Certification CTIA Authorized Test Lab
Lab Code: 20020328- 00

ilac-MRA A2LA ACCREDITED TESTING LABORATORY Certificate #2135.01

cetecom advanced

Antenna Gain

Spherical Pattern Measurement.

RADAR RS550 Antenna REPORT

Date of Report: 2025-2-7
Date of issue: 2025-2-7
Report Copy No.: 1.0

***CETECOM* Inc.**
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686

Manufacturer	Radar
Model	RS550
CTIA Request #	N/A
Wi-Fi Alliance CID #	N/A
EUT ID / SN / IMEI	N/A
FCC ID Number	2BAMERS550
Hardware Version	6.1
Software Version	N/A
Configuration of Primary Mechanical Mode	Unit in Freespace position
Test Plan Revision	N/A
Test date	1/20/2025
Temperature / Humidity	72.7^{0}F / 47.1%

Applicant's Name:	Automaton Inc., dba RADAЯ
Address:	15150 Avenue of Science, Ste. 200 San Diego, CA 92128
Contact Person:	Craig Owens
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EUTs used for each test

EUT #	EUT ID	CATL/CHAMBER USED	Radio Modes	Band(s)	Test Types(s)	Test Conditions
1	--	CETECOM/OTA4	Passive antenna	902 – 928 MHz	Gain	FS

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1 SUMMATION TEST REPORT – Gain measurements

Sector	Azimuth	Elevation	Frequency (MHz)	PHI/Horizontal (dB)	Theta/Vertical (dB)	Maximum (dB)
0	0	180	902.75	5.7	6.2	6.2
			908.875	6.1	6.2	6.2
			915	5.9	6.3	6.3
			921.125	6.4	6.1	6.4
			927.25	6.6	6.3	6.6
2	15	165	902.75	5.3	5.9	5.9
			908.875	5.9	6.3	6.3
			915	6.0	6.0	6.0
			921.125	5.9	6.0	6.0
			927.25	6.0	6.0	6.0
13	345	165	902.75	5.6	6.0	6.0
			908.875	5.7	6.0	6.0
			915	5.9	6.2	6.2
			921.125	6.3	6.2	6.3
			927.25	6.0	6.3	6.3
14	15	150	902.75	5.3	5.9	5.9
			908.875	5.9	6.0	6.0
			915	6.0	6.4	6.4
			921.125	6.2	6.1	6.2
			927.25	6.1	6.2	6.2

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37	345	135	902.75	5.6	6.0	6.0
			908.875	5.6	6.3	6.3
			915	5.8	6.2	6.2
			921.125	6.2	6.4	6.4
			927.25	5.9	6.2	6.2

38	15	120	902.75	5.1	5.7	5.7
			908.875	5.4	5.3	5.4
			915	5.8	5.6	5.8
			921.125	5.5	5.8	5.8
			927.25	5.8	5.5	5.8

49	345	120	902.75	5.0	5.5	5.5
			908.875	5.3	6.2	6.2
			915	5.7	5.9	5.9
			921.125	5.7	5.9	5.9
			927.25	5.8	6.3	6.3

25	345	150	902.75	5.4	6.2	6.2
			908.875	6.0	6.4	6.4
			915	5.8	6.4	6.4
			921.125	6.0	6.2	6.2
			927.25	6.1	6.5	6.5

26	15	135	902.75	5.7	6.0	6.0
			908.875	5.5	6.0	6.0
			915	5.8	6.1	6.1
			921.125	5.8	5.8	5.8
			927.25	6.1	5.8	6.1

16	75	150	902.75	5.4	5.9	5.9
			908.875	6.2	6.3	6.3
			915	6.3	6.3	6.3
			921.125	6.3	5.9	6.3
			927.25	6.3	6.1	6.3

7	165	165	902.75	5.2	6.2	6.2
			908.875	5.7	6.0	6.0
			915	6.0	6.3	6.3
			921.125	6.1	6.2	6.2
			927.25	5.9	6.3	6.3

FS = Free Space
BHHL = Beside Head and Hand Left Side (Head & Hand Phantom)
BHHR = Beside Head and Hand Right Side (Head & Hand Phantom)
HL = Hand Left (Hand Phantom Only)
HR = Hand Right (Hand Phantom Only)
* Mark values exceeding pass/fail limits in RED.

Milpitas 2025-2-7

Technical responsibility for area of testing:

2/7/2025	OTA	Nicolas Stamber (Director of OTA)	Nicolas Stamber Digitally signed by: Nicolas Stamber DN: CN = Nicolas Stamber email = Nicolas.Stamber@cetecom.com C = AD O = CETECOM Inc. OU = OTA Date: 2025.02.07 11:21:36 -08'00'
Date	Section	Name	Signature

This report is reviewed by:

2/7/2025	OTA	Thy Tran (OTA Engineer)	Thy Tran Digitally signed by: Thy Tran DN: CN = Thy Tran email = thy.tran@cetecom.com C = US O = Cetecom OU = OTA Date: 2025.02.07 13:26:38 -08'00'
Date	Section	Name	Signature

2 Physical Layout and Site Description

All tests were performed in CETECOM's state-of-the-art Wireless Test Facility consisting of a fully anechoic rectangular chamber equipped with a Phi Axis Positioner (Pedestal) & two Theta Axis positioners, SAM head phantom, 2 dual polarized quad-ridge wave guide horns, and a circularly polarized communication antenna.
The second Theta antenna is only used for MIMO measurements, this is why it won't be used for the 2G, 3G and LTE SISO measurements listed in the Test plan for Wireless Device Over the Air Performance, February 2022, Revision 4.0.0. A base station simulator (Rohde & Schwarz CMU200 or CMW500) is used to establish communication with the EUT and place it in the proper mode.
A power meter with 2 separate power sensors and a RF switch is used for measuring the uplink signal from the EUT at each position simultaneously on both polarizations. Rohde & Schwarz's proprietary AMS32 Pattern Measurement Software is used for data acquisition, post-processing and generation of the required output.

2.1 Wireless Test Facility

2.2 Anechoic Rectangular Chamber

The 16x16x16 feet rectangular model 4800 chamber from The Howland Company consists of an enclosure constructed of shielded modular panel sections that are assembled with screws. The chamber is all over equipped with RF absorbers. Lighting in the chamber consists of eight fiber optic lights mounted in the chamber ceiling. The chamber is forced air ventilated to maintain it at the same ambient as the surrounding facility.
A single leaf pneumatic swing type shielded door is provided for equipment and personal access into the chamber. The Anechoic Rectangular Chamber is capable of meeting RF attenuation level of over 100dB throughout the frequency range of 600 MHz to 6 GHz, so that testing performed within the chamber does not interfere with other testing activities at the facility and vice versa. Power is supplied on separate circuits to the chamber and control area. All power filters provide a minimum of 100dB attenuation over a frequency range of 14 kHz to 18 GHz when tested per Mil Std 220A.

2.3 Phi Axis & Theta Axis Positioner

The Phi Axis Positioner (Pedestal) is capable of rotating the Equipment Under Test (EUT) in the Phi axes with full 360 degrees angular range. The Theta Axis Positioner - together with a measurement antenna - revolves around the EUT in the Theta axes from 0 degrees (top of the chamber) to 165 degrees. Under normal conditions it provides 0.1 degree positioning accuracy. In conjunction with the AMS32 Software, it can perform positioning for data acquisition in both continuous and stepped movement modes.

A DUT and a SAM head (eventually together with hand phantoms) can be placed on the pedestal to minimize the effect of the support on the measurement. The electrically driven Phi Axis Positioner does not introduce conducted or radiated electrical noise above the ambient levels existing within the chamber.

2.4 SAM Head Phantom / Hand Phantoms

A SAM head phantom meeting the requirement for CTIA Certification Program Test Plan is used for the phantom head testing. Additionally, four different types of hand phantoms are available to simulate the effect of a human hand on the EUT's RF performance. The proper hand is selected depending on the physical design and dimensions of the EUT.

2.5 Quiet Zone

A 50 cm diameter by 40 cm tall cylindrical quiet zone volume was qualified for each axis (Theta/Phi) of the positioning system during the Ripple Test. This test is done on both polarizations using reference dipole and magnetic loop antennas. The measurement was performed after completion of the chamber construction by The Howland Company to ensure compliance of the test chamber with the requirements of the CTIA test plan for Wireless Device Over the Air Performance, February 2022, Revision 4.0.0. It will be repeated on an annual cycle to ensure consistent chamber performance. The associated effects are included in the measurement uncertainty reported.

2.6 Howland Company Model QR-1 Quad Ridge Horn Antenna

The Model QR-1 is a broad bandwidth, dual polarized horn antenna designed for wireless device measurements. It can be used as the measurement antenna in all Howland Wireless Test Labs. The QR-1 is designed with a minimum overall length in order to maximize the range length in the wireless test lab. The horn antenna serves
as measurement antenna during TRP measurements and provides the downlink during TIS measurements.

2.7 Circularly Polarized Communication Antenna

The top of the Phi Axis Positioner - below the foam spacer holding the EUT - is fitted with a broadband circularly polarized communication antenna (Model FPA3-0.8-6.0R/1329) to provide a low loss link to the base station simulator in any position. This antenna is used as communication antenna during TRP measurements, handling both uplink and downlink with the base station emulator. During sensitivity measurements (TIS), the antenna is used to provide the uplink from the EUT to the base station.

2.8 Test Equipment

The test was performed using the following additional test equipment

Rohde & Schwarz CMU200 Base Station Simulator or
Rohde & Schwarz CMW500 Base Station Simulator
Rohde & Schwarz ZNB8 Vector Network Analyzer
Rohde & Schwarz OSP 130 RF Switch
Rohde & Schwarz NRP2 Power Meter
The Howland Company Motion Control Unit

2.9 AMS32 Software

Rohde & Schwarz's AMS32 proprietary pattern measurement software is used to automate the data acquisition process and provides all post-processing calculations and data output required by the CTIA. Its parameterized test configuration system and conscientiously validated design helps to insure repeatable and correct results. Safeguards prevent data tampering and ensure that the original raw measured data is always available for review.

3 Test Method

3.1 Total Radiated Power

The Total Radiated Power (TRP) test is performed according to the CTIA Test Plan for Wireless Device Over the Air Performance, December 2023, Revision 6.0.0, using the conical cut data acquisition order.
The call is established using the communication antenna and the EUT is positioned in the center of the quite zone, either on the pedestal mount (FS), phantom head with hand (BHHR/BHHL), or hand only position (HR/HL). The call parameters are adjusted on the base station simulator to bring the EUT to the required traffic channel and output power level. The EUT is then stepped between 0 and 165 degrees along the theta axis in 15-degree increments. At each theta position, the phi axis is stepped from 0-345 degrees or from 345-0 degrees, alternating to minimize test time in 15-degree increments. Data is recorded using the power meter with two independent power sensors to measure both theta and phi polarization at each position simultaneously. Upon completion of the test, the net power (Angular dependent EIRP) is calculated at each measurement point and the required values of TRP and Near Horizon Partial Radiated Power (NHPRP) are automatically calculated. This test procedure is repeated for each channel, band, and configuration as required.
GPRS and EGPRS, respectively 1xRTT and 1xEV-DO are calculated through CTIA's single point offset test.

3.2 Total Isotropic Sensitivity

The Total Isotropic Sensitivity (TIS) test is performed according to the CTIA Test Plan for Wireless Device Over the Air Performance December 2023, Revision 6.0.0., using the conical cut data acquisition order. The call is established using the horn antenna for the downlink and the communication antenna for the uplink. The EUT is positioned in the center of the quite zone, either on the pedestal mount (FS), phantom head with hand (BHHR/BHHL), or hand only position (HR/HL). The call parameters are adjusted on the base station simulator to bring the EUT to the required traffic channel and ensuring the receive signal at the position of the EUT is high enough to provide a stable connection. The EUT is then stepped between 0 and 150 degrees along the theta axis in 30-degree increments. At each theta position, the phi axis is stepped from 0-330 degrees or from 330-0 degrees, alternating to minimize the test time in 30-degree increments. At each spherical point and on each polarization the base station emulator lowers the downlink power until a certain BER/BLER limit is exceeded. The chamber path loss will then be subtracted from the base station output power to calculate the receive signal strength at the position of the EUT. These values are recorded by the AMS32 software and later used to calculate the TIS and NHPIS according to the formula specified in

Appendix E of the CTIA Test Plan. This test procedure is repeated for each channel, band and configuration as required. GPRS and EGPRS respectively 1xRTT and 1xEV-DO are calculated through CTIA's single point offset test.

4 Measurement Uncertainty OTA 4 Chamber

4.1 TRP uncertainty standard

Free Space	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.89	0.66	0.58	0.59	0.59	0.55	1.03	0.86
Expanded Uncertainty, U, with 95% Confidence Interval	1.77	1.31	1.16	1.17	1.18	1.11	2.07	1.72

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.06	0.88	0.83	0.83	0.83	0.81	1.19	1.04
Expanded Uncertainty, U, with 95% Confidence Interval	2.13	1.76	1.65	1.66	1.67	1.62	2.38	2.09

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.94	0.73	0.66	0.66	0.6	0.63	1.08	0.92
Expanded Uncertainty, U, with 95% Confidence Interval	1.88	1.45	1.31	1.33	1.33	1.27	2.16	1.83

Forearm Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.96	0.75	0.69	0.69	0.70	0.67	1.10	0.94
Expanded Uncertainty, U, with 95% Confidence Interval	1.92	1.51	1.37	1.38	1.39	1.33	2.20	1.88

Laptops over 30 cm	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	**0.93**	**0.71**	0.64	0.62	0.66	0.78	1.04	0.87
Expanded Uncertainty, U, with 95% Confidence Interval	**1.86**	**1.42**	1.27	1.25	1.32	1.55	2.07	1.73

4.2 TRP uncertainty alternate methods (worst case)

Free Space	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.93	0.71	0.64	0.65	0.65	0.62	1.07	0.91
Expanded Uncertainty, U, with 95% Confidence Interval	1.86	1.43	1.28	1.30	1.30	1.24	2.14	1.81

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.10	0.92	0.87	0.88	0.88	0.85	1.22	1.08
Expanded Uncertainty, U, with 95% Confidence Interval	2.20	1.85	1.74	1.75	1.76	1.71	2.44	2.16

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.98	0.78	0.71	0.72	0.72	0.69	1.11	0.96
Expanded Uncertainty, U, with 95% Confidence Interval	1.96	1.55	1.42	1.44	1.44	1.39	2.23	1.91

Forearm Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.00	0.80	0.74	0.75	0.75	0.72	1.13	0.98
Expanded Uncertainty, U, with 95% Confidence Interval	2.00	1.61	1.48	1.50	1.50	1.45	2.27	1.96

Laptops over 30 cm	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.97	0.76	0.69	0.68	0.72	0.82	1.07	0.91
Expanded Uncertainty, U, with 95% Confidence Interval	1.94	1.52	1.39	1.37	1.43	1.65	2.15	1.82

4.3 TIS uncertainty

Free Space	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.79	0.53	0.42	0.43	0.44	0.39	0.96	0.77
Expanded Uncertainty, U, with 95% Confidence Interval	1.59	1.05	0.85	0.87	0.88	0.78	1.91	1.54

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.99	0.79	0.73	0.73	0.73	0.71	1.13	0.97
Expanded Uncertainty, U, with 95% Confidence Interval	1.98	1.58	1.45	1.46	1.47	1.41	2.26	1.95

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.85	0.61	0.53	0.53	0.54	0.50	1.10	0.83
Expanded Uncertainty, U, with 95% Confidence Interval	1.71	1.22	1.05	1.07	1.08	1.00	2.01	1.66

Phantom Forearm Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.88	0.64	0.56	0.57	0.57	0.54	1.03	0.85
Expanded Uncertainty, U, with 95% Confidence Interval	1.75	1.29	1.13	1.14	1.15	1.08	2.05	1.70

Laptops over 30 cm	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.84	0.59	0.50	0.49	0.53	0.67	0.96	0.77
Expanded Uncertainty, U, with 95% Confidence Interval	1.69	1.18	1.00	0.97	1.06	1.34	1.92	1.54

4.4 TIS uncertainty RSS based

Free Space	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.88	0.65	0.57	0.58	0.58	0.55	1.03	0.86
Expanded Uncertainty, U, with 95% Confidence Interval	1.77	1.31	1.15	1.16	1.17	1.10	2.06	1.72

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.06	0.88	0.82	0.83	0.83	0.80	1.19	1.05
Expanded Uncertainty, U, with 95% Confidence Interval	2.12	1.76	1.64	1.65	1.66	1.61	2.38	2.09

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.94	0.72	0.65	0.66	0.66	0.63	1.08	0.91
Expanded Uncertainty, U, with 95% Confidence Interval	1.87	1.45	1.31	1.32	1.32	1.26	2.15	1.83

Phantom Forearm Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.96	0.75	0.68	0.69	0.69	0.66	1.10	0.94
Expanded Uncertainty, U, with 95% Confidence Interval	1.92	1.50	1.37	1.38	1.39	1.33	2.19	1.87

Laptops over 30 cm	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.93	0.70	0.63	0.62	0.66	0.77	1.03	0.86
Expanded Uncertainty, U, with 95% Confidence Interval	1.86	1.41	1.26	1.24	1.31	1.55	2.07	1.73

4.5 TIS uncertainty alternate methods (worst case)

Free Space	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	0.98	0.79	0.72	0.73	0.73	0.70	1.12	0.96
Expanded Uncertainty, U, with 95% Confidence Interval	1.97	1.57	1.44	1.45	1.46	1.40	2.24	1.93

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.15	0.98	0.93	0.94	0.94	0.92	1.27	1.23
Expanded Uncertainty, U, with 95% Confidence Interval	2.29	1.96	1.86	1.87	1.88	1.83	2.54	2.27

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.03	0.84	0.78	0.79	0.79	0.77	1.16	1.01
Expanded Uncertainty, U, with 95% Confidence Interval	2.07	1.69	1.57	1.58	1.59	1.53	2.32	2.02

Phantom Hand Only	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.05	0.87	0.81	0.82	0.82	0.79	1.18	1.03
Expanded Uncertainty, U, with 95% Confidence Interval	2.11	1.74	1.62	1.63	1.64	1.59	2.36	2.07

Phantom Head and Hand	LTE600 617-698MHz	LTE700 699-798 MHz	Cellular 824-894 MHz	LTE/AWS-1 Tx 1695-1780 MHz	PCS/LTE 1850-2020 MHz	LTE/WLAN 2300-2800 MHz	LTE 3300-3800MHz	WLAN 5150-5925 MHz
Standard Uncertainty, u	1.03	0.83	0.77	0.76	0.79	0.89	1.12	0.97
Expanded Uncertainty, U, with 95% Confidence Interval	2.05	1.66	1.53	1.52	1.58	1.78	2.25	1.93

5 Test Equipment List

5.1 Table 1. Test equipment used for measuring TRP & TIS

TYPE OF EQUIPMENT	MODEL NUMBER	MANUFACTURER	SN	CALIBRATION DUE DATE
Rectangular Anechoic Chamber	4800	The Howland Company	N/A	July 2025
Quad-Ridge Horn Antenna 700MHz-6GHz	QR-1	The Howland Company	1036	N/R
Circularly Polarized Communication Antenna	FPA3-0.8-6.0R/1329	Rohde & Schwarz	408994-0002	N/A
Antenna Position Controller	Motion Control Unit	The Howland Company	0157	N/A
Dual Axis Positioner	None	The Howland Company	N/A	N/A
Low loss RF Cables	N/A	Huber & Suhner	N/A	N/R
Desktop Computer	Workstation	Dell Computer	N/A	N/A
Pattern Measurement Software	AMS32	Rohde & Schwarz	901-0A101161	N/A
Base Station Emulator	CMW-500	Rohde & Schwarz	125754	March 2025
RF Switch	OSP 130	Rohde & Schwarz	100328	N/R

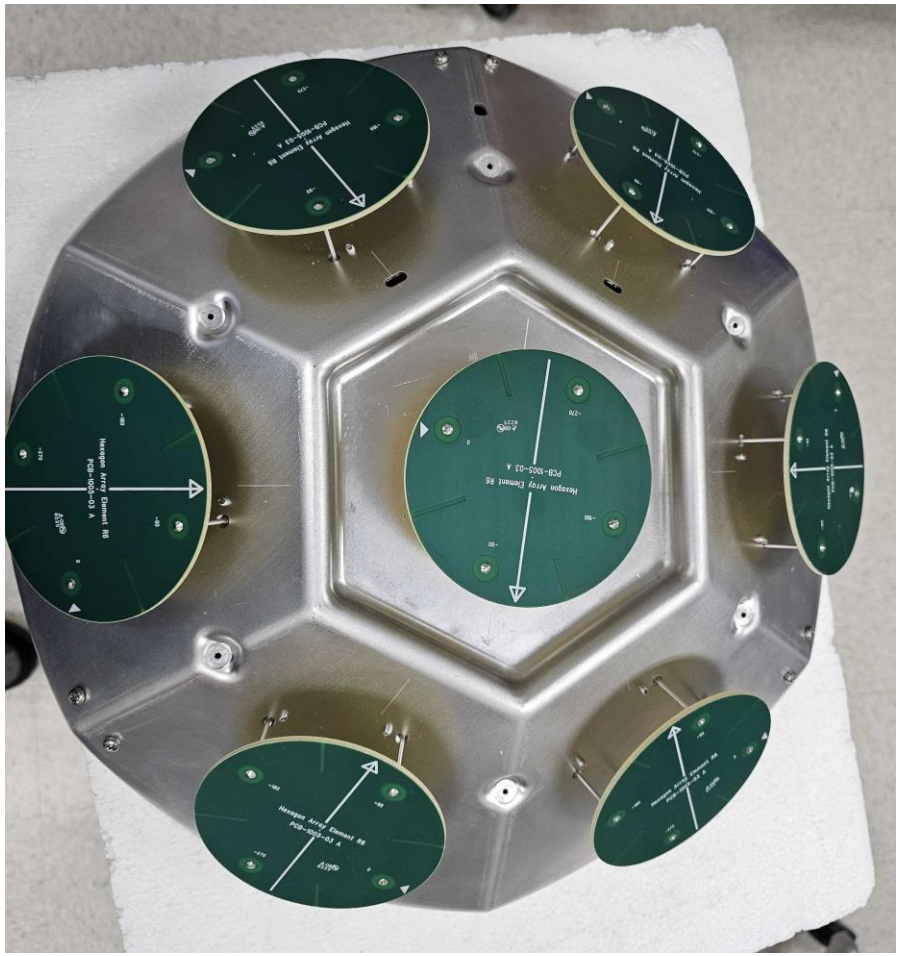
Power Meter	NRP 2	Rohde & Schwarz	102589	N/A
Power Sensor	NRP-Z11	Rohde & Schwarz	111155	July 2025
Power Sensor	NRP-Z11	Rohde & Schwarz	111156	July 2025
VNA	ZNB8	Rohde & Schwarz	-	September 2025
Hand Phantom		SPEAG	N/A	N/A
SAM Head Phantom		SPEAG	N/A	N/A

Note: **N/A** = Equipment does not need to be calibrated.
N/R = Equipment is not required to be calibrated, due to the fact that it is included in the chamber calibration.

6 Setup Photos

6.1 Test Chamber

6.2 EUT photo



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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686

7 Appendix A. (3D Plots)

7.1 EUT Reference Setup

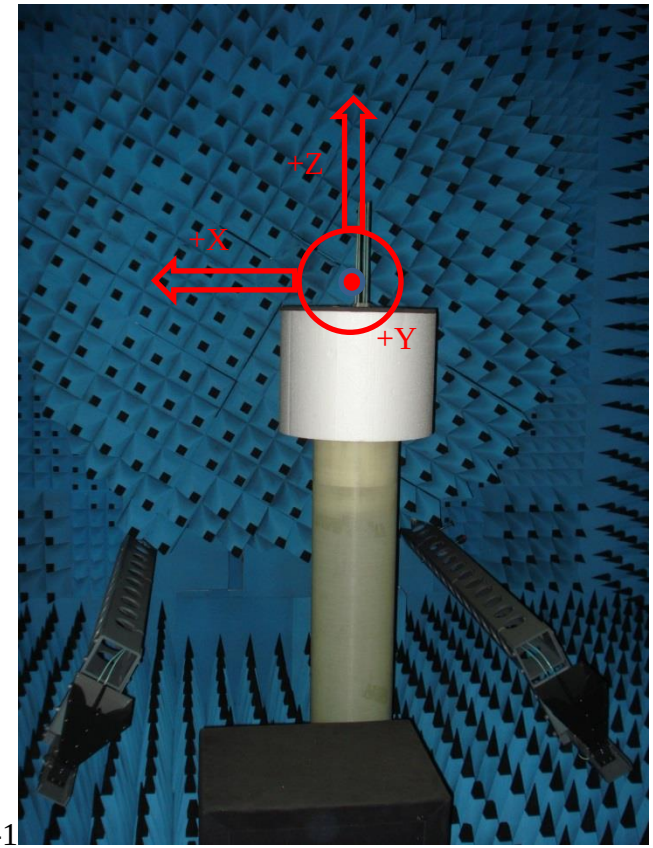

Figure A-1

8 Revision History

Version	Date	By	Status / changes
1.0	2025-02-07	NS	Official report

End of Test Report !

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