F&MM
Fragrant Mountain Microwave

Measurement System

FM57 Product Selection Guide

Commercial Radar and Antenna Testing System in Chamber

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Expand the Global Horizon of Innovation Invent the Future of Microwave Technology

Part 1 – Product Introduction

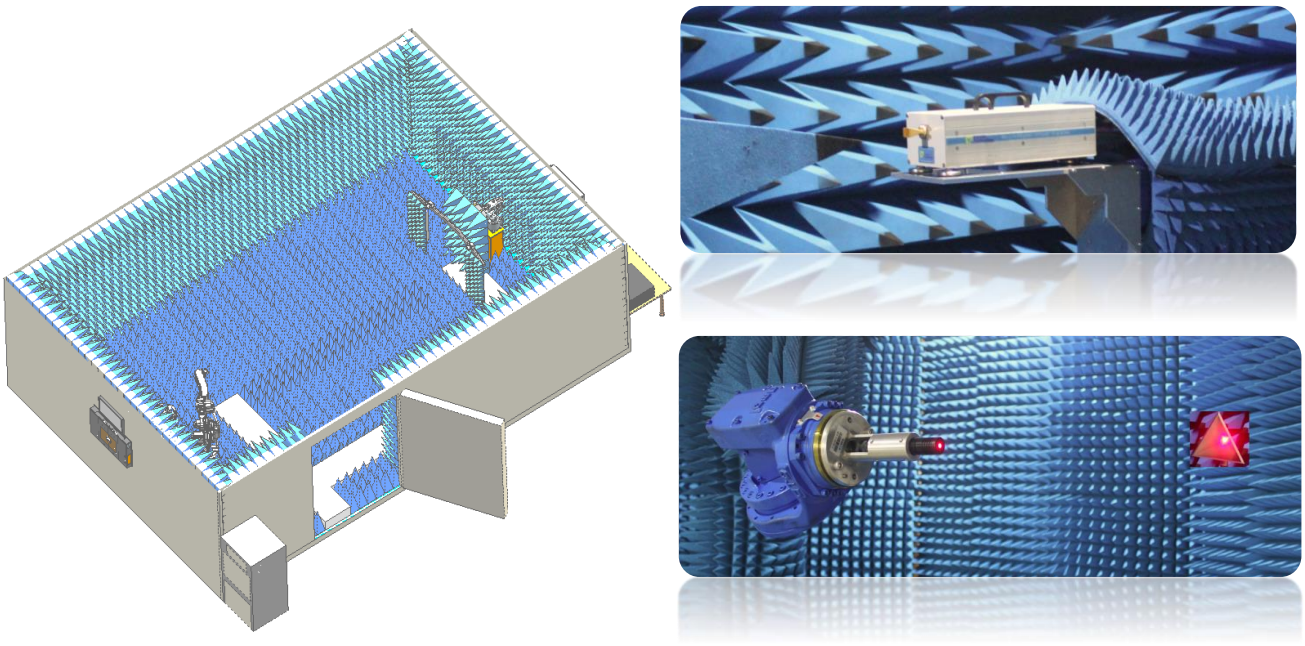

Fig. 1. FM57 Commercial Radar and Antenna Testing System in Chamber

This ALL-IN-ONE System is developed and work for the following sectors:

- **Automobile Industry**
  - Automobile Radar Calibration
  - Collision Avoidance Radar Measurement
  - Angular Resolution Test
  - ERIP and Radiation Pattern Test
  - Radar Installation Measurement
  - Target Simulation and RCS Testing
- **Wireless Communications**
  - 4G & 5G Mobile Antenna Farfield Test
  - Microwave Feeder Optimization and Test
  - Sub6, 28GHz and mm-wave 5G Module Radiation Test
  - Terminal Antenna Test
  - Base Station Full Radio Test
- **Commercial Aerospace Industry**
  - GPS Antenna Measurement
  - mm-wave Satellite Antenna Farfield Test
  - Commercial Satellite Active RF Module Test
  - LEO Small Antenna Farfield Test
- **Education and Research**
  - New Materials such as Radome Insertion Loss Test
  - Absorber Performance Assessment
  - Microwave and mm-wave Passive and Active Antenna Test
  - Wireless Energy Transmission Unit Test

Part 2 – Product Specifications

	Product Number	FM57SE	FM57SI	FM57SA	FM57ME	FM57MI	FM57MA	FM57LE	FM57LI	FM57LA
Item	**Description**	Educational S-Model	Industrial S-Model	Aero S-Model	Educational M-Model	Industrial M-Model	Aero M-Model	Educational L-Model	Industrial L-Model	Aero L-Model
1	**Gain Repeatability, Typ**	0.05 dBi	0.03 dBi	0.02 dBi	0.05 dBi	0.03 dBi	0.02 dBi	0.05 dBi	0.03 dBi	0.02 dBi
2	**HPBW Repeatability, Typ**	0.08 deg	0.06 deg	0.05 deg	0.08 deg	0.06 deg	0.05 deg	0.08 deg	0.06 deg	0.05 deg
3	**SLL-20db Repeatability, rms**	0.12 dB	0.1 dB	0.08 dB	0.12 dB	0.1 dB	0.08 dB	0.12 dB	0.1 dB	0.08 dB
4	**SLL-30db Repeatability, rms**	0.2 dB	0.18 dB	0.15 dB	0.2 dB	0.18 dB	0.15 dB	0.2 dB	0.18 dB	0.15 dB
5	**System Angular Resolution**	0.03 deg	0.02 deg	0.01 deg	0.03 deg	0.02 deg	0.01 deg	0.03 deg	0.02 deg	0.01 deg
6	**System Pointing Accuracy**	0.1 deg	0.08 deg	0.05 deg	0.1 deg	0.08 deg	0.05 deg	0.1 deg	0.08 deg	0.05 deg
7	**DUT Re-position Accuracy**	0.1 deg	0.08 deg	0.05 deg	0.1 deg	0.08 deg	0.05 deg	0.1 deg	0.08 deg	0.05 deg
8	**Back Slash Angle**	0.02 deg	0.015 deg	0.01 deg	0.02 deg	0.015 deg	0.01 deg	0.02 deg	0.015 deg	0.01 deg
9	**Auto Coordinates Calculation**	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)	6 (c_d, c_s, c_p, c_t, c_f, c_b)
10	**TX Typ Rotary Range**	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°	POL: ±180° EL: +/-90°AZ: +/-90°
11	**RX Typ Rotary Range**	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±70° AZ2: ±60°	AZ1: ±180° POL: ±180° EL: ±90° AZ2: ±75°	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±70° AZ2: ±60°	AZ1: ±180° POL: ±180° EL: ±90° AZ2: ±75°	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±70° AZ2: ±60°	AZ1: ±180° POL: ±180° EL: ±90° AZ2: ±75°
12	**TX Rotary Range (>77GHz)**	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°	POL: ±125° EL: +/-10°AZ: +/-10°
13	**RX Rotary Range (>77GHz)**	AZ1: ±180° POL: ±180°EL: ±40° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±60°	AZ1: ±180° POL: ±180°EL: ±60° AZ2: ±75°	AZ1: ±180° POL: ±180°EL: ±40° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±60°	AZ1: ±180° POL: ±180°EL: ±60° AZ2: ±75°	AZ1: ±180° POL: ±180°EL: ±40° AZ2: ±50°	AZ1: ±180° POL: ±180° EL: ±50° AZ2: ±60°	AZ1: ±180° POL: ±180°EL: ±60° AZ2: ±75°
14	**LOS Alignment DOF**	6 DOF	6 DOF	6 DOF	6 DOF	6 DOF	6 DOF	6 DOF	6 DOF	6 DOF
15	**System Drive**	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive	Full Servo Drive
16	**Testing Distance, Typ**	3.0m	3.0m	3.0m	5m	5m	5m	9m	9m	9m
17	**Rotation Speed**	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s	0.1°/s ~ 4°/s
18	**Position Resolution, Typ**	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS	0.02mm RMS
19	**TX Side Max Weight**	4kg	4kg	4kg	4kg	4kg	4kg	25kg	25kg	25kg
20	**RX Side Max Weight**	25kg	25kg	25kg	25kg	25kg	25kg	50kg	50kg	50kg
21	**Control Unit**	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED	Industrial PC + LED
22	**Power Supply**	100-240 VAC; 380V 50/60 Hz, 3500 watts	100-240 VAC; 380V 50/60 Hz, 3500 watts	100-240 VAC; 380V 50/60 Hz, 3500 watts	100-240 VAC; 380V 50/60 Hz, 3500 watts	100-240 VAC; 380V 50/60 Hz, 3500 watts	100-240 VAC; 380V 50/60 Hz, 3500 watts	380VAC; 50/60 Hz, 5500 watts	380 VAC; 50/60 Hz, 5500 watts	380 VAC; 50/60 Hz, 5500 watts
23	**Usage Temperature Range**	0-40deg	0-40deg	0-40deg	0-40deg	0-40deg	0-40deg	0-40deg	0-40deg	0-40deg
24	**Storage Temperature Range**	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60	-10 ~ 60
25	**Product Dimension**	Compact ()	Compact ()	Compact ()	Mid ()	Mid ()	Mid ()	Large ( )	Large ( )	Large ( )
26	**Typ Anechoic Chamber**	3.0m x 5.0m x 2.8m [Office-Model]	3.0m x 5.0m x 2.8m [Office-Model]	3.0m x 5.0m x 2.8m [Office-Model]	8.0m x 5.5m x 3.5m [Workshop-Model]	8.0m x 5.5m x 3.5m [Workshop-Model]	8.0m x 5.5m x 3.5m [Workshop-Model]	12m x 8m x 6m [Lab-Model]	12m x 8m x 6m [Lab-Model]	12m x 8m x 6m [Lab-Model]
27	**Testing Modes**	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid	Farfield, Multi-hybrid
28	**System Self-calibration**	Not Included	Manual	Manual + Auto	Not Included	Manual	Manual + Auto	Not Included	Manual	Manual + Auto
29	**Real Time CCTV**	Not Included	Non-upgradable	Included	Not Included	Non-upgradable	Included	Not Included	Non-upgradable	Included
30	**Software Licenses**	Educational Lic.	Industrial Lic.	Aerospace Lic.	Educational Lic.	Industrial Lic.	Aerospace Lic.	Educational Lic.	Industrial Lic.	Aerospace Lic.

31	**Std Option: Manual Calibration Toolkit**	Not Included	Included	Included	Not Included	Included	Included	Not Included	Included	Included
32	**Std Option: Automatic Calibration Toolkit**	Not Included	Upgradable	Included	Not Included	Upgradable	Included	Not Included	Upgradable	Included
33	**Std Option: Production line automation and reporting feature**	Not Included	Included	Included	Not Included	Included	Included	Not Included	Included	Included
34	**Type1 Mode: Angular Calibration Functionality using Corner Reflectors**	Included	Upgradable	Included	Included	Upgradable	Included	Included	Upgradable	Included
35	**Type2 Mode: ERIP Pattern Measurement Functionality**	Included	Upgradable	Included	Included	Upgradable	Included	Included	Upgradable	Included
36	**Type3 Mode: Radar Simulator Testing Functionality**	Not Included	Upgradable	Upgradable	Not Included	Upgradable	Upgradable	Not Included	Upgradable	Upgradable
37	**Type4 Mode: Radar Angular Resolution Measurement Functionality**	Not Included	Included	Included	Not Included	Included	Included	Not Included	Included	Included
38	**Type5 Mode: System Noise Measurement Functionality**	Not Included	Upgradable	Included	Not Included	Upgradable	Included	Not Included	Upgradable	Included
39	**Type6 Mode: System RCS Pattern Measurement Functionality**	Not Included	Not Included	Included	Not Included	Not Included	Included	Not Included	Not Included	Included
40	**Type7 Mode: Passive Component Pattern Measurement Functionality**	Included	Included	Included	Included	Included	Included	Included	Included	Included
41	**Type8 Mode: ERIP Frequency Sweep Measurement Functionality**	Not Included	Upgradable	Included	Not Included	Upgradable	Included	Not Included	Upgradable	Included

* Refer to www.fragrant-mountain.com for more brochures, technical notes, highlights and product training materials.
* Specifications are subjected to change by F&MM without prior notice.

Part 3 – Contact Our Technical Experts for Accessories Selections

We solve for measurement and tactic turnkey solutions of advanced electromagnetic systems for the market of 5G communications, satellite communications and radar systems. We do this by applying multi-disciplinary approach that involves customized advanced radio systems, close-loop robotic control technologies and software algorithms. To offer affordable turnkey solutions for your specific needs, we frequently provide customized modules and accessories for different products and industries. Please reach our technical sale engineer for your customized requirement. www.fragrant-mountain.com