



**Keystone Compliance, LLC
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New Castle, PA 16101**

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PABCO Gypsum

2203-156EA



Shielding Effectiveness Test Report 2203-156EA Rev. N/C

Test Standards: IEEE 2992-2006

For

PABCO Gypsum

37851 Cherry Street
Newark, California 94560

On

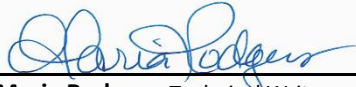
QuietRock® 530RF Gypsum Panel Sample

Model Number: N/A; Part Number: N/A; Serial Number: N/A

Performed By: **Keystone Compliance, LLC.**
131 Columbus Inner Belt
New Castle, PA 16101

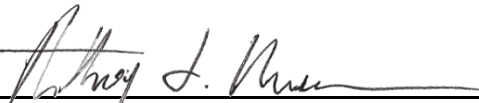
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Prepared By:


Maria Rodgers, Technical Writer

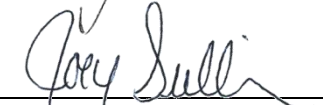
Date: 8/30/2022

Approved By:


Tony Masone Jr., Lab Manager

Date: 8/30/2022

Approved By:


Joey Sullivan, Quality Manager

Date: 8/30/2022



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REPORT NO.: 2203-156EA

REVISION: N/C

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Document History				
Revision	Issue Date	Description of Modifications	Revised By	Approved By
N/C	8/30/2022	Initial release	N/A	T.M.

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Client Information

Purchase Order	4503325347
Quote Number	2203-156EA
EUT Arrival Date	8/15/2022 -- Received in good condition
Company Name	PABCO Gypsum
Address	37851 Cherry Street
City, State Zip	Newark, California 94560
Contact Name	Deborah Callaway
Phone	(702) 407-3753
Email	Deborah.Callaway@pabcogypsum.com

Test Facility Information

Test Laboratory	Keystone Compliance, LLC.
Address	131 Columbus Inner Belt
City, State, Zip Code	New Castle, PA 16101
Phone	(724) 657-9940
Fax	724-657-9920
Web Site	www.keystonecompliance.com
Contact Name	Tony Masone Jr.
Title	Lab Manager
E-Mail Address	Tonyjr@keystonecompliance.com

Test Program Information

Test Personnel	Camren Morgan and Ethan Gonzalez – EMC Test Technician
Test Title & Test Dates	Shielding Effectiveness – August 16, 2022

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

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SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Introduction

This report documents the results of the EMC tests performed on the QuietRock® 530RF Gypsum Panel Sample, Model Number: N/A; Part Number: N/A; Serial Number: N/A, submitted by PABCO Gypsum

The EMC test programs described herein were performed in accordance with the applicable requirements of IEEE 2992-2006.

Statements of compliance are made in this report without taking measurement uncertainty into account, except for when specifically requested by the customer. Where statements of compliance are made in this report, the following decision rules are applied:

Complied/Met the criteria of the specification - Results are within the limits

Non-Compliant/Did not meet the criteria of the specification - Results exceed the limits

All test data is included in Section 3 of this document.

All tests performed at Keystone Compliance New Castle, PA EMC test facility. All tests were performed using the test set-ups of the relevant standard for tests performed in laboratory conditions.

Acronyms and Abbreviations

EMC – Electromagnetic Compatibility	EMI – Electromagnetic Interference
EUT – Equipment Under Test	M/N – Model Number
P/N – Part Number	S/N – Serial Number
Vac – Voltage Alternating Current	DC – Direct Current
AM – Amplitude Modulation	dB – Decibel
deg – Degree	H/V – Horizontal or Vertical Polarity
m – Meters	cm – Centimeter
V/m – Volts per meter	dBuV/m – Decibel microvolts per meter
kV – Kilovolt	Hz – Hertz
kHz – Kilohertz	MHz – Megahertz
GHz – Gigahertz	pF – Picofarad
Ω – Ohm	QP – Quasi-Peak
N/A – Not Applicable	

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

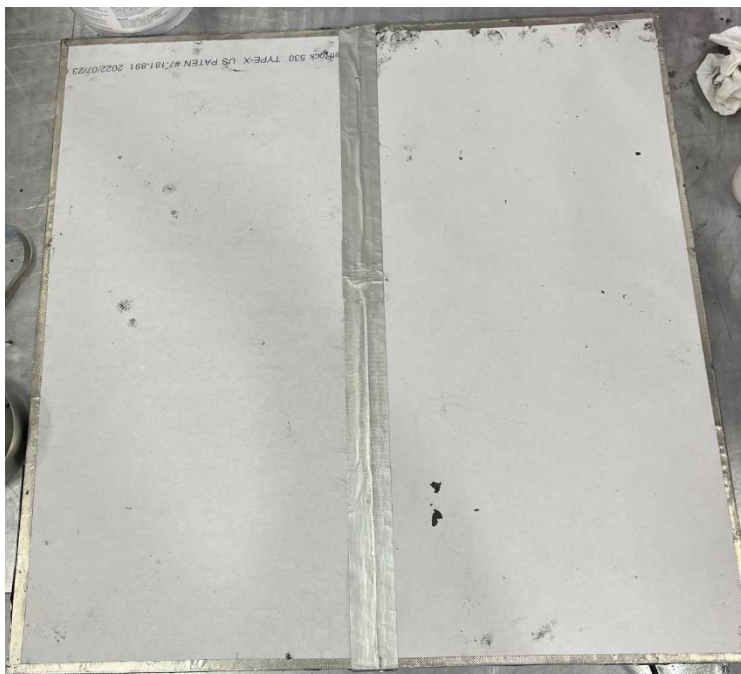
Configuration

Testing performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations, and settings used to complete the evaluation. The actual test parameters specified in the test data; this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation, indicated in the test data.

EUT		
Description		Manufacturer
QuietRock® 530RF Gypsum Panel Sample		PABCO Gypsum
Model Number	Part Number	Serial Number
N/A	N/A	N/A

EUT	
	
QuietRock® 530RF Gypsum Panel Sample	

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM



EUT

QuietRock® 530RF
Gypsum Panel Sample

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Summary of Tests Performed & Results
Table 1 Tests Performed & Results

Report Paragraph	Test Description	Specification	Notes	Results
IEEE 299-2006				
3.1	Shielding Effectiveness	IEEE 299-2006	10kHz – 40GHz	Determined by Customer

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Section 1 – Test Conditions and Equipment**1.1 Instrumentation and Equipment**

Measuring and test equipment, utilized in the performance of these tests, was calibrated in accordance with ANSI/NCSL Z540-3-2006, by Keystone Compliance, LLC or a commercial facility, utilizing reference standards (or interim standards) whose calibrations have been certified as being traceable to the National Institute of Standards & Technology (NIST). All reference standards utilized in the above calibration system are supported by certificates, reports, or data sheets attesting to the date, accuracy, and conditions under which the results furnished were obtained. All subordinate standards, measuring and test equipment are supported by like data when such information is essential to achieve the accuracy control required by the procedure.

Keystone Compliance, LLC attests that the commercial sources providing calibration services on the above-referenced equipment, other than the NIST Standards are in fact capable of performing the required services to the satisfaction of Keystone Compliance, LLC Quality Assurance. Certifications of all calibrations performed are retained on file in the Keystone Compliance, LLC Quality Assurance Department, and are available for inspection upon request by customer representatives.

The test equipment utilized during this test program is listed on individual Test Equipment Logs located in Section 3 of this document.

1.2 Tolerances

All test conditions were maintained within all applicable specified tolerances.

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Section 2 – References

2.1 Applicable Specifications

Reference
Specification Title

IEEE 299-2006

Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures

Calibration
Information

ANSI/NCSL Z540-3-2006

Calibration Laboratories and Measuring Test Equipment— General Requirements

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Section 3 – Test Descriptions, Test Equipment, Test Data, & Test Setup Photographs**3.1 Shielding Effectiveness Test**

- a) The Shielding Effectiveness test requirements for the QuietRock® 530RF Gypsum Panel Sample are specified in IEEE 299-2006.
- b) The Shielding Effectiveness test description for the QuietRock® 530RF Gypsum Panel Sample is located in Paragraph 3.1.1 of this document.
- c) The Shielding Effectiveness test equipment used to test the QuietRock® 530RF Gypsum Panel Sample is located in Paragraph 3.1.2 of this document.
- d) All recorded test data for the Shielding Effectiveness test on the QuietRock® 530RF Gypsum Panel Sample is located in Paragraph 3.1.3 of this document.
- e) The Shielding Effectiveness test setup photographs for the QuietRock® 530RF Gypsum Panel Sample are located in Paragraph 3.1.4 of this document.

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

3.1.1 Shielding Effectiveness Test Description

Test Description

Using the configuration(s) noted within this report, multiple shielding effectiveness tests were performed. The frequency range investigated is also noted in this report.

Sample Calculation

Shielding Effectiveness: "Open Bulkhead" measurement – Test Screen Measurement

Measurement Bandwidths

Start Frequency:	10kHz	Stop Frequency:	40GHz	Step Size:	10/decade
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SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

3.1.2 Shielding Effectiveness Test Equipment Log

Equipment Log	
Customer:	PABCO Gypsum
Date:	8/16/22
Test Engineer:	C. Morgan and E. Gonzalez

Test Equipment					
Asset No.	Description	Manufacturer	Model	Serial No.	Cal. Due
EE028	Radiating Loop Antenna	Electro-Metrics	EM-6866	108	12/15/2023
EE029	Loop Calibration Fixture	Electro-Metrics	EM-6867	108	12/15/2023
EE063	Transmit Loop Antenna	AH Systems	SAS-564	380	UWCE
EE070	Active 12" Loop Antenna	AH Systems	SAS-563B	506	UWCE
EE077	Passive Monopole Antenna	Super Antenna	None	None	UWCE
EE078	Passive Monopole Antenna	Super Antenna	None	None	UWCE
EE089	Antenna, Ultra-Wideband, Omni-Directional	Electro-Metrics	EM-6853	135	UWCE
EE090	Antenna, Ultra-Wideband, Omni-Directional	Electro-Metrics	EM-6853	332	UWCE
EG076	Preamplifier	The EMC Shop	PA18G-HA	1324	6/23/2023
EB036	Spectrum Analyzer	HP	8564E	3728A00854	3/7/2023
EG066	RF Amplifier	Exodus Advanced Communications	AMP4037	10005	UWCE
EG005	RF Amplifier	AR	100W1000m1 1	19161	UWCE
EG007	RF Amplifier	HP	8349B	2644A01939	UWCE
EF125	Signal Generator	Rhode & Schwarz	SMP04	DE33813	2/15/2023
EU001	Software, Tile (Version 3.4.k.6)	Quantum Change	None	None	UWCE
None	Computer System	Assorted	Assorted	Assorted	UWCE

UWCE: Used with Calibrated Equipment

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

3.1.3 Shielding Effectiveness Test Data

Shielding Effectiveness Data Sheet				
Customer:	PABCO Gypsum			
Date:	8/16/22	Test Engineer:	C. Morgan and E. Gonzalez	
Config. #:	1	Power:	N/A	Job Site: Keystone Compliance
Test Specifications				
Test Spec.:	IEEE 299-2006			

Test Data

Shielding Effectiveness				
Attenuation (dB)				
Frequency (MHz)	Full Panel Sample Vertical Polarization	Full Panel Sample Horizontal Polarization	Conjoined Half Panel Samples Vertical Polarization	Conjoined Half Panel Samples Horizontal Polarization
0.01	28.50	27.17	28.17	15.17
0.014	36.50	36.67	31.84	16.34
0.016	36.17	37.00	31.34	16.00
0.0205	32.17	32.84	31.84	16.34
0.025	29.33	29.50	31.50	16.00
0.032	27.50	27.67	30.33	15.67
0.04	26.84	27.00	31.34	16.17
0.05	26.33	26.50	31.00	15.67
0.064	26.17	26.17	30.84	16.01
0.08	26.50	26.50	31.67	16.50
0.111	26.33	26.33	32.17	16.50
0.13	26.66	26.66	32.33	17.00
0.16	26.34	26.33	33.00	17.17
0.20	26.17	26.17	32.00	17.00
0.25	26.16	26.17	32.50	17.17
0.326	26.84	26.67	33.17	17.67
0.40	26.66	26.66	33.00	17.66
0.52	26.84	27.00	33.00	18.00
0.64	26.83	27.00	33.00	17.84
0.81	27.00	27.00	33.00	18.17
1.00	27.01	27.00	33.00	18.17
1.30	27.66	27.66	33.49	17.83
1.995	27.50	27.50	33.33	17.66
2.60	27.17	27.17	33.33	17.67
3.20	26.67	27.00	33.17	17.50
4.06	26.50	26.33	32.50	17.17
5.10	25.83	25.83	32.00	16.33
6.525	24.83	24.83	31.66	15.83
8.10	23.67	23.67	30.33	15.00

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

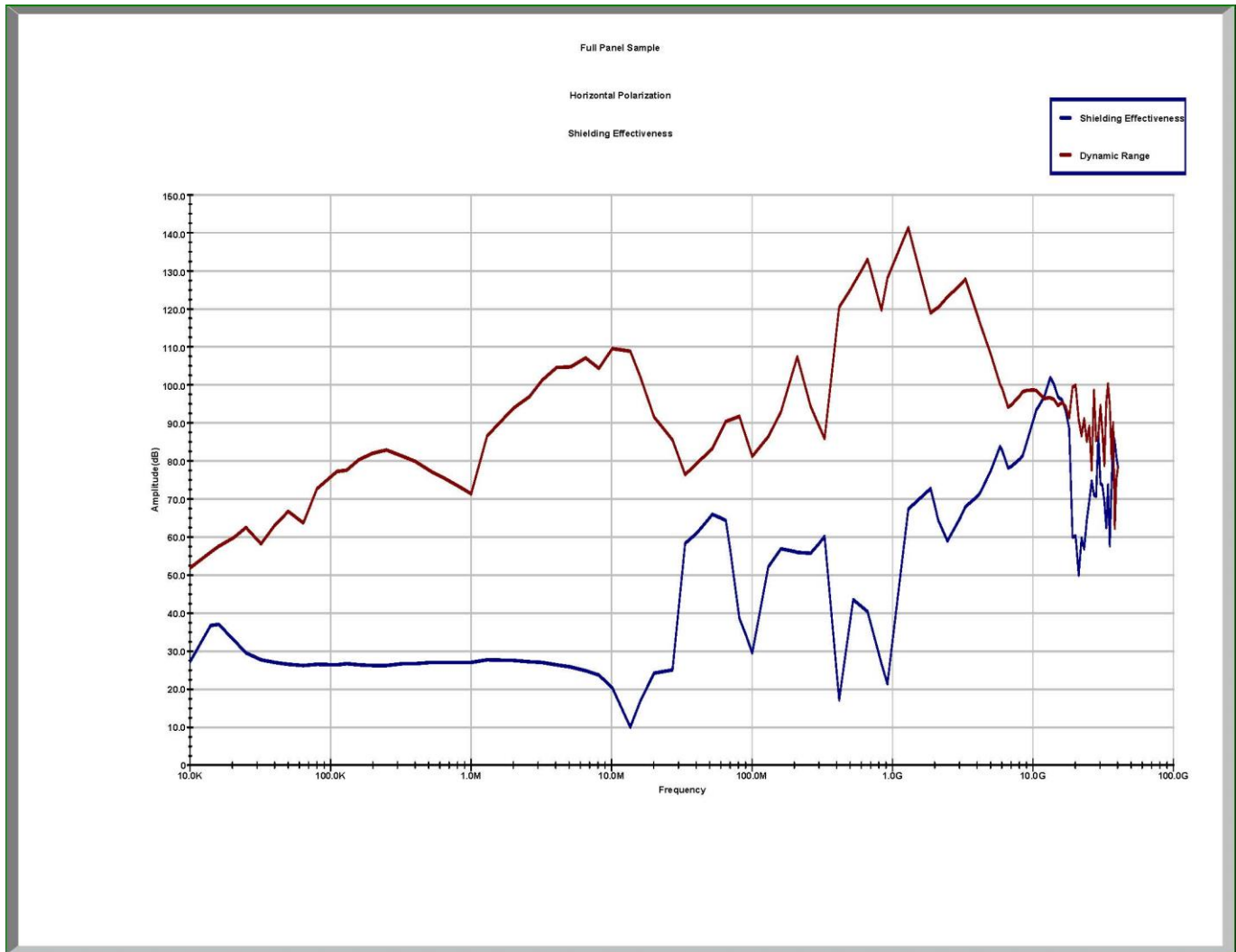
10.1	20.33	20.33	26.83	11.33
13.56	10.00	10.00	10.00	10.00
16.00	16.67	16.84	23.34	8.50
20.02	24.16	24.16	30.66	16.33
27.12	24.84	25.00	32.00	18.17
33.3.0	50.62	58.28	68.29	53.83
40	53.64	60.86	65.71	53.16
40.68	53.95	61.12	65.45	46.34
50	58.89	65.09	60.10	35.00
52	59.95	65.95	58.95	19.67
60	61.80	64.92	52.90	16.17
65	62.94	64.27	49.11	38.33
70	58.50	56.24	44.93	39.83
80	49.69	40.23	36.63	47.33
81	48.80	38.63	35.80	40.17
90	46.97	34.27	34.52	53.66
100	44.95	29.45	33.12	53.83
130	51.90	52.07	41.40	53.16
160	63.86	56.86	42.69	46.34
200	64.75	56.11	50.92	35.00
209	64.95	55.95	52.78	19.67
260	57.70	55.70	44.36	16.17
300	57.63	58.33	50.07	38.33
327	57.61	60.12	53.95	39.83
415	9.34	17.17	8.50	24.34
523	32.83	43.49	31.50	36.16
661	22.17	40.34	21.33	35.17
830	16.83	26.67	24.67	22.50
915	18.00	21.34	13.50	26.00
1,290	67.28	67.28	16.66	20.00
1,860	71.02	72.69	18.83	14.00
2,100	64.47	64.47	13.16	19.00
2,450	58.91	58.91	18.83	7.66
3,290	73.73	67.89	21.33	20.83
4,190	76.15	71.65	24.50	13.00
5,800	81.57	83.73	31.66	24.17
6,600	75.60	78.10	22.84	39.00
8,400	95.36	81.36	38.83	43.16
10,500	96.83	93.33	55.83	50.50
13,200	103.88	101.88	29.33	45.33
18,000	98.16	88.50	38.83	49.50
19,000	58.66	60.00	61.67	54.00
20,000	63.17	60.17	40.34	42.00
21,000	59.17	50.01	35.17	41.17

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

22,000	59.16	59.66	34.49	44.50
23,000	53.83	56.83	42.00	48.50
24,000	67.67	64.50	45.67	51.33
25,000	65.00	69.33	47.83	52.67
26,000	70.83	74.66	49.16	47.83
27,000	70.33	71.00	43.00	50.17
28,000	65.83	70.66	50.17	41.83
29,000	71.34	87.34	47.50	60.34
30,000	68.67	74.00	43.34	61.84
31,000	86.66	73.50	50.66	52.50
32,000	66.17	69.34	55.84	54.67
33,000	64.34	62.50	36.50	45.67
34,000	68.67	73.67	53.33	60.50
35,000	59.50	57.68	33.83	42.33
36,000	76.34	73.67	53.83	54.83
37,000	83.16	86.66	58.33	57.67
38,000	84.50	85.00	50.17	57.50
39,000	77.83	81.00	43.00	52.00
40,000	74.50	78.34	45.17	48.50

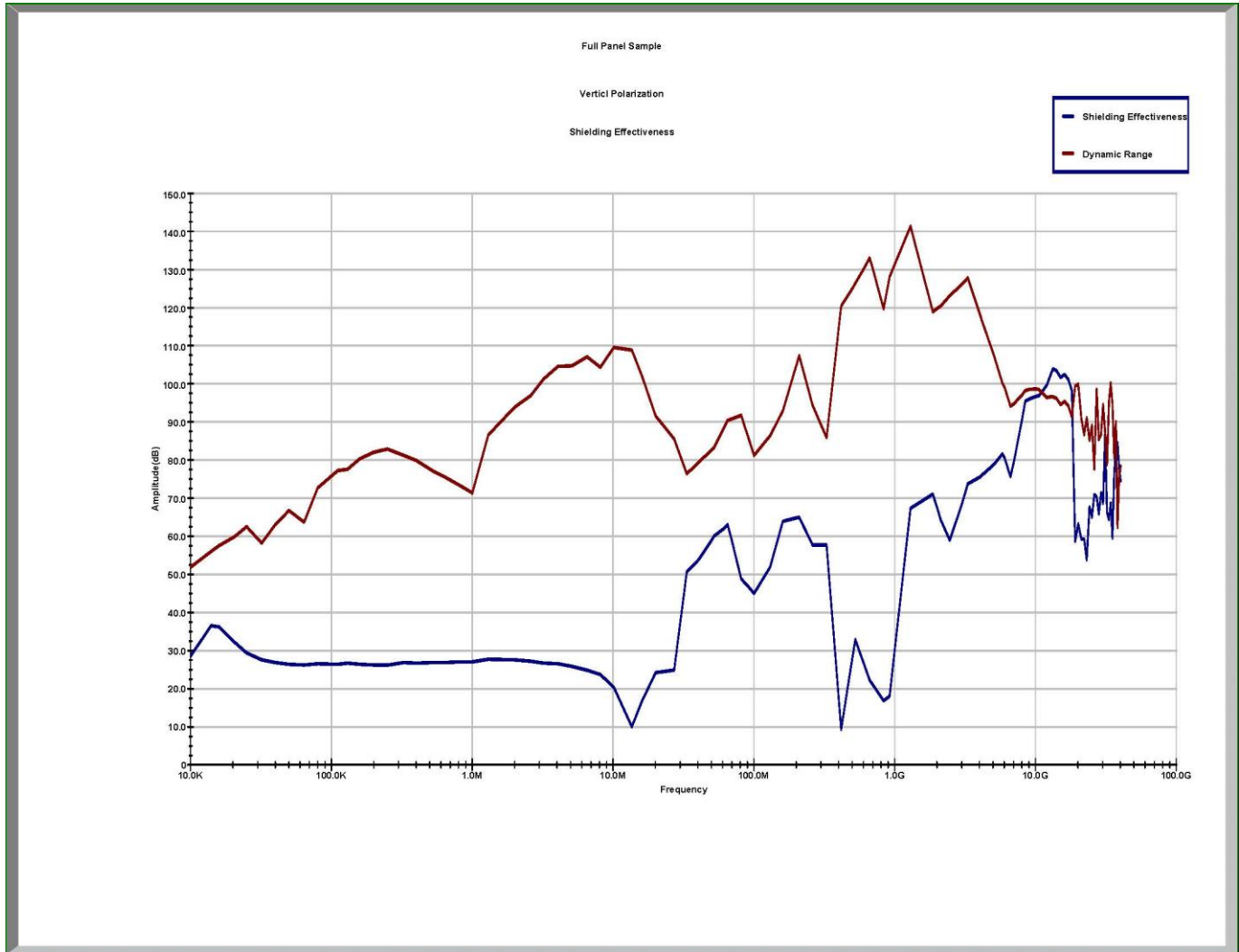
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Full Panel-Horizontal



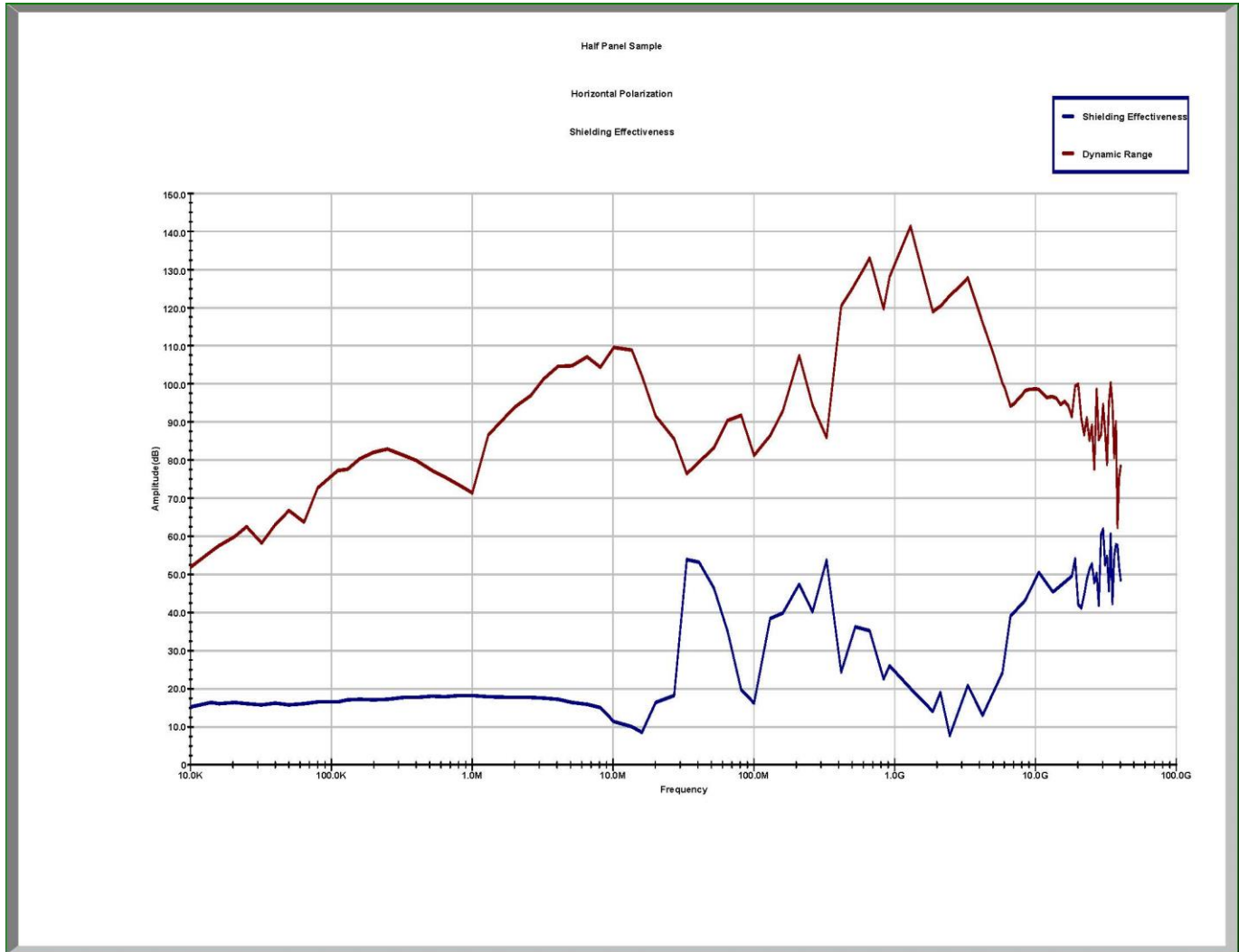
SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Full Panel-Vertical



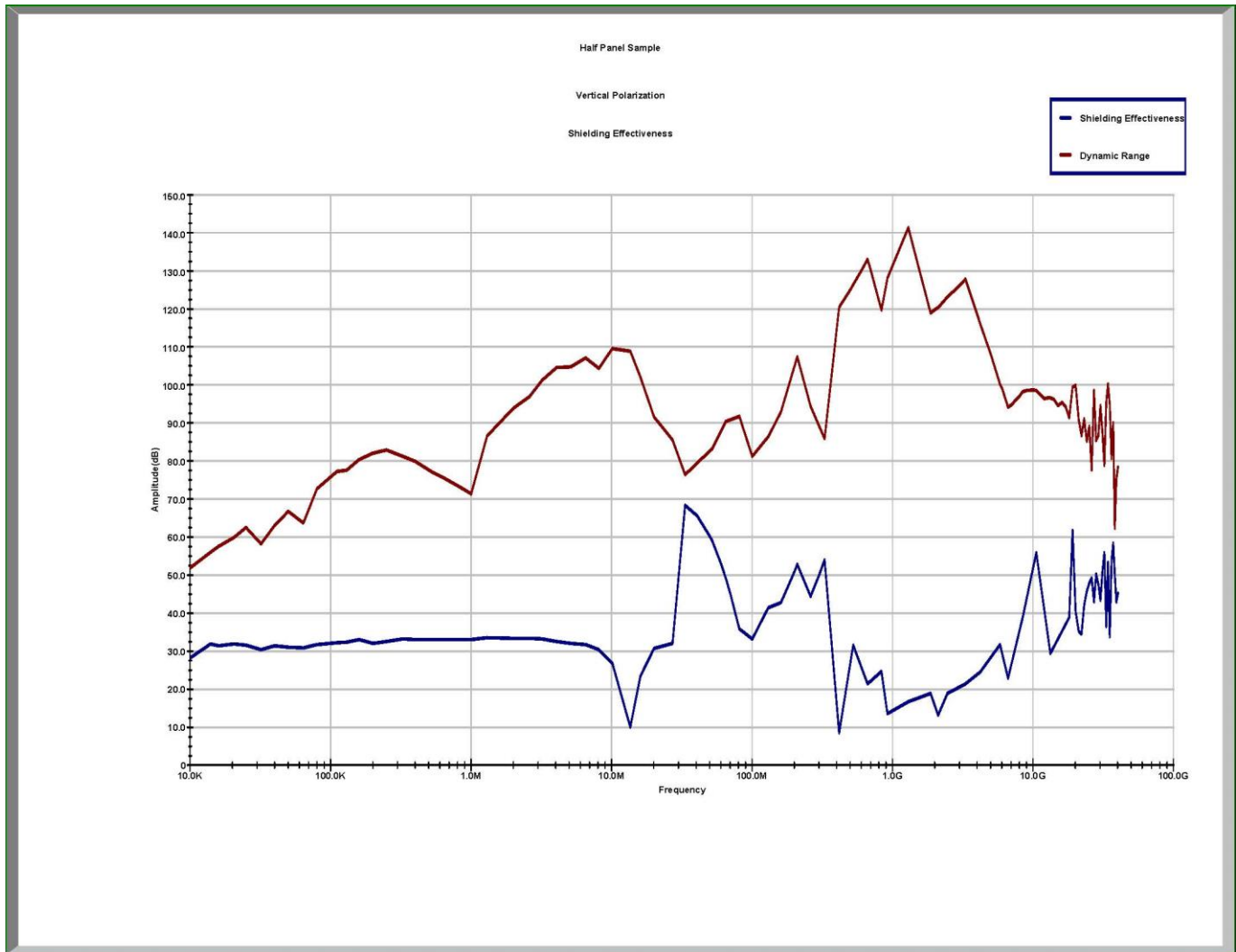
SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Half Panel-Horizontal



SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Half Panel-Vertical



SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

3.1.4 Shielding Effectiveness Test Setup Photographs



Shielding Effectiveness

Test Setup

SHIELDING EFFECTIVENESS TEST REPORT FOR PABCO GYPSUM

Section 4 – Conclusion

- a) The QuietRock® 530RF Gypsum Panel Sample, Model Number: N/A; Part Number: N/A; Serial Number: N/A, was subjected to the following EMC Tests in accordance with IEEE 2992-2006 and the specifications as shown in Table 2:

Table 2 Tests Performed & Results

Test Description	Specification	Results
IEEE 299-2006		
Shielding Effectiveness	IEEE 299-2006	Determined by Customer

- b) The QuietRock® 530RF Gypsum Panel Sample was returned to PABCO Gypsum after completion of the Shielding Effectiveness Test.