

Test Report

No. 1-2351-26-01-02_TR1-R01

August 14. 2026

Applicant	ADC Automotive Distance Control Systems GmbH
Product	SRD for RTTT and other vehicle or fixed installation
Model	ARS6-B
Tested Technology	Applications 6 GHz to 110 GHz
Test Standards	IEEE C 95.3:2021 IEC/IEEE 63195-1
FCC-ID	OAYARS6B
Verdict	PASS

The test results apply only to the equipment specified in this document.

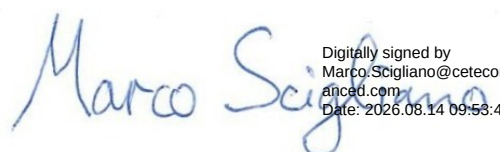
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2. Related cetecom advanced documents

Title	Description	Reference	Total Pages
1-2351-26-01-02_TR1-A101-R01	Photos of EUT and test positions	1-2351-26-01-02_TR1-A101-R01	5
1-2351-26-01-02_TR1-A201-R01	Detailed mmWAVE System calibration data	1-2351-26-01-02_TR1-A201-R01	31

3. Document history

3.1. Current release

Release No.: R01
Date of release: August 14. 2026
Applied changes: Initial release

3.2. Previous releases

Version	Applied change	Date of release
n/a		

4. Test laboratory

4.1. Contact information

cetecom advanced GmbH
Untertuerkheimer Str. 6-10
66117 Saarbruecken
Germany

4.2. Involved test locations

Saarbrücken Lab

Untertürkheimer Strasse 6 – 10
66117 Saarbrücken
Germany

4.3. Subcontracted laboratories

None.

4.4. Laboratory listings and recognitions

	Saarbrücken	Essen
FCC	DE0002	DE0003
ISED	DE0001 3462C	DE0001 3462D

5. Client information

5.1. Applicant

Name: ADC Automotive Distance Control Systems GmbH
Address: GERMANY, 88131 Lindau, Peter-Dornier-Str. 10
Contact Person: Thomas Reitmayer
Contact Person's Email: Thomas.Reitmayer@aumovio.com

5.2. Manufacturer

Name: ADC Automotive Distance Control Systems GmbH
Address: GERMANY, 88131 Lindau, Peter-Dornier-Str. 10
Contact Person: Thomas Reitmayer
Contact Person's Email: Thomas.Reitmayer@aumovio.com

6. Test sample information

The data about the test samples is given/supplied by the customer and not under control by cetecom advanced GmbH.

6.1. General Information

6.1.1. General Data of Main EUT as Declared by Applicant

Kind of test item	SRD for RTTT and other vehicle or fixed installation
Model name	ARS6-B
S/N serial number	DUT 24 AAA27437000000022550500024
FCC-ID	OAYARS6B
ISED-Number	4135A-ARS6B
Hardware Version Identification Number (HVIN)	ARS6-B
Product Marketing Name (PMN)	ARS6-B
Firmware Version Identification Number (FVIN)	N/A
Host Marketing Name (HMN)	N/A
Hardware status	B1.0
Software status	195.230.107
Frequency	76-77 GHz and 77-81 GHz
Antenna	Integrated antenna
Power option	DC supply 12 V by external source
Accessories	N/A
Test sample status	Identical prototype
Exposure category	General public / uncontrolled environment

7. Application Details

7.1. Scheduling

Date of sample reception: July 08.2026

Deate(s) of test: July 08. 2026 to July 26. 2026

7.2. Climatic data (Lab/Test environment)

Ambient temperature: 20 - 24 °C

Relative humidity content: 40 - 50 %

Air pressure: not relevant for this kind of testing

Power supply: 230 V / 50 Hz

7.3. Options and interpretations

None

8. Measurement details

8.1. Test methodology

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS).

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number D-PL-12047-01-00.

Test method, standard, rule	Description
IEEE C 95.3:2021	IEEE Recommended Practice For Measurements And Computations Of Electric, Magnetic, And Electromagnetic Fields With Respect To Human Exposure To Such Fields, 0 Hz To 300 GHz
IEC/IEEE 63195-1	Assessment of power density of human exposure to radio frequency fields from wireless devices in close proximity to the head and body (frequency range of 6 GHz to 300 GHz) – Part 1: Measurement procedure

9. Additional documents

FCC KDB:	Description
KDB 865664D02v01	RF Exposure Compliance Reporting Documentation Considerations
KDB 447498D01v06	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

10. Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

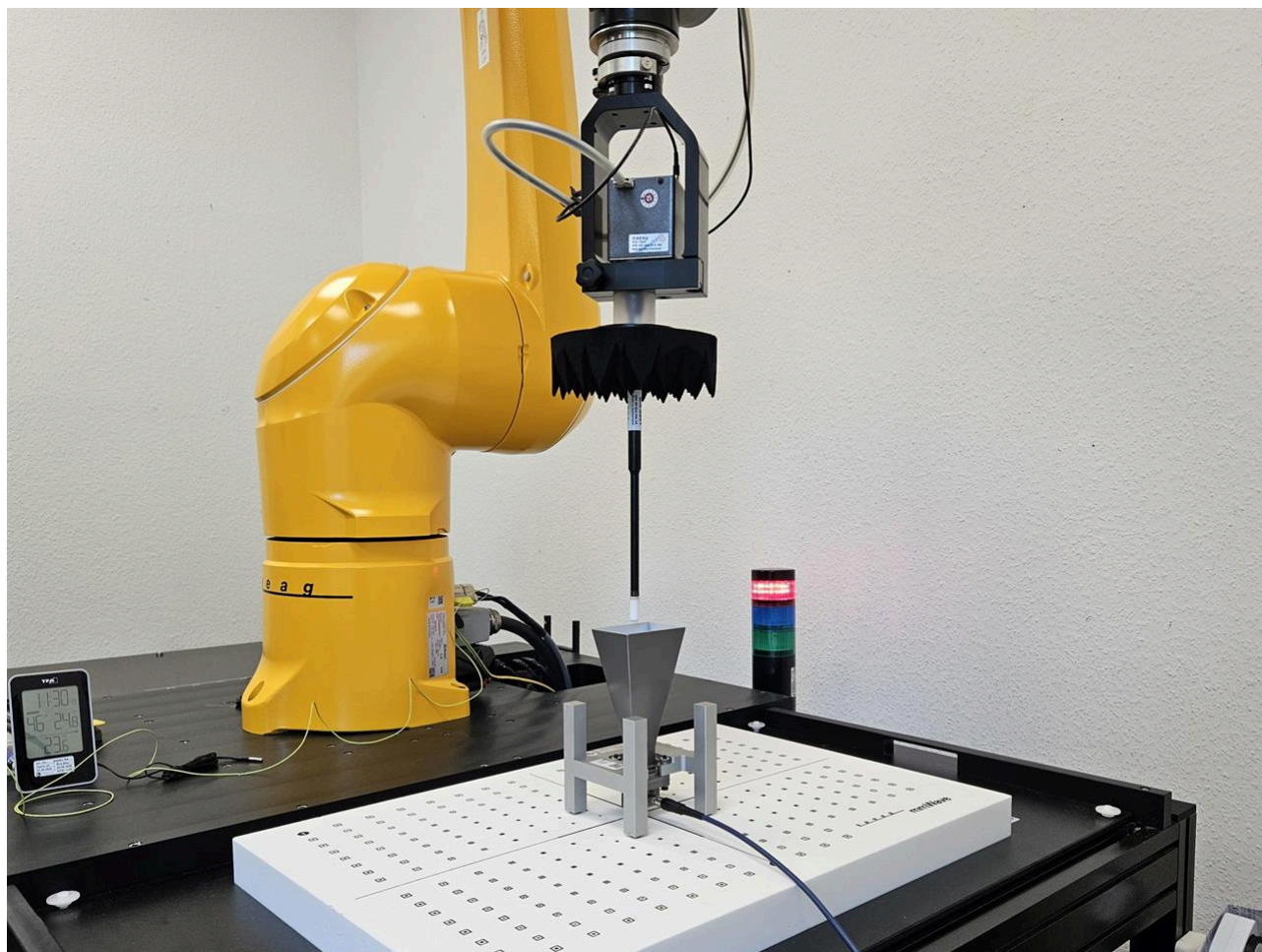
Each block diagram listed can contain several test setup configurations. All devices belonging to a test setup are identified with the same letter syntax. For example: Column Setup and all devices with an A.

Note: Monitoring

Abbreviation	Explanation
cal	Calibration
calchk	Calibration and Validation
car	Calibration Restricted Use
chk	Validation
chr	Validation Restricted Use
cpu	Validation prior to Use
cnn	No Monitoring

10.1. DASY 8 mmWave measurements

DASY 8 - mmWave System



Equipment table:

Config	Equipment	Manufacturer	Serial no.	INV. no.	Monitoring	Last Cal./Val.	Next Cal./Val.
A	Robot Controller - CS9	Schmid & Partner Engineering AG / Zürich	2072100002C	40882	cnn	n/a	n/a
A	System Controller DASY 8 Machine- No.: F/21/ 0026008/A/001	Schmid & Partner Engineering AG / Zürich	4efddb8 (Software)	40896	cnn	n/a	n/a
A	Temperatur Sensor - Kat. Nr. 30.5048.01	TFA Dostmann GmbH & Co. KG / Wertheim-Reicholzheim	n/a	40913	cnn	n/a	n/a
A	Control PC WS 5508 / WNC 100836 FCL SA-1701B	Hewlett Packard	4CE1110WS5	40914	cnn	n/a	n/a
A	Robot TX2 90 XL spe F/21/ 0026008/A/001	Schmid & Partner Engineering AG / Zürich	4efddb8 (Software)	40957	cnn	n/a	n/a
A	System Verification Antenna X-Band - H10GV2	Schmid & Partner Engineering AG / Zürich	1079	41036	cal	Nov 05. 2025	Nov 05. 2026

Config	Equipment	Manufacturer	Serial no.	INV. no.	Monitoring	Last Cal./Val.	Next Cal./Val.
A	DASY8 Module mmWave	Schmid & Partner Engineering AG / Zürich	n/a	41037	cnn	n/a	n/a
A	Pseudo-vector probe EUmWV4	Schmid & Partner Engineering AG / Zürich	9551	41038	cal	Jul 08. 2025	Jul 08. 2026
A	System Verification Device V-Band H60GV2	Schmid & Partner Engineering AG / Zürich	n/a	41039	cal	Jul 04. 2025	Jul 04. 2026
A	System Verification Device W-Band H90GV2	Schmid & Partner Engineering AG / Zürich	n/a	41040	cal	Jul 04. 2025	Jul 04. 2026

11. Exposure limits

Maximum permissible exposure limits according CFR 47 - Part 1, §1.1310

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
1500 - 100000 MHz	10 W/m²	50 W/m ²

Table: Maximum permissible exposure limits (1500 kHz to 100 GHz)

The limit applied in this test report is shown in bold letters

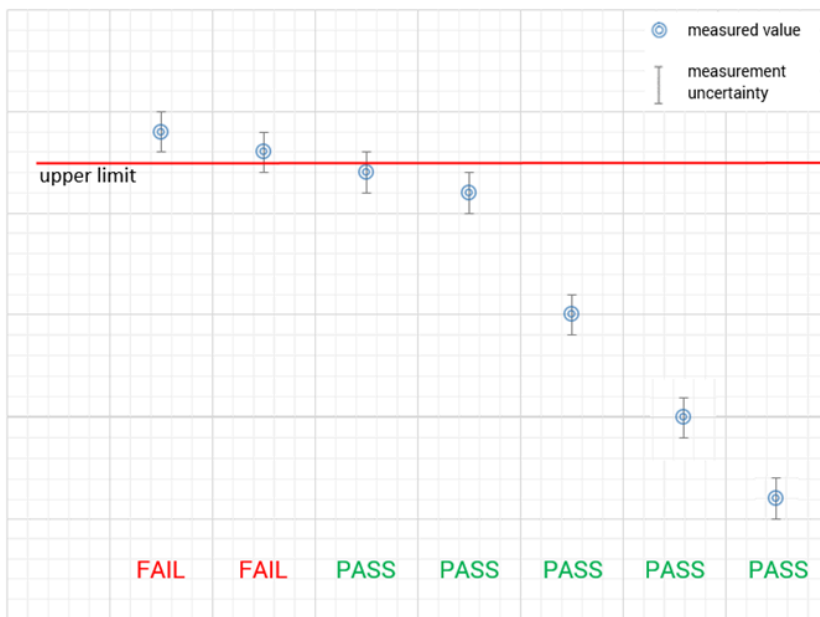
Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

12. Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, see chapter 9, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 20% that the decision might be wrong.

measured value, measurement uncertainty, verdict



13. Summary of measurement results

☒ No deviations from the technical specifications ascertained

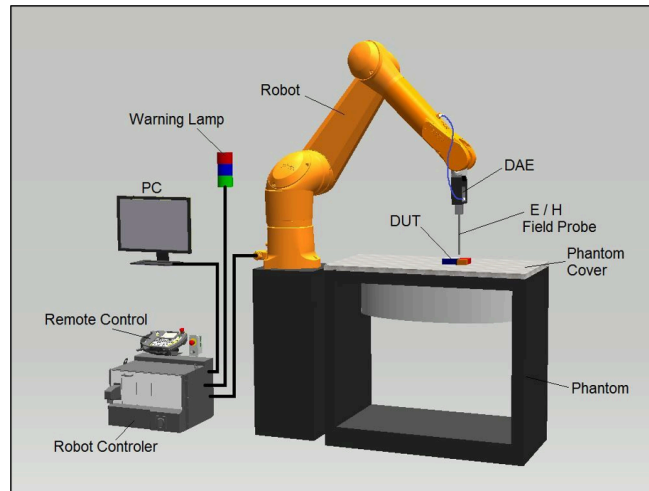
☐ Deviations from the technical specifications ascertained

	Maximum IPD value (W/m ²)	
	reported	limit
76.5 GHz mode 1 36mm distance for 4cm ²	9.68	10.0
78.7 GHz mode 18(c0) 2mm distance for 4cm ²	6.78	10.0

14. Test Set-Up

14.1. Measurement System

14.1.1. Measurement with mmWave probe / DASY 8 System



- The DASY system for performing compliance tests consists of the following items:
- A standard high precision 6-axis robot (Stäubli RX/TX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A pseudo probe, which measures the field magnitude and derives its polarization ellipse to reduce field distortions by the substrate.
- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY measurement server.
- The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows.
- DASY software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The mmWave Phantom
- The device holder
- System check dipoles allowing to validate the proper functioning of the system.

Workflow for Power Density Compliance Testing

Compliance testing is an accurate method ensuring no overestimation of the exposure. The workflow implemented in the DASY 8 Module consists of the following steps:

1. Project generation
2. teaching of the DUT position
3. parallel and perpendicular scan with automated grid optimization
4. algorithmic reconstruction

Additionally the system performance is routinely verified using the standard sources as DUTs.

Compatibility with IEC/IEEE 63195-1

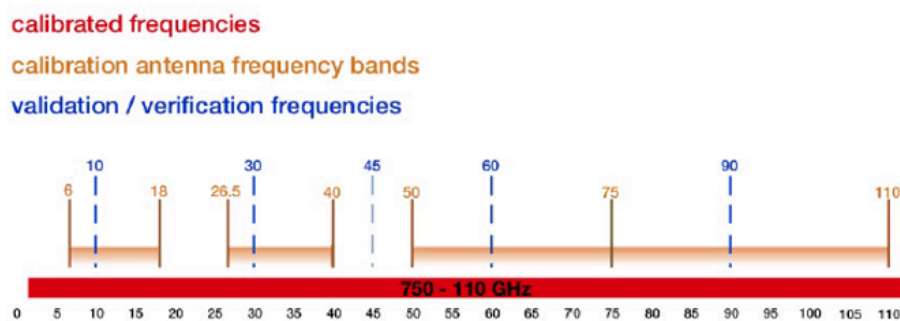
DASY8 mmWave Module is fully compliant with IEC PAS 63184:2021 and evaluates the reference values and basic restrictions according to All international and national standards for incident PD above 6 GHz, e.g., IEC/IEEE 63195-1, and Base station standards, e.g., IEC 62232.

Probe description

The EU mmWV4 probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse. This probe concept is advantageous because the sensor angle errors or distortions of the field by the substrate can be largely nullified by calibration. This is particularly important as field distortions by the substrate are dependent on the wavelength at these very high frequencies.

The probe contains two small 0.8mm dipole sensors mechanically protected by high-density foam, printed on both sides of a 0.9mm wide and 0.12mm thick glass substrate. The body of the probe is specifically constructed to minimize distortion by the scattered fields.

The sensitivity of the probe sensors, which is dependent on frequency, is calibrated during exposure to E-fields of known amplitude. The frequency response of the sensor is smooth over the entire frequency and can be approximated with a lumped element model of five elements. During a pre-calibration step using the same setup as for calibration, we determine the values of the lumped elements. The evaluation method is based on a least-squares optimization and it increases the precision of the calibration. It also provides reliable sensitivity parameters over the entire calibration frequency range, covering the gaps between the calibration bands. The stated uncertainty is therefore also valid for the entire frequency range from 750MHz to 110 GHz.



Calibration bands and frequencies from 6-110 GHz, as shown in DASY 8 Module mmWave manual

The probe consists of two sensors with different angles (γ_1 and γ_2) arranged in the same plane in the probe axis. Three measurements of the two sensors are taken for different probe rotational angles to derive the amplitude and polarization information.

The probe design allows measurements at distances as small as 2 mm from the sensors to the surface of the DUT. The typical sensor to the probe tip distance is 1.5 mm. The exact distance is calibrated.

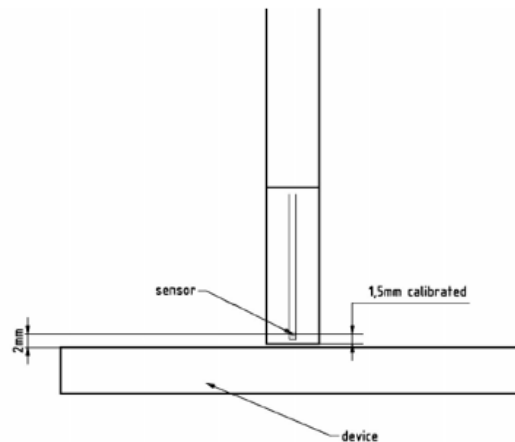
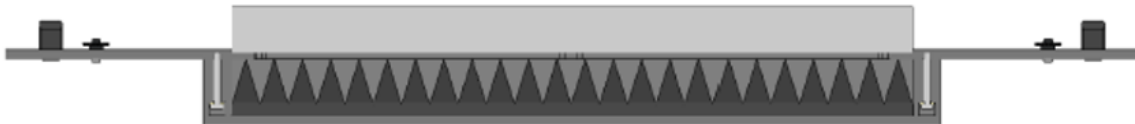


Illustration of the distance sensor to the DUT surface from DASY8 Module mmWave manual

Phantom Description

The mmWave Phantom approximates free-space conditions, allowing for the evaluation of the antenna side of the device and the front (screen) side or any opposite-radiating side of wireless devices operating above 10 GHz without distorting the RF field. It consists of a 40 mm thick Rohacell plate used as a test bed, which has a loss tangent ($\tan \delta$) ≤ 0.05 and a relative permittivity (ϵ_r) ≤ 1.2 . High-performance RF absorbers are placed below the foam.



Cross section of the mmWave phantom, as shown in the DASY8 module mmWave manual

The reflectivity performance of the mmWave phantom has been evaluated in comparison to the predecessor 5G Phantom and a total reflective backside of the foam.

The reflectivity of both phantoms was measured with a method similar to the NRL arch approach, except that the phantoms under study were placed in the near-fields of the transmitting antenna and the receiving antenna.

The reflectivity measurement was performed at 10, 30, 60, and 90 GHz. At each frequency, a corresponding pair of pyramidal horns was used as the transmitting antenna and the receiving antenna. The continuous-wave (CW) signal fed into the transmitting antenna was generated by a signal generator at 10 GHz and a Gunn oscillator at 30, 60, and 90 GHz. The power captured by the receiving antenna was measured by a thermal power sensor. The transmitting antenna and the receiving antenna were placed symmetrically to the normal of the metal plate. The antennas were further oriented to provide perpendicular polarization and to roughly meet the specular-reflection law (since either the transmitting antenna or the receiving antenna may be moved slightly around their initial positions to capture the maximum reflected power and/or the casing of the antennas and the power sensor makes it impossible to move the antennas close enough for very small incident angles). Three incident angles, varying from $< 10^\circ$ to approx. 45° , were studied at each frequency. The reflectivity of the phantom is quantified by the difference between the reflected power exclusively from the metal plate and the reflected power from the phantom placed on the same metal plate.

The results demonstrate that the reflectivity of the mmWave phantom is reduced by more than 20 dB between 10 and 90 GHz compared to the predecessor 5G phantom and better than 20 dB with respect to a phantom with total reflections (i.e., the foam with a large metal plate on its backside).

The mmWave phantom meets all the requirements for accurate exposure evaluations of any device operating at >10 GHz. The 5G phantom should only be used if the device radiates away from the phantom.

mmWave Device Holder (mmWDH)

mmWave Device Holder (mmWDH) is designed to ease positioning of the DUT of various sizes when measuring PD along an edge. It is made of low loss Rohacell material and meets the standard requirements. It is provided with an additional spacer to accommodate devices with smaller form factors.

Figure 3.13.1 shows a DASY8 system setup for PD compliance testing at mmWave frequencies (e.g., for testing a laptop positioned within the mmWDH). The DUT is held with a mmWDH placed on top of the mmWave phantom.

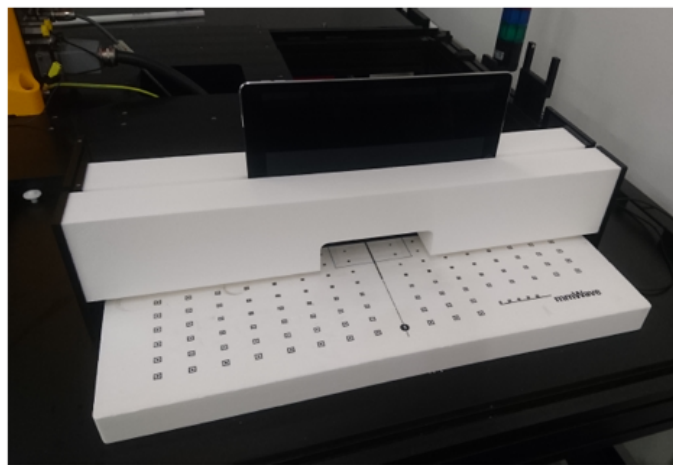


Figure 3.13.1: Test Setup with the mmWave Device Holder

Test Setup with the mmWave Device Holder (Side/Edge position of the DUT)

14.1.2. Scanning procedure

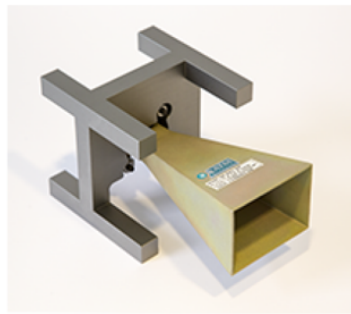
The DASY installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

The „reference“ and „drift“ measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max. +/- 5 %.

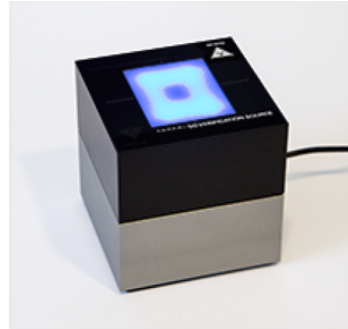
The highest integrated PD value is the main concern in compliance test applications. These values can mostly be found at the inner surface of the phantom and cannot be measured directly due to the sensor offset in the probe. To extrapolate the surface values, the measurement distances to the surface must be known accurately.

14.1.3. mmWave Verification and Validation sources

The horn antenna-based verification sources are used for regular system verification. They are available at five different frequencies: 10 GHz, 30 GHz, 45 GHz, 60 GHz, and 90 GHz (see Figure 3.14.1. The 10 GHz source has a SMA connector and can be connected to any supply generator. The other sources comprise a Gunn oscillator.



(a) 10 GHz Source



(b) 30/45/60 and 90 GHz Source

Verification sources at mmWave frequencies

The validation sources are used for in-depth performance evaluations and software validation according to the IEC/IEEE 63195-1. Two types of sources are available:

- Cavity-backed array of dipoles arranged in an offset lattice according to the modes generated in the resonant cavity. The dipoles are printed onto one face of a low-loss dielectric substrate and excited by non-resonant rectangular slots located on the opposite face of the substrate.
- Pyramidal horn loaded with an array of rectangular slot antennas on the aperture. Each source type is available for 10 GHz, 30 GHz, 60 GHz, and 90 GHz.

Grid settings:

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	0.125 $\left(\frac{\lambda}{8}\right)$	60/60	18×18
30	0.25 $\left(\frac{\lambda}{4}\right)$	60/60	26×26
45	0.25 $\left(\frac{\lambda}{4}\right)$	42/42	28×28
60	0.25 $\left(\frac{\lambda}{4}\right)$	32.5/32.5	28×28
90	0.25 $\left(\frac{\lambda}{4}\right)$	30/30	38×38

Table 5.1.1: Recommended settings for the measurement of verification sources

Recommended settings for the measurement of verification sources advised in DASY 8 Module mmWave manual

The measured $\text{psPD}_{\text{n+}}$, $\text{psPD}_{\text{tot+}}$, and $\text{psPD}_{\text{mod+}}$ values over 1 cm² or 4 cm² for the desired averaging geometry are compared to the calibrated value and expected to be below 0.66 dB.

15. Uncertainties

15.1. Measurement uncertainties for mmWave tests

DASY8 Uncertainty Budget for PD (avg $\geq 1\text{ cm}^2$)							
Evaluation Distances to the Antennas $\geq \lambda/25$							
in Compliance with IEC/IEEE 63195							
Error Description		Unc. Value ($\pm\text{dB}$)	Probab. Distri.	Div.	(c_i)	Std. Unc. ($\pm\text{dB}$)	(v_i) v_{eff}
Uncertainty terms dependent on the measurement system							
CAL	Calibration	0.49	N	1	1	0.49	∞
COR	Probe correction	0	R	$\sqrt{3}$	1	0	∞
FRS	Frequency response ($\text{BW} \leq 1\text{ GHz}$)	0.20	R	$\sqrt{3}$	1	0.12	∞
SCC	Sensor cross coupling	0	R	$\sqrt{3}$	1	0	∞
ISO	Isotropy	0.50	R	$\sqrt{3}$	1	0.29	∞
LIN	Linearity	0.20	R	$\sqrt{3}$	1	0.12	∞
PSC	Probe scattering	0	R	$\sqrt{3}$	1	0	∞
PPO	Probe positioning offset	0.30	R	$\sqrt{3}$	1	0.17	∞
PPR	Probe positioning repeatability	0.04	R	$\sqrt{3}$	1	0.02	∞
SMO	Sensor mechanical offset	0	R	$\sqrt{3}$	1	0	∞
PSR	Probe spatial resolution	0	R	$\sqrt{3}$	1	0	∞
FLD	Field impedance dependence	0	R	$\sqrt{3}$	1	0	∞
MED	Measurement drift	0.05	R	$\sqrt{3}$	1	0.03	∞
APN	Amplitude and phase noise	0.04	R	$\sqrt{3}$	1	0.02	∞
TR	Measurement area truncation	0	R	$\sqrt{3}$	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	$\sqrt{3}$	1	0	∞
REC	Field reconstruction	0.60	R	$\sqrt{3}$	1	0.35	∞
SNR	Signal-to-Noise Ratio	0	R	$\sqrt{3}$	1	0	∞
TRA	FTE/MEO	0	R	$\sqrt{3}$	1	0 (0)	∞
SCA	Power density scaling	–	R	$\sqrt{3}$	1	–	∞
SAV	Spatial averaging	0.10	R	$\sqrt{3}$	1	0.06	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	$\sqrt{3}$	1	0	∞
MOD	Modulation response	0.40	R	$\sqrt{3}$	1	0.23	∞
IT	Integration time	0	R	$\sqrt{3}$	1	0	∞
RT	Response time	0	R	$\sqrt{3}$	1	0	∞
DH	Device holder influence	0.10	R	$\sqrt{3}$	1	0.06	∞
DA	DUT alignment	0	R	$\sqrt{3}$	1	0	∞
AC	RF ambient conditions	0.04	R	$\sqrt{3}$	1	0.02	∞
TEM	Laboratory Temperature	0.05	R	$\sqrt{3}$	1	0.03	∞
REF	Laboratory Reflections	0.04	R	$\sqrt{3}$	1	0.02	∞
MSI	Immunity / secondary reception	0	R	$\sqrt{3}$	1	0	∞
DRI	Drift of the DUT	–	R	$\sqrt{3}$	1	–	∞
Combined Std Uncertainty (w/ FTE/MEO)						0.75	∞
Expanded Std Uncertainty (w/ FTE/MEO)						1.51	

Table: Uncertainty budget for DASY8 for Power Density (PD) complies with IEC/IEEE 63195. The budget is valid for evaluation distances $\geq \lambda/25$. The uncertainty budget shown in parentheses is valid for the assessment using the Options FTE/MEO for the evaluation anywhere. For specific tests and configurations, the uncertainty could be considerably smaller.

DASY8 Uncertainty Budget for relative PD (avg $\geq 1\text{ cm}^2$)							
Evaluation Distances to the Antennas $\geq \lambda/25$							
in Compliance with IEC/IEEE 63195							
Error Description		Unc. Value ($\pm\text{dB}$)	Probab. Distri.	Div.	(c_i)	Std. Unc. ($\pm\text{dB}$)	(v_i) v_{eff}
Uncertainty terms dependent on the measurement system							
CAL	Calibration	0.49	N	1	0	0.0	∞
COR	Probe correction	0	R	$\sqrt{3}$	1	0	∞
FRS	Frequency response (BW $\leq 1\text{ GHz}$)	0.20	R	$\sqrt{3}$	0	0.0	∞
SCC	Sensor cross coupling	0	R	$\sqrt{3}$	1	0	∞
ISO	Isotropy	0.50	R	$\sqrt{3}$	0.5	0.14	∞
LIN	Linearity	0.20	R	$\sqrt{3}$	0.5	0.06	∞
PSC	Probe scattering	0	R	$\sqrt{3}$	1	0	∞
PPO	Probe positioning offset	0.30	R	$\sqrt{3}$	0	0.0	∞
PPR	Probe positioning repeatability	0.04	R	$\sqrt{3}$	1	0.02	∞
SMO	Sensor mechanical offset	0	R	$\sqrt{3}$	1	0	∞
PSR	Probe spatial resolution	0	R	$\sqrt{3}$	1	0	∞
FLD	Field impedance dependence	0	R	$\sqrt{3}$	1	0	∞
MED	Measurement drift	0.05	R	$\sqrt{3}$	1	0.03	∞
APN	Amplitude and phase noise	0.04	R	$\sqrt{3}$	1	0.02	∞
TR	Measurement area truncation	0	R	$\sqrt{3}$	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	$\sqrt{3}$	1	0	∞
REC	Field reconstruction	0.6	R	$\sqrt{3}$	0.5	0.17	∞
SNR	Signal-to-Noise Ratio	0	R	$\sqrt{3}$	1	0	∞
TRA	FTE/MEO	0 (0)	R	$\sqrt{3}$	0.5	0	∞
SCA	Power density scaling	–	R	$\sqrt{3}$	1	–	∞
SAV	Spatial averaging	0.10	R	$\sqrt{3}$	1	0.06	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	$\sqrt{3}$	1	0	∞
MOD	Modulation response	0.40	R	$\sqrt{3}$	1	0.23	∞
IT	Integration time	0	R	$\sqrt{3}$	1	0	∞
RT	Response time	0	R	$\sqrt{3}$	1	0	∞
DH	Device holder influence	0.10	R	$\sqrt{3}$	0	0.0	∞
DA	DUT alignment	0	R	$\sqrt{3}$	1	0	∞
AC	RF ambient conditions	0.04	R	$\sqrt{3}$	1	0.02	∞
TEM	Laboratory Temperature	0.05	R	$\sqrt{3}$	1	0.03	∞
REF	Laboratory Reflections	0.04	R	$\sqrt{3}$	1	0.02	∞
MSI	Immunity / secondary reception	0	R	$\sqrt{3}$	1	0	∞
DRI	Drift of the DUT	–	R	$\sqrt{3}$	1	–	∞
Combined Std Uncertainty (w/ FTE/MEO)						0.34	∞
Expanded Std Uncertainty (w/ FTE/MEO)						0.68	

Table: Uncertainty budget for DASY8 for the relative Power Density (PD) is in compliance with IEC/IEEE 63195. The budget is valid for evaluating the same device at different power levels and modulations (evaluation distances $\geq \lambda/25$). The uncertainty budget shown in parentheses is valid for the assessment using the Options FTE/MEO for the evaluation anywhere. For specific tests and configurations, the uncertainty could be considerably smaller.

15.2. Measurement uncertainty evaluation for mmWave system checks

DASY8 mmWave Uncertainty Budget System Performance Check using mmWave Verification Sources							
Error Description		Unc. Value (±dB)	Probab. Distri.	Div.	(c_k)	Std. Unc. (±dB)	(v_k) v_{eff}
Uncertainty terms dependent on the measurement system							
CAL	Calibration Repeatability	0.21	N	1	1	0.21	∞
COR	Probe correction	0	R	$\sqrt{3}$	1	0	∞
FRS	Frequency response (BW ≤1 GHz)	0.20	R	$\sqrt{3}$	0	0	∞
SCC	Sensor cross coupling	0	R	$\sqrt{3}$	1	0	∞
ISO	Isotropy	0.30	R	$\sqrt{3}$	1	0.17	∞
LIN	Linearity	0.20	R	$\sqrt{3}$	1	0.12	∞
PSC	Probe scattering	0	R	$\sqrt{3}$	1	0	∞
PPO	Probe positioning offset	0.11	R	$\sqrt{3}$	1	0.06	∞
PPR	Probe positioning repeatability	0.04	R	$\sqrt{3}$	1	0.02	∞
SMO	Sensor mechanical offset	0	R	$\sqrt{3}$	1	0	∞
PSR	Probe spatial resolution	0	R	$\sqrt{3}$	1	0	∞
FLD	Field impedance dependence	0	R	$\sqrt{3}$	1	0	∞
MED	Measurement drift drift	0.05	R	$\sqrt{3}$	1	0.03	∞
APN	Amplitude and phase noise	0.04	R	$\sqrt{3}$	0	0	∞
TR	Measurement area truncation	0	R	$\sqrt{3}$	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	$\sqrt{3}$	1	0	∞
REC	Field reconstruction	0.60	R	$\sqrt{3}$	0.3	0.10	∞
SNR	Signal-to-Noise Ratio	0.0	R	$\sqrt{3}$	1	0.0	∞
TRA	Forward transformation	0	R	$\sqrt{3}$	1	0	∞
SCA	Power density scaling	–	R	$\sqrt{3}$	1	0	∞
SAV	Spatial averaging	0.10	R	$\sqrt{3}$	0	0	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	$\sqrt{3}$	1	0	∞
MOD	Modulation response	0.40	R	$\sqrt{3}$	0	0	∞
IT	Integration time	0	R	$\sqrt{3}$	1	0	∞
RT	Response time	0	R	$\sqrt{3}$	1	0	∞
DH	Device holder influence	0.10	R	$\sqrt{3}$	0	0	∞
DA	DUT alignment	0	R	$\sqrt{3}$	1	0	∞
AC	RF ambient conditions	0.04	R	$\sqrt{3}$	1	0.02	∞
TEM	Laboratory temperature	0.05	R	$\sqrt{3}$	1	0.03	∞
AR	Ambient Reflections	0.04	R	$\sqrt{3}$	1	0.02	∞
MSI	Immunity / secondary reception	0	R	$\sqrt{3}$	0	0	∞
DRI	Drift of the DUT	0.10	R	$\sqrt{3}$	1	0.06	∞
Combined Standard Uncertainty						0.33	∞
Expanded Standard Uncertainty (95%)						0.66	

Table: Uncertainty budget for system verification using mmWave sources for the evaluation plane at 10mm from the horn antenna

NOTE:

System is fully compliant to IEC/IEEE 63195

DASY8 mmWave Uncertainty Budget Relative System Performance Check using mmWave Verification Sources							
Error Description		Unc. Value (±dB)	Probab. Distri.	Div.	(c_1)	Std. Unc. (±dB)	(v_1) v_{eff}
Uncertainty terms dependent on the measurement system							
CAL	Calibration Repeatability	0.21	N	1	0	0	∞
COR	Probe correction	0	R	$\sqrt{3}$	1	0	∞
FRS	Frequency response (BW ≤1 GHz)	0.20	R	$\sqrt{3}$	0	0	∞
SCC	Sensor cross coupling	0	R	$\sqrt{3}$	1	0	∞
ISO	Isotropy	0.30	R	$\sqrt{3}$	1	0.17	∞
LIN	Linearity	0.20	R	$\sqrt{3}$	0	0	∞
PSC	Probe scattering	0	R	$\sqrt{3}$	1	0	∞
PPO	Probe positioning offset	0.11	R	$\sqrt{3}$	1	0.06	∞
PPR	Probe positioning repeatability	0.04	R	$\sqrt{3}$	1	0.02	∞
SMO	Sensor mechanical offset	0	R	$\sqrt{3}$	1	0	∞
PSR	Probe spatial resolution	0	R	$\sqrt{3}$	1	0	∞
FLD	Field impedance dependence	0	R	$\sqrt{3}$	1	0	∞
MED	Measurement drift	0.05	R	$\sqrt{3}$	1	0.03	∞
APN	Amplitude and phase noise	0.04	R	$\sqrt{3}$	0	0	∞
TR	Measurement area truncation	0	R	$\sqrt{3}$	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	$\sqrt{3}$	1	0	∞
REC	Field reconstruction	0.60	R	$\sqrt{3}$	0.15	0.05	∞
SNR	Signal-to-Noise Ratio	0.0	R	$\sqrt{3}$	1	0.0	∞
TRA	Forward transformation	0	R	$\sqrt{3}$	1	0	∞
SCA	Power density scaling	–	R	$\sqrt{3}$	1	0	∞
SAV	Spatial averaging	0.10	R	$\sqrt{3}$	0	0	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	$\sqrt{3}$	1	0	∞
MOD	Modulation response	0.40	R	$\sqrt{3}$	0	0	∞
IT	Integration time	0	R	$\sqrt{3}$	1	0	∞
RT	Response time	0	R	$\sqrt{3}$	1	0	∞
DH	Device holder influence	0.10	R	$\sqrt{3}$	0	0	∞
DA	DUT alignment	0	R	$\sqrt{3}$	1	0	∞
AC	RF ambient conditions	0.04	R	$\sqrt{3}$	1	0.02	∞
TEM	Laboratory temperature	0.05	R	$\sqrt{3}$	1	0.03	∞
AR	Ambient Reflections	0.04	R	$\sqrt{3}$	1	0.02	∞
MSI	Immunity / secondary reception	0	R	$\sqrt{3}$	0	0	∞
DRI	Drift of the DUT	0.10	R	$\sqrt{3}$	1	0.06	∞
Combined Standard Uncertainty						0.21	∞
Expanded Standard Uncertainty (95%)						0.42	

Table: Uncertainty budget for relative system verification using mmWave sources for the evaluation plane at 10 mm from the horn antenna

16. System check

A sytem check was performed prior to measuring the DUT. The results were within the combined confidence interval of 0.33 dB (k=1) stated for the DASY8 module mmWave.

System performance check											
System validation Kit	Probe	DAE S/N	Distance mm	Frequency GHz	Target 1 cm ² W/m ²	Target 4 cm ² W/m ²	Measured 1 cm ² W/m ²	Deviation	Measured 4 cm ² W/m ²	Deviation	Measured date
H60GV2 S/N: 1072	EUmmWV S/N: 9551	1842	10	60	123.0	81.0	119.00	-3.3%	77.30	-4.6%	2026-06-24
H90GV2 S/N: 1023	EUmmWV S/N: 9551	1842	10	90	249.0	108.0	250.00	0.4%	117.00	8.3%	2026-06-26

Table: Results system check

17. Test results

5G Scan									
Square Averaging	Mod.	Frequency	Test	mode	Gap	Limit	psPDn+	4 cm ² psPDtot+	psPDmod+
		GHz	Position		mm	W/m ²	W/m ²	W/m ²	W/m ²
	FMCW	76.5	Front	1	36	10.0	9.50	9.54	9.68
	FMCW	78.7	Front	18(c0)	2	10.0	6.07	6.37	6.78

Table: Test results for 76.5 and 78.7 GHz

sPD _{n+}	-	surface normal to propagating power flux density into the phantom
sPD _{tot+}	-	total propagating power flux density into the phantom
sPD _{mod+}	-	total power flux density into the phantom considering near-field exposure

Note: Plots of the measurements follow in chapter - mmWave measurement plots.

17.1. EUT Photos and test positions (Annex A101)

Detailed photos of EUT and test positions are in the additional document:
1-2351-26-01-02_TR1-A101-R01

17.2. Calibration data for DASY 8 System mmWave (Annex A201)

Detailed calibration documents for the DASY 8 mmWave System are provided in external document:
1-2351-26-01-02_TR1-A202-R01

18. DASY 8 Module mmWave - Plots

18.1. mmWave System Check Plots

Measurement Report for Device, FRONT, Custom Band, CW, Channel 60000000 (60000.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device, H60GV2	100.0 x 100.0 x 100.0		Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 5.55	Custom Band	CW, 0--	60000.0, 60000000	1.0

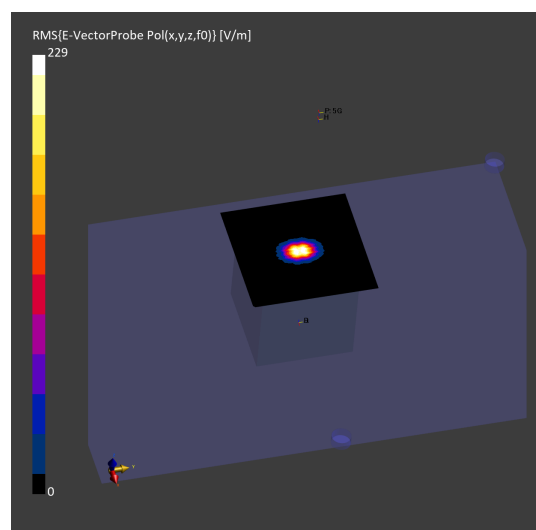
Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Measurement Results

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	32.5 x 32.5	Date	2026-06-24, 13:50
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	1.00
Sensor Surface [mm]	5.55	psPDn+ [W/m ²]	119
MAIA	N/A	psPDtot+ [W/m ²]	119
		psPDmod+ [W/m ²]	119
		E _{max} [V/m]	243
		Power Drift [dB]	-0.13



Measurement Report for Device, FRONT, Custom Band, CW, Channel 60000000 (60000.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device, H60GV2	100.0 x 100.0 x 100.0		Phone

Exposure Conditions

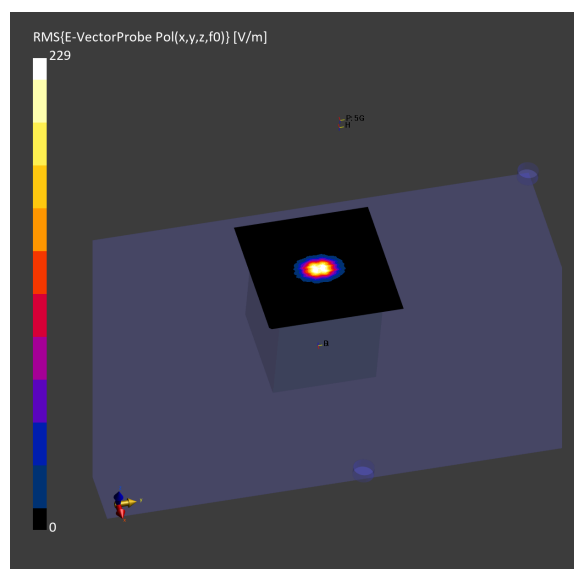
Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 5.55	Custom Band	CW, 0--	60000.0, 60000000	1.0

Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	32.5 x 32.5	Date	2026-06-24, 13:50
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	4.00
Sensor Surface [mm]	5.55	psPDn+ [W/m ²]	76.8
MAIA	N/A	psPDtot+ [W/m ²]	77.3
		psPDmod+ [W/m ²]	77.7
		E _{max} [V/m]	243
		Power Drift [dB]	-0.13



Measurement Report for Device, FRONT, Custom Band, CW, Channel 90000000 (90000.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device, H90GV2	100.0 x 100.0 x 100.0		Phone

Exposure Conditions

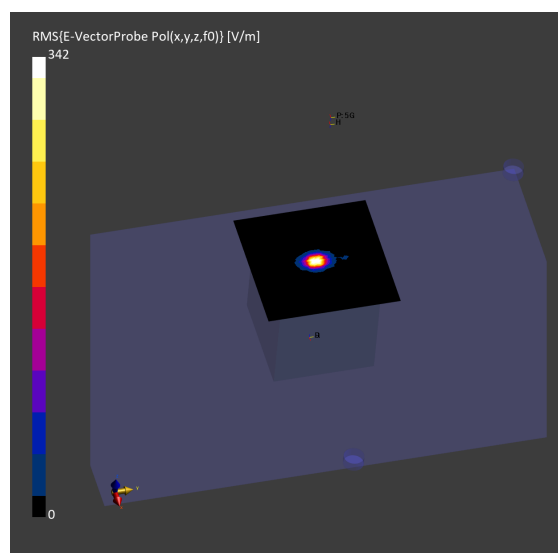
Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 5.55	Custom Band	CW, 0--	90000.0, 90000000	1.0

Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	30.0 x 30.0	Date	2026-06-26, 23:15
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	1.00
Sensor Surface [mm]	5.55	psPDn+ [W/m ²]	248
MAIA	N/A	psPDtot+ [W/m ²]	250
		psPDmod+ [W/m ²]	252
		E _{max} [V/m]	366
		Power Drift [dB]	-0.13



Measurement Report for Device, FRONT, Custom Band, CW, Channel 90000000 (90000.0 MHz)
Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device, H90GV2	100.0 x 100.0 x 100.0		Phone

Exposure Conditions

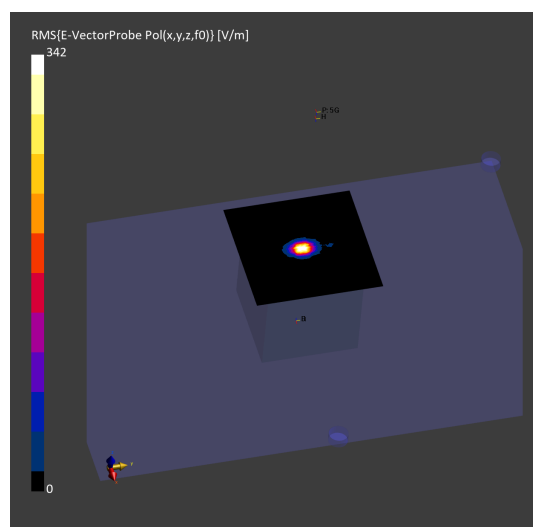
Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 5.55	Custom Band	CW, 0--	90000.0, 90000000	1.0

Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	30.0 x 30.0	Date	2026-06-26, 23:15
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	4.00
Sensor Surface [mm]	5.55	psPDn+ [W/m ²]	116
MAIA	N/A	psPDtot+ [W/m ²]	117
		psPDmod+ [W/m ²]	118
		E _{max} [V/m]	366
		Power Drift [dB]	-0.13



mmWave Measurement Plots

Measurement Report for SRD for RTTT and other vehicle or fixed installation, FRONT, Custom Band, CW, Channel 76492000 (76492.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SRD for RTTT and other vehicle or fixed installation, RSS-102.PD.MEAS	92.0 x 55.0 x 20.0	-/-	Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 36.00	Custom Band	CW, 0--	76492.0, 76492000	1.0

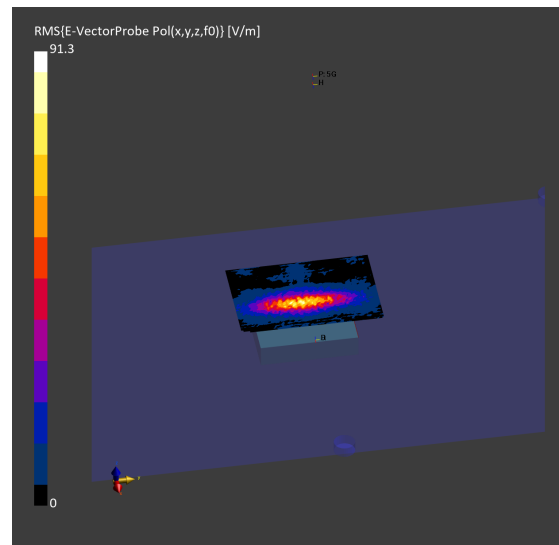
Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Measurement Results

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	30.0 x 30.0	Date	2026-06-24, 20:56
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	4.00
Sensor Surface [mm]	36.0	psPDn+ [W/m ²]	9.50
MAIA	N/A	psPDtot+ [W/m ²]	9.54
		psPDmod+ [W/m ²]	9.68
		E _{max} [V/m]	76.0
		Power Drift [dB]	-0.01



Measurement Results for incidentPD

Max (Sn) [W/m ²]	15.9
Max (Stot) [W/m ²]	16.2
Max(Stot) [W/m ²]	15.9

Measurement Report for SRD for RTTT and other vehicle or fixed installation, FRONT, Custom Band, CW, Channel 78720000 (78720.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SRD for RTTT and other vehicle or fixed installation, RSS-102.PD.MEAS	92.0 x 55.0 x 20.0	-/-	Phone

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G	FRONT, 2.00	Custom Band	CW, 0--	78720.0, 78720000	1.0

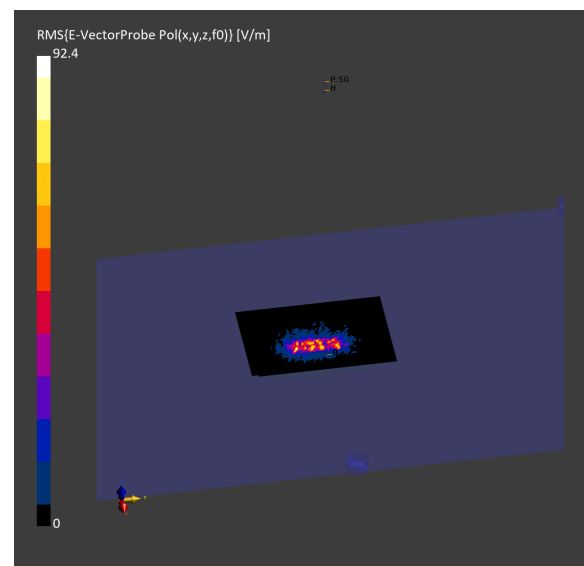
Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave - 1127	Air -	EUmmWV4 - SN9551_F55-110GHz, 2025-07-08	DAE4ip Sn1842, 2025-11-12

Scans Setup

Measurement Results

Scan Type	5G Scan	Scan Type	5G Scan
Grid Extents [mm]	30.0 x 30.0	Date	2026-06-26, 10:52
Grid Steps [lambda]	0.25 x 0.25	Avg. Area [cm ²]	4.00
Sensor Surface [mm]	2.0	psPDn+ [W/m ²]	6.07
MAIA	N/A	psPDtot+ [W/m ²]	6.37
		psPDmod+ [W/m ²]	6.78
		E _{max} [V/m]	83.8
		Power Drift [dB]	-0.31



Measurement Results for incidentPD

Max (Sn) [W/m ²]	15.0
Max (Stot) [W/m ²]	16.2
Max(Stot) [W/m ²]	15.4

End of document