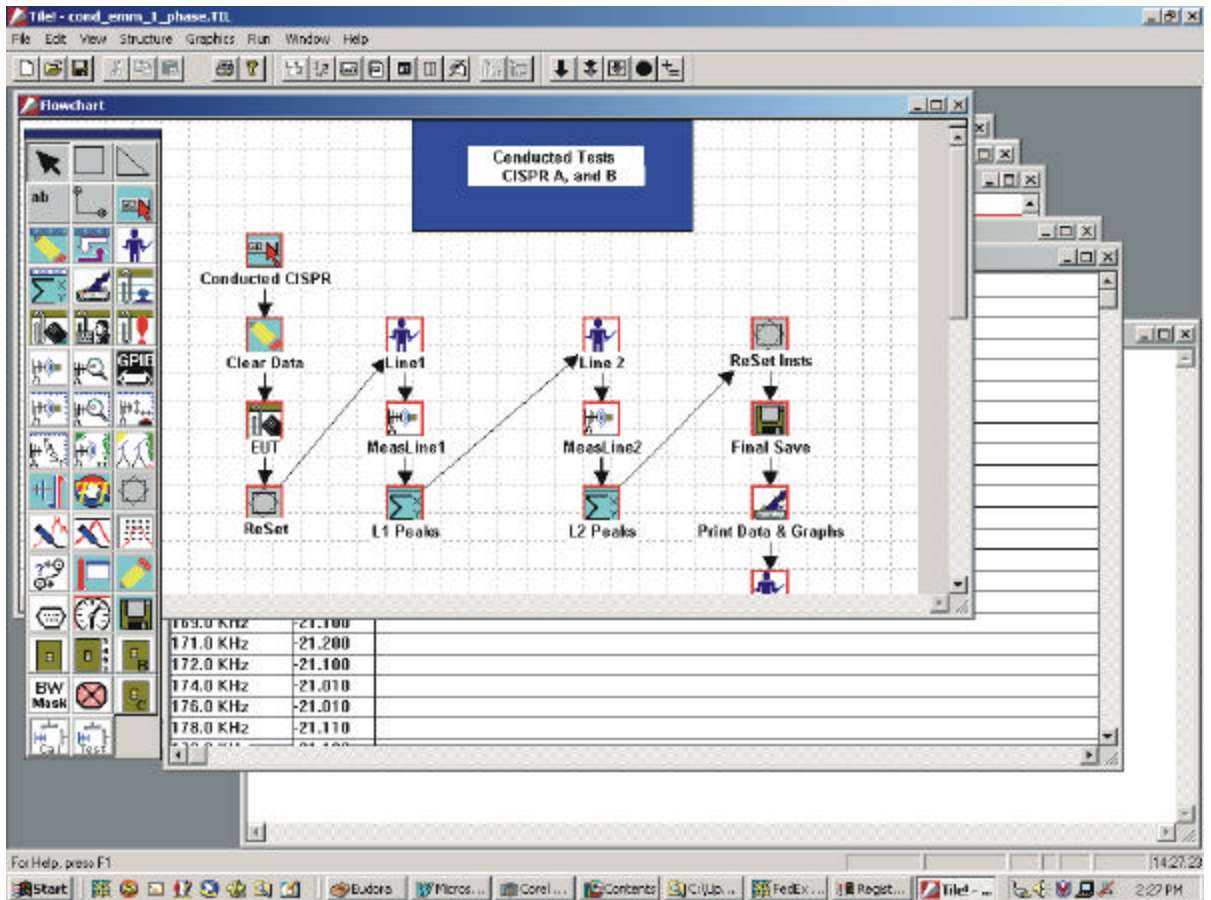
The Quantum Change/EMC Total Integrated Laboratory Environment (**TILE**) system is designed to be an extremely flexible, general instrument control software system with integrated links to various word processing, database and spreadsheet software. This program presents a unique and simple user front end to a powerful testing platform.

An overview of the **TILE** structure of this system would appear as follows:



### **General Design**

The general layout involves four components: (1) the TILE Instrument Control System, the main engine, (2) various unique actions (Dynamic Link Libraries - DLL's) that perform specific measurement or immunity tests, (3) the instrument drivers (also DLL's) that handle all communications between the main program or actions and the instruments, and (4) data reporting elements such as word processing, spreadsheets and data base software which can be provided by **QC** or by the end-user.



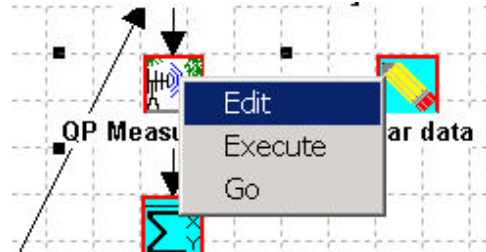
The main program is unique to Quantum Change/EMC Systems. It provides a graphical, flowchart oriented method of designing and executing EMC tests. Unique test plans, called profiles, are specific test routines which control the various pieces of instrumentation and walk the user through the various steps needed to complete each test. The graphical front-end allows easy training of personnel for a wide range of testing requirements. Quantum Change/EMC Systems will normally write, test, and maintain these test routines.

### *Profiles*

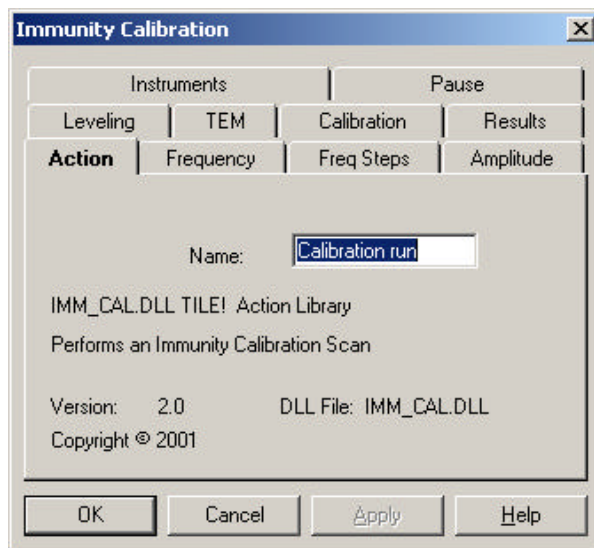
Each test routine is defined as a 'Profile'. The profile describes each step of a test routine, from equipment setup to final reporting. These profiles can be explained graphically by looking at a flowchart of the test, from beginning to end. This flowchart represents a group of 'actions'. The 'actions' control changeable information, such as descriptions of the Equipment under Test (EUT), frequency ranges, bandwidths, etc. appropriate for each step.

## Actions

Each 'action' on the flowchart can be edited to allow the user unique customization for each step in the test. When you double click on any icon on the flowchart, you get access to the 'edit', 'execute' and 'go' functions. 'Edit' allows you to modify specific characteristics of this test step. 'Execute' and 'go' allow you to perform this step, or begin a series of steps.



Each edit is a group of pages. Each page gives you access to unique characteristics of this action. In this example, an immunity test, you can specify frequency, amplitude, leveling method, modulation levels and type, check to make sure door is shut, save the states of any instrument in the system, including monitors (such as voltmeters, oscilloscopes, current meters, etc), their unique calibration, set the process to control dwell time, soak time, keying cycle and finally a pass/fail criteria (that can include automatic communication with your equipment). The greatest strength of **TILE** is the amount of flexibility that it gives the user.

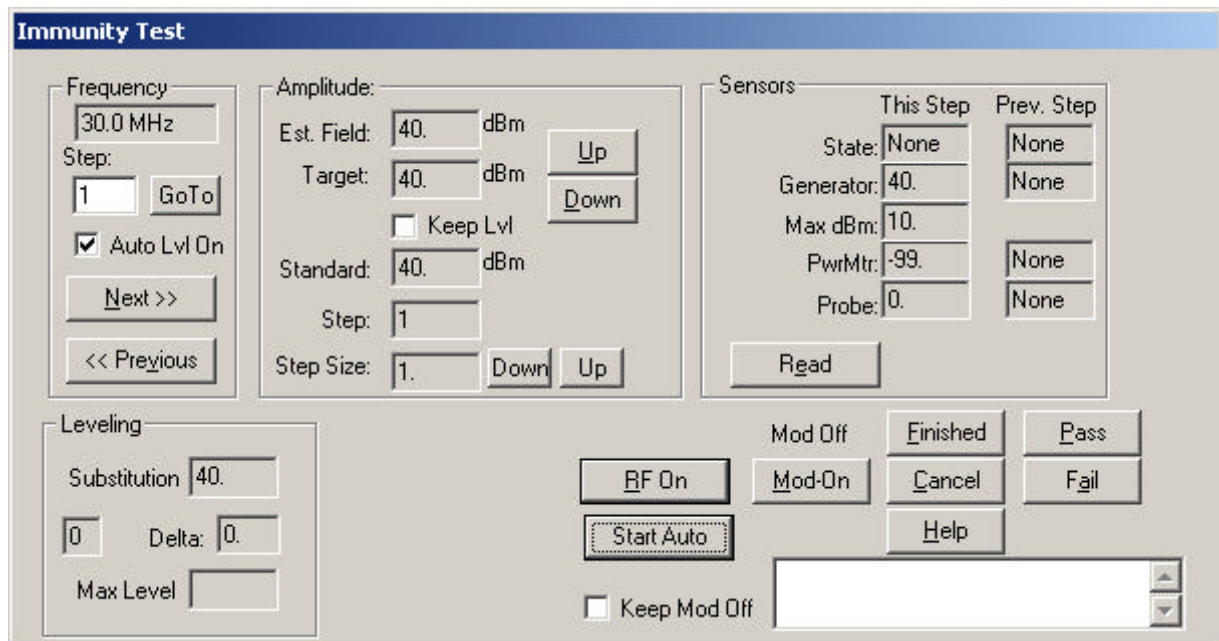


Dialog Boxes provide information as the test executes. In an immunity test, you receive direct information on the current state of the test, including the ability to go to manual mode, change rf levels, mark the step as pass/fail, append a comment for this frequency and return to automatic mode. The dialog box changes nature depending upon the options chosen when the step was created. If thresholding is turned off, then a set of buttons are visible to mark pass or failure. When performing an emissions scan, the dialog box is simpler. It merely displays the current state of the test. The operator during an emissions scan has no need for any

option except 'Stop'. But the action itself performs a number of complicated steps in making an emissions scan, including moving towers, turntables or paddles (reverberation chambers).

The 'actions' when coupled with the flowchart interface, are a powerful, visual representation of your testing requirements. On the flowchart, each 'action' is linked together to specify the order of execution. Once the test is formatted and linked, the profile will run a complete test from start to finish with whatever interface has been specified. Throughout the flowchart the designer can embed prompts for

# Quantum Change/EMC Systems, LLC



the user. This allows the designer to verify equipment states, question the users to make sure the setup is correct, prompt for an antenna change or any other message that would be appropriate.

## Instruments

The **TILE** system covers a wide range of instrumentation including almost any instrument that uses a GPIB bus (and is appropriate for an EMC test). Drivers are available from Quantum Change, and are supplied at no charge to our customers. All drivers are available to all installations. If you are running an HP spectrum analyzer and it needs to be sent for calibration, you can use any available instrument (whether company owned or rented) to continue running your **TILE** profiles.

The following instrument manufacturers are already supported by **TILE**:

Agilent	Rohde & Schwartz
Advantest	Tektronix
Bird	Anritsu
Boonton	Amplifier Research
PMM	IFI
ETS (EMCO)	Holaday
Sunol	Dynamic Sciences

The **QC** commitment is to support any instrument that is available to the EMC industry.

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### Test Standards

Because of the flexibility of **TILE**, you can perform a wide variety of different types of testing:

<i>Emissions</i>	FCC Part 15	FCC Part 18	FCC Part 95	And more
	CISPR 11	CISPR 22	Mil-Std CE	
	SAE	ITE	Bellcore	
<i>Immunity</i>	IEC 61000-4-3/6	Mil-Std CS	Mil-Std RS	And more
	SAE	ITE	Bellcore	

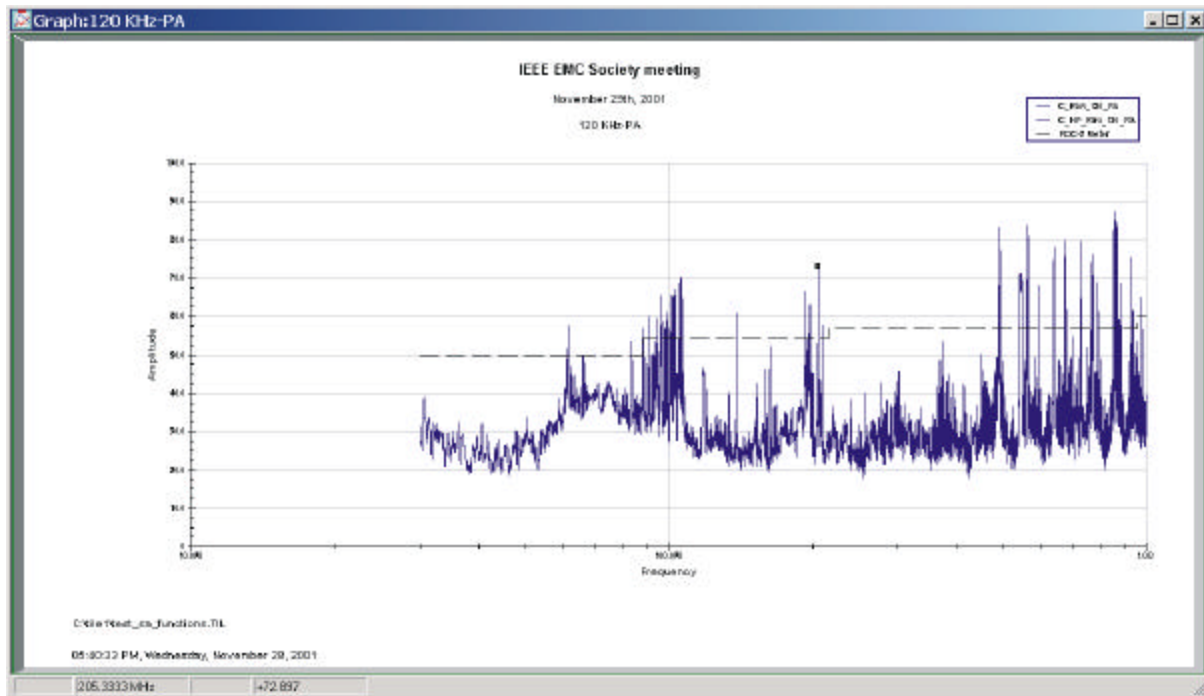
Are just a few of the supported types of EMC testing. In reality, if you need to configure any EMC test, **TILE** can support your requirements. Whether it is for:

- Conducted Emissions
- Radiated Emissions
- Conducted Immunity
- Radiated Immunity
- Frequency Harmonic Tests

**TILE** provides a powerful platform for meeting your test requirements.

### Output

Within the **TILE** system, you can configure graphs or tables to reflect the requirements of your test. Placing results of different sweeps on the same graph or table allows you to easily configure pass/fail analysis or product R&D evaluation.



Frequency MHz	Raw dBuV	AF dB	Preamp dB	Peaks dBuV/M	FCC Class B
30.638 MHz	64.340	9.615	35.173	38.782	49.540
32.054 MHz	57.570	9.870	35.175	32.355	49.540
36.162 MHz	56.840	10.579	35.168	32.351	49.540
40.483 MHz	55.500	11.550	35.154	32.004	49.540
43.813 MHz	50.840	12.057	35.139	27.759	49.540
47.858 MHz	53.170	12.200	35.115	30.255	49.540
50.542 MHz	56.500	12.200	35.095	33.605	49.540
58.929 MHz	61.570	11.944	34.971	38.593	49.540
60.883 MHz	72.000	11.553	34.944	48.609	49.540
61.379 MHz	81.000	11.414	34.945	57.459	49.540
62.308 MHz	70.840	11.156	34.952	47.044	49.540
63.079 MHz	68.170	10.938	34.958	44.150	49.540
63.787 MHz	68.670	10.740	34.963	44.446	49.540
65.983 MHz	74.840	10.046	34.980	49.906	49.540
66.692 MHz	72.340	9.791	34.993	47.138	49.540
66.833 MHz	73.000	9.740	34.996	47.744	49.540
74.625 MHz	70.570	7.490	35.007	43.073	49.540
81.354 MHz	68.000	8.171	34.990	41.181	49.540
83.408 MHz	79.840	8.582	34.948	53.473	49.540

Graphs can include any data element within the profile, as well as comments, legends, EUT information, Client information, Operator information, Date/Time stamps for the last run and file name. The comments and legends can be positioned anywhere on the graph. Graphs are constantly updated to reflect the current values of each data element.

The ability to define multiple graphs allows a level of customization that is not found in any competing EMC software product. You can create unique views for different frequency ranges of interest, annotating each with appropriate information. These graphs can be exported, manually or automatically, printed or saved to disk.

As with graphs, tables can reflect any combination of data elements and can be restricted to only display those ranges that are appropriate for your interest. You can configure them to show different types of information on different tables. Tables can be automatically exported, printed or saved to disk.

You can also save specific data elements or tables to ASCII text files. This allows for easy transportation between different engineers, customers, sites or as e-mail attachments. You do not need **TILE** loaded on a remote machine to view ASCII text. Files.

### **The **TILE** Advantage**

The flexibility in the design of **TILE** will yield improved efficiency to your laboratory. Other options include the integration of ISO 9000 work instructions into the help subsystem, integration of database and word processing systems as well as specialized options such as voltage monitoring or video monitoring.