TEST REPORT

Applicant:	TOUCH DYNAMIC INC.
Address:	121 Corporate Blvd, South Plainfield, NJ 07080, USA
Equipment Type:	QuestGamingTablet
Model Name:	QuestGamingTablet
Brand Name:	TOUCH_DYNAMIC
FCC ID:	2BMQJ-QUESTBINGO10
Test Standard:	FCC 47 CFR Part 2.1093 (refer to section 3.1)
Maximum PD:	4.81 W/m^2
Sample Arrival Date:	Oct. 11, 2024
Test Date：	Nov. 26, 2024
Date of Issue:	Jan. 08, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Guo Guangwei

Checked by: Xu Rui

Approved by: Tolan Tu (Testing Director)

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jan. 08, 2025	Initial Issue

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☑ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

1.3 Test Environment Condition

Ambient Temperature	18℃ to 25℃
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	TOUCH DYNAMIC INC.
Address	121 Corporate Blvd, South Plainfield, NJ 07080, USA

2.2 Manufacturer Information

Manufacturer	TOUCH DYNAMIC INC.
Address	121 Corporate Blvd, South Plainfield, NJ 07080, USA

2.3 General Description for Equipment under Test (EUT)

EUT Name	QuestGamingTablet
Model Name Under Test	QuestGamingTablet
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	V1.0
Software Version	S0461_TOUCH_DYNAMIC_COMBO_20240821
Dimensions (Approx.)	332.9mm*180.9mm*21.2mm
Weight (Approx.)	1.23kg

2.4 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	N/A
	Model No.	S0461
	Serial No.	N/A
	Capacitance	Rated: 11700mAh/ 45.05Wh Typical: 12000mAh/ 46.20Wh
	Rated Voltage	3.85 V
	Limited Voltage	4.40 V
	Manufacturer	Guangdong Fenghua New Energy co., Ltd.

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.11ax

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	6G WIFI	
Frequency Range	802.11ax(HE20/ HE40/HE80/HE160)	5925 MHz ~ 6425 MHz
		6425 MHz ~ 6525 MHz
		6525 MHz ~ 6875 MHz
		6875 MHz ~ 7125 MHz
Antenna Type	FPC Antenna	
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Portable Device	
EUT Type	☒ Production unit	☐ Identical prototype

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radio frequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	47 CFR Part 1.1310	Radiofrequency radiation exposure limits
4	FCC KDB 447498 D04	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
5	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
6	IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
7	IEC/IEEE 63195-1:2022	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
8	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters
9	IEC TR 63170:2018	Measurement procedure for the evaluation of power density related to human exposure to radio frequency fields from wireless communication devices operating between 6 GHz and 100 GHz
10	KDB 616217 D04v01r02	SAR for laptop and tablets

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is power density for frequencies between 1.5GHz and 100 GHz is 1.0 mW/cm^2= 10 W/m^2

Table of Exposure Limits:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW / cm ^{2})	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f^2	6
30-300	61.4	0.163	1.0	6
300-1,500	/	/	f/300	6
1,500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f^2	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30
*f = frequency in MHz * = Plane-wave equivalent power density*				

NOTE:

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest Power Density

Equipment Class	Band	Maximum Scaled PD (W/m^2)	Maximum Report PD (W/m^2)
U-NII-5/6/7/8	6G WIFI	4.81	**4.81**
Limit (W/m^2)		10	
Verdict		Pass	

3.4 Test Uncertainty

For PTP measurement method: DASY8 uncertainty budget in compliance with IEC/IEEE 63195-1 for the cases indicated in the refrence table.

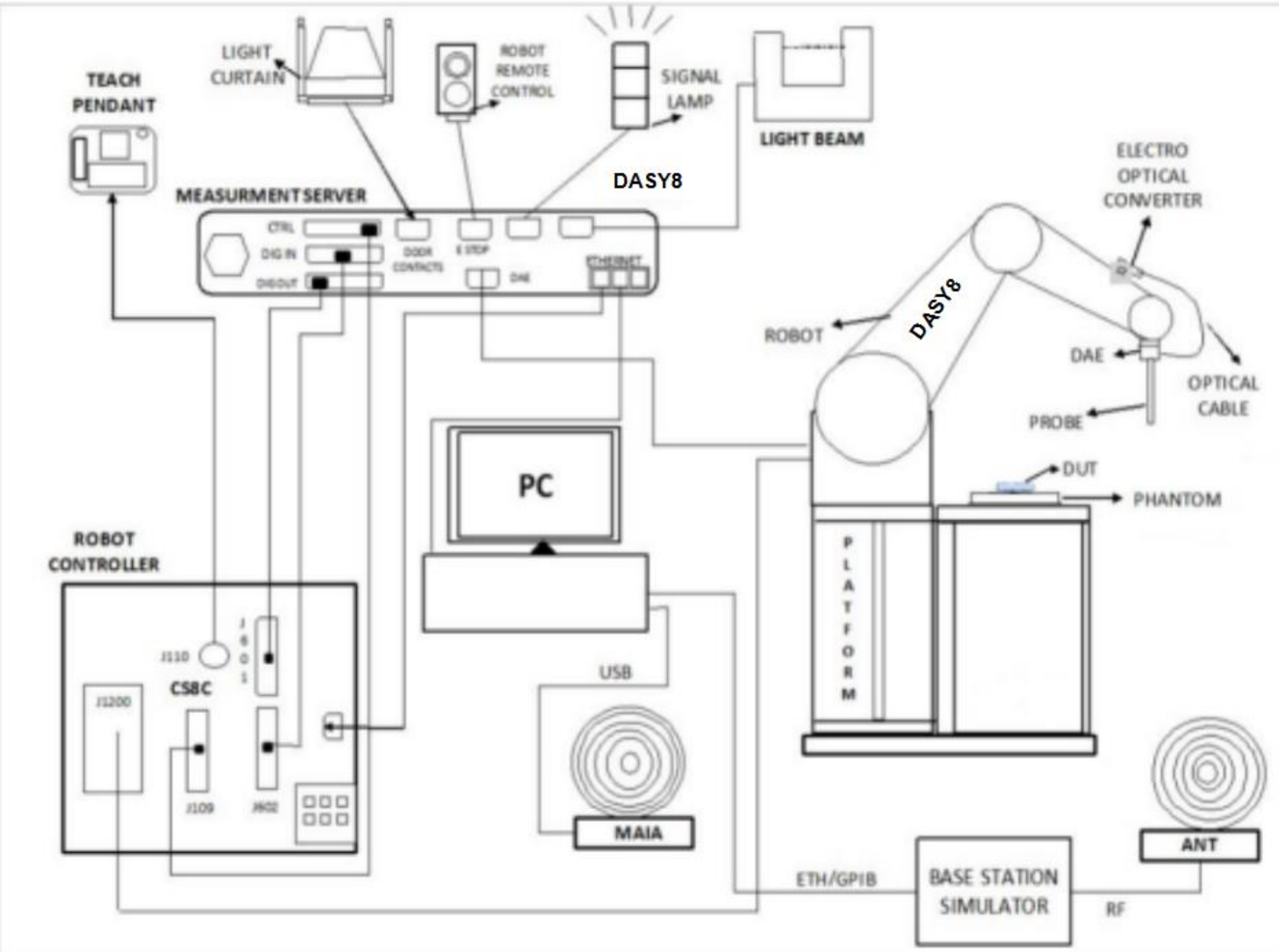
DASY8 Uncertainty Budget for PD (avg ≥1 cm2) Evaluation Distances to the Antennas ≥ λ/5 in Compliance with IEC/IEEE 63195							
Error Description		Unc. Value (±dB)	Probab. Distri.	Div.	(c_i)	Std. Unc. (±dB)	(vi) veff
Uncertainty terms dependent on the measurement system							
CAL	Calibration	0.49	N	1	1	0.49	∞
COR	Probe correction	0	R	1.732	1	0	∞
FRS	Frequency response (BW ≤ 1 GHz)	0.2	R	1.732	1	0.12	∞
SCC	Sensor cross coupling	0	R	1.732	1	0	∞
ISO	Isotropy	0.5	R	1.732	1	0.29	∞
LIN	Linearity	0.2	R	1.732	1	0.12	∞
PSC	Probe scattering	0	R	1.732	1	0	∞
PPO	Probe positioning offset	0.3	R	1.732	1	0.17	∞
PPR	Probe positioning repeatability	0.04	R	1.732	1	0.02	∞
SMO	Sensor mechanical offset	0	R	1.732	1	0	∞
PSR	Probe spatial resolution	0	R	1.732	1	0	∞
FLD	Field impedance dependence	0	R	1.732	1	0	∞
APD	Amplitude and phase drift	0	R	1.732	1	0	∞
APN	Amplitude and phase noise	0.04	R	1.732	1	0.02	∞
TR	Measurement area truncation	0	R	1.732	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	1.732	1	0	∞
REC	Field reconstruction	0.6	R	1.732	1	0.35	∞
TRA	FTE/MEO	0 (0.7)	R	1.732	1	0 (0.4)	∞
SCA	Power density scaling	–	R	1.732	1	–	∞
SAV	Spatial averaging	0.1	R	1.732	1	0.06	∞
SDL	System detection limit	0.04	R	1.732	1	0.02	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	1.732	1	0	∞
MOD	Modulation response	0.4	R	1.732	1	0.23	∞

IT	Integration time	0	R	1.732	1	0	∞
RT	Response time	0	R	1.732	1	0	∞
DH	Device holder influence	0.14	R	1.732	1	0.08	∞
DA	DUT alignment	0	R	1.732	1	0	∞
AC	RF ambient conditions	0.04	R	1.732	1	0.02	∞
AR	Ambient reflections	0.04	R	1.732	1	0.02	∞
MSI	Immunity / secondary reception	0	R	1.732	1	0	∞
DRI	Drift of the DUT	–	R	1.732	1	–	∞
Combined Std Uncertainty (w/ FTE/MEO)			–	–	–	0.75	∞
Expanded Std Uncertainty (w/ FTE/MEO)			–	–	–	**1.50 (1.71)**	–

4 MEASUREMENT SYSTEM

4.1 DASY Power Density System

4.1.1 DASY PD System Diagram



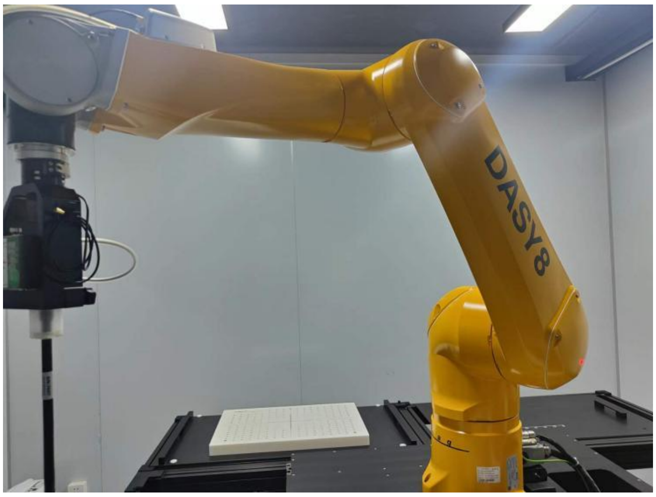
The DASY system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. 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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. 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.
6. The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.

7. DASY software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.1.2 Robot

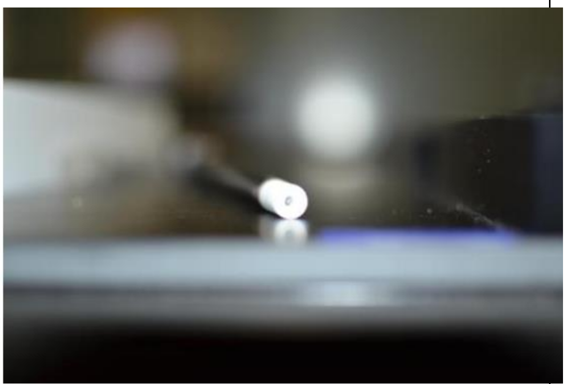
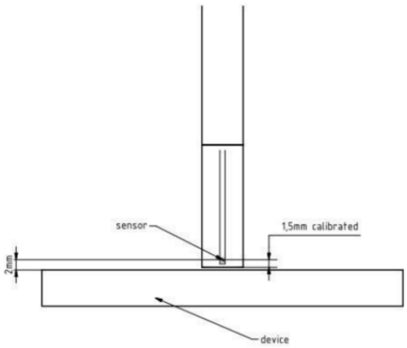
The Dasy SAR system uses the high precision robots. Symmetrical design with triangular core Built-in optical fiber for surface detection system For the 6-axis controller system, Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents). The robot series have many features that are important for our application:



- High precision
  (repeatability ±0.02 mm)
- High reliability
  (industrial design)
- Low maintenance costs
  (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
  (brush less synchron motors; no stepper motors)
- Low ELF interference
  (motor control _elds shielded via the closed metallic construction shields)

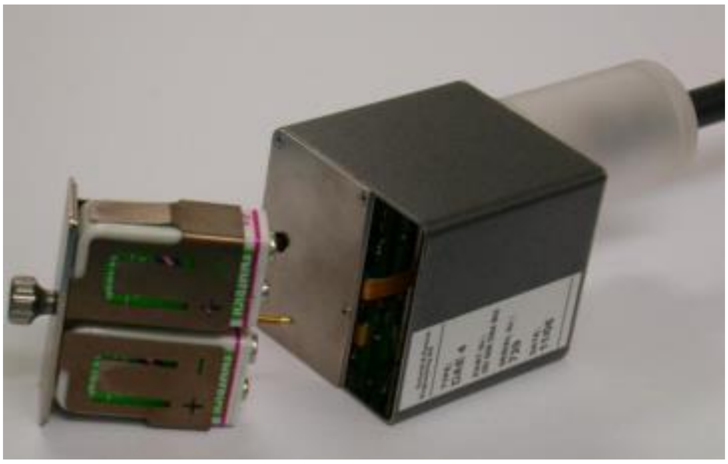
4.1.3 EUmmWave Probe / E-Field 5G Probe

The EUmmWave3 probe design allows measurements at distances as small as 2mm

Frequency	750 MHz – 110 GHz
Probe Overall Length	320 mm
Probe Body Diameter	8.0 mm
Tip Length	23.0 mm
Tip Diameter	8.0 mm
Probe's two dipoles length	0.9 mm – Diode loaded
Dynamic Range	< 20 V/m – 10000 V/m with PRE-10 (min < 50 V/m – 3000 V/m)
Position Precision	< 0.2 mm
Distance between diode sensors and probe's tip	1.5 mm
Minimum Mechanical separation between probe tip and a Surface	0.5 mm
Applications	E-field measurements of 5G devices and other mm-wave transmitters operating above 10GHz in < 2 mm distance from device (free-space) Power density, H-field and far-field analysis using total field reconstruction.
Compatibility	cDASY6 + 5G-Module SW1.0 and higher
	

4.1.4 Data Acquisition Electronics

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.



- Input Impedance: 200MOhm
- The Inputs: Symmetrical and Floating
- Commom Mode Rejection: Above 80dB

5 SYSTEM VERIFICATION

5.1 Purpose of System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal Power Density measurements in a simplified setup with a well characterized source.This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

5.2 System Check Setup

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.
The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

6 POWER DENSITY MEASUREMENT PROCEDURE

6.1 Computation of the Electric Field Polarization Ellipse

For the numerical description of an arbitrarily oriented ellipse in three-dimensional space, five parameters are needed: the semi-major axis (a), the semi-minor axis (b), two angles describing the orientation of the normal vector of the ellipse (ϕ, θ), and one angle describing the tilt of the semi-major axis (Ψ). For the two
extreme cases, i.e. circular and linear polarizations, three parameters only (a, ϕ and θ) are sufficient for
the description of the incident field.

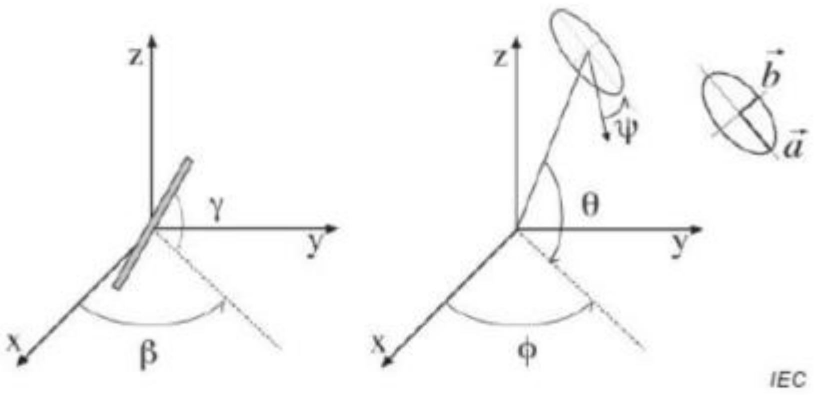


Illustration of the angles used for the numerical description of the sensor and the orientation of an ellipse in 3-D space

For the construction of the ellipse parameters from measured data, the problem can be reformulated as a nonlinear search problem. The semi-major and semi-minor axes of an elliptical field can be express as functions of the three angles (ϕ, θ and Ψ). The parameters can be uniquely determined towards minimizing the error based on least-squares for the given set of angles and the measured data. In this way, the numbers of three parameters is reduced from five to three, which means that least three sensors readings are necessary to gain sufficient information for the reconstruction of ellipse parameters.
However, to suppress the noise and increase the reconstruction accuracy, it is desirable to have an over determined system of equations. The solution to use a probe consisting of two sensors angled by γ1 and γ2 toward the probe axis and to perform measurements at three angular positions of the probe, i.e. at β1, β2 and β3, results in over determination of two. If there is a need for more information or increased accuracy, more rotation angles can be added.
The reconstruction of ellipse parameters can be separated into linear and non-linear parts that are best solved by the givens algorithm combined with a downhill simplex algorithm. To minimize the mutual coupling, sensor angles are set with a 90° shift (γ1=γ2+90°), and, to simplify, the first rotation angle of the probe (β1) can be set to 0°.

6.2 Total Field and Power Flux Density Reconstruction

Computation of the power density in general requires knowledge of the electric and magnetic field amplitudes and phases in the plane of incidence. Reconstruction of these quantities from pseudo-vector E-field measurements is feasible, as they are constrained by Maxiwell,s equations. The SPEAG have developed a reconstruction approach based on the Gerchberg-Saxton algorithm, which benefits from the availability of the E-Field polarization ellipse information obtained with the EUmmWV2 probe. This reconstruction algorithm, together with the ability of the probe to measure extremely close to the source without perturbing the field, permits reconstruction of the E-field and H-field, as well as of the power density, on measurement planes located as near as λ /5 away.

6.3 Power Flux Density Averaging

The average of the reconstructed power density is evaluated over a circular area in each measurement plane. The area of the circle is defined by the user; the default is 1cm2. The computed peak average value
is displayed in the box at the top right. Note that the average is evaluated only for grid points where the averaging circle is completely filed with values; for points at the edge where the averaging circle is only partly filled with values, the average power density is set to zero. Two average power density values are computed.

6.4 Measurement Workflow: Incident Power Density Measurements with DASY8 Module mmWave

The incident power density must be measured for the test configuration producing the highest SAR value. The
measurement procedure is summarized below:

1. Perform a system performance check at 10 GHz.
2. Determine the optimal grid resolution to be used for subsequent measurements.
3. Assess the incident power for the configuration to be tested.
4. Calculate the additional reconstruction uncertainty at 2mm and compute the total measurement uncertainty.
5. Adjust the incident psPD results by the amount that the measurement uncertainty exceeds 30%

7 CONDUCTED RF OUPUT POWER

7.1 WIFI

7.1.1 6G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
6G	802.11ax(HE20)	1	5955	6.72	7.00	No
		45	6175	6.76	7.00	No
		93	6415	6.22	7.00	No
		97	6435	6.33	7.00	No
		105	6475	6.76	7.00	No
		113	6515	6.19	7.00	No
		117	6535	6.48	7.00	No
		149	6695	6.06	7.00	No
		181	6855	6.15	7.00	No
		185	6875	6.47	7.00	No
		209	6995	6.19	7.00	No
		233	7115	6.40	7.00	No
	802.11ax(HE40)	3	5965	9.35	10.00	No
		43	6165	9.52	10.00	No
		91	6405	8.92	10.00	No
		99	6445	9.12	10.00	No
		107	6485	9.38	10.00	No
		115	6525	9.41	10.00	No
		147	6685	9.79	10.00	No
		179	6845	9.60	10.00	No
		187	6885	9.51	10.00	No
		211	7005	9.53	10.00	No
		227	7085	9.47	10.00	No
	802.11ax(HE80)	7	5985	11.49	12.00	No
		39	6225	11.90	12.00	No
		87	6385	11.54	12.00	No
		103	6465	11.38	12.00	No
		119	6545	11.23	12.00	No
		135	6625	11.39	12.00	No
		151	6705	11.77	12.00	No
		167	6785	11.74	12.00	No
		183	6865	11.63	12.00	No
		199	6945	11.50	12.00	No
		215	7025	11.34	12.00	No
	802.11ax(HE160)	15	6025	14.25	15.00	Yes

		47	6185	14.52	15.00	Yes
		79	6345	14.53	15.00	Yes
		111	6505	14.37	15.00	Yes
		143	6665	**14.63**	15.00	Yes
		207	6985	14.40	15.00	Yes

8 ANTENNA LOCATION

8.1 Tablet Mode antenna location sketch

For antenna location and support bands please refer the document “BL-SH2490675-AI EUT internal photo.pdf”.

9 TEST RESULT OF POWER DENSITY

9.1.1 WIFI 6GHz SAR

Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Setting	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Report SAR (W/kg)	Measured APD (W/m²)	Scaled APD (W/m²)	Meas. No.
Body																	
802.11ax （HE160)	Ant.0	Back side	0	143	6185	14.5	0.08	0.113	14.63	15.00	1.089	85.23	1.173	0.144	0.688	0.879	/
		Left Edge	0	143	6185	14.5	0.08	0.055	14.63	15.00	1.089	85.23	1.173	0.070	0.385	0.492	/
		Top Edge	0	143	6185	14.5	0.08	0.445	14.63	15.00	1.089	85.23	1.173	0.568	2.830	3.615	/
		Top Edge	0	15	6025	13.5	0.08	0.441	14.25	15.00	1.189	85.23	1.173	0.615	3.110	4.338	/
		Top Edge	0	47	6185	14	0.08	0.506	14.52	15.00	1.117	85.23	1.173	0.663	3.290	4.311	/
		Top Edge	0	79	6345	14.5	0.08	0.488	14.53	15.00	1.114	85.23	1.173	0.638	3.210	4.195	/
		Top Edge	0	111	6505	14	-0.11	0.524	14.37	15.00	1.156	85.23	1.173	0.711	3.620	**4.909**	/
		Top Edge	0	207	6985	14.5	-0.13	0.475	14.40	15.00	1.148	85.23	1.173	0.640	3.160	4.255	/

9.1.2 WIFI 6GHz PD

Fre. Band	Mode	Antenna	Test State	Dist. (mm)	Grid Step(λ)	Ch.	Freq. (MHz)	IPDn	IPD ratio (≥-1）
6G	802.11 ax MCS0 HE160	Ant.0	Back Side	2	0.0625	111	6505	2.84	2.69
6G	802.11 ax MCS0 HE160	Ant.0	Back Side	9.96	0.0625	111	6505	1.53	

Fre. Band	Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	Meas Total psPD [W/m2]	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty Factor	Meas. uncertainty Scaling Factor	Scaled TotalpsPD [W/m2]	Meas. No.
Body																
6G	802.11 ax MCS0 HE160	Ant.0	Front Side	2	111	6505	-0.03	0.655	14.37	15	1.156	99.58	1.004	1.545	1.175	/
			Left Edge	2	111	6505	0.00	0.322	14.37	15	1.156	99.58	1.004	1.545	0.577	/
			Top Edge	2	111	6505	0.06	2.54	14.37	15	1.156	99.58	1.004	1.545	4.555	/
				2	15	6025	0.13	2.42	14.25	15	1.189	99.58	1.004	1.545	4.463	/
				2	79	6345	-0.16	2.62	14.53	15	1.114	99.58	1.004	1.545	4.527	/
				2	143	6185	0.09	2.58	14.63	15	1.089	99.58	1.004	1.545	4.358	/
				2	207	6985	-0.04	2.70	14.40	15	1.148	99.58	1.004	1.545	**4.808**	1#

Note: According to FCC test guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.66 dB (84.5%) was used to determine the psPD measurement scaling factor.

10 SIMULTANEOUS TRANSMISSION

The fields generated by the antennas can be correlated or uncorrelated. At different frequencies, fields are always uncorrelated, and the aggregate power density contributions can be summed according to spatially averaged values of corresponding sources at any point in space, r, to determine the total exposure ratio (TER). Assuming I sources, the TER at each point in space is equal to

$$\mathrm{TER}^{\mathrm{uncorr}}(\mathrm{r}) = \sum_{\mathrm{i}=1}^{\mathrm{I}} \mathrm{ER}_{\mathrm{i}} = \sum_{\mathrm{i}=1}^{\mathrm{I}} \frac{\mathrm{S}_{\mathrm{av,i}}(\mathrm{r},\mathrm{f}_{\mathrm{i}})}{\mathrm{S}_{\mathrm{lim}}(\mathrm{f}_{\mathrm{i}})}$$

Where Sav,i is the power density for the source I operating at a frequency fi and Slim is the power density limit as specified by the relevant standard.

Exposure from transmitters operating above and below 6GHz, where 6GHz denotes the transmission frequency where the basic restrictions change from being defined in terms of SAR to being defined in terms of power density, therefore uncorrelated and the TER is determined as

$$\mathrm{TER}^{\mathrm{uncorr}}(\mathrm{r}) = \sum_{\mathrm{i}=1}^{\mathrm{I}} \mathrm{ER}_{\mathrm{i}} = \sum_{\mathrm{i}=1}^{\mathrm{I}} \frac{\mathrm{S}_{\mathrm{av,i}}(\mathrm{r},\mathrm{f}_{\mathrm{i}})}{\mathrm{S}_{\mathrm{lim}}(\mathrm{f}_{\mathrm{i}})}$$

According to the FCC guidance in TCBC workshop and IEC TR 63170, the total exposure ratio calculated by taking ratio of maximum reported SAR divided by SAR limit and adding it to maximum measured power density by its limit. Numerical sum of the ratios should be less or equal to 1. Therefore the simultaneous transmission should be follows:

$$TER = \sum_{n=1}^{N} \frac{\mathrm{SAR}_n}{\mathrm{SAR}_{n,limit}} + \sum_{n=1}^{N} \frac{\mathrm{S}_{m,avg}}{\mathrm{S}_{m,limit}} < 1$$

10.1 Simultaneous Transmission Mode Considerations

Note: This product has only one antenna, so simultaneous transmission evaluation is not required in this report.

11 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Test System	Speag	DASY8 mmWave	V2.4.0.44	N/A	N/A
Verification Source	Speag	10GHz	SN: 2010	2024/06/19	2025/06/19
EUmmW Probe	Speag	EUmmWV4	SN: 9607	2024/02/12	2025/02/12
Data Acquisition Electronicsr	Speag	DAE4	SN: 1711	2024/03/18	2025/03/18
Signal Generator	R&S	SMB100A	177746	2024/04/24	2025/04/24
Signal Generator	R&S	SMB100A	177746	2024/04/24	2025/04/23
Power Meter	R&S	NRVD-B2	835843/014	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z4	100381	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z2	100211	2024/08/08	2025/08/07
Thermometer	Elitech	RC-4HC	EF7239002655	2024/10/31	2025/10/30
Power Amplifier	mini-circuits	ZVA-183W-S+	505102223	N/A	N/A

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the users manual and calibration facility recommendation.

Date	Freq. (GHz)	Meas. Forward Power (dBm)	Measured PD 4 cm^2 (W/m^2)	Normalized PD 4 cm^2 (W/m^2)	Target Forward PD 4 cm^2 (W/m^2)	Deviation (dB)
2024.11.26	10	21.5	151	169.4	183.0	-0.33

Note1: The tolerance limit of System validation ±0.66dB.

Note2: According the verification source 10GHz calibration report the target forward power is 22.00dBm.

Note3: Normalized PD 4 cm^2= Measured PD 4 cm^2 *10^(0.1*(Target Forward power- Meas. Forward Power))

System Performance Check Data (10GHz)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
5G Verification Source 10GHz, SPEAG	100.0 x 100.0 x 130.0	5G Verification Source 10GHz

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Frequency [MHz], Channel Number	Conversion Factor
5G Air	Front, 10.00	10000.0Validation band, 10000	1.0

Hardware Setup

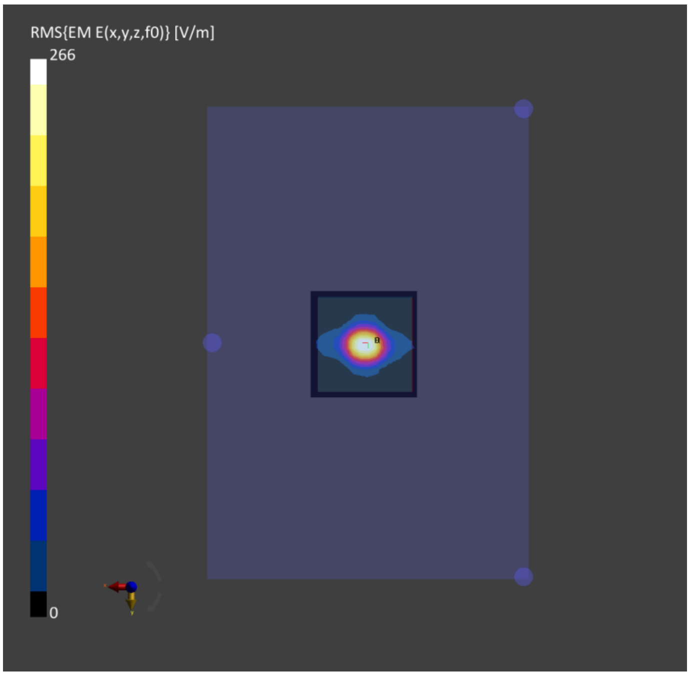
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave- 1083	---Air	EUmmWV4 – SN9607_F1-55GHz, 2024-02-12	DAE4 Sn1711, 2024-03-18

Scan Setup

	5G Scan
Grid Extents [mm]	25.0 x 25.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2024-11-26
Avg. Area [cm²]	4.00
psPDn+ [W/m²]	148
psPDtot+ [W/m²]	151
psPDmod+ [W/m²]	149
E_{max} [V/m]	273
Power Drift [dB]	0.08


RMS{EM E(x,y,z,f0)} [V/m]
266
0

ANNEX B POWER DENDITY TEST DATA

Meas.1 Body Plane with Back Side 2mm on 207 Channel in IEEE802.11ax160 mode with Antenna 0

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	EDGE TOP, 2.00	U-NII-8	WLAN, 10755-AAC	6985.0, 207	1.0

Hardware Setup

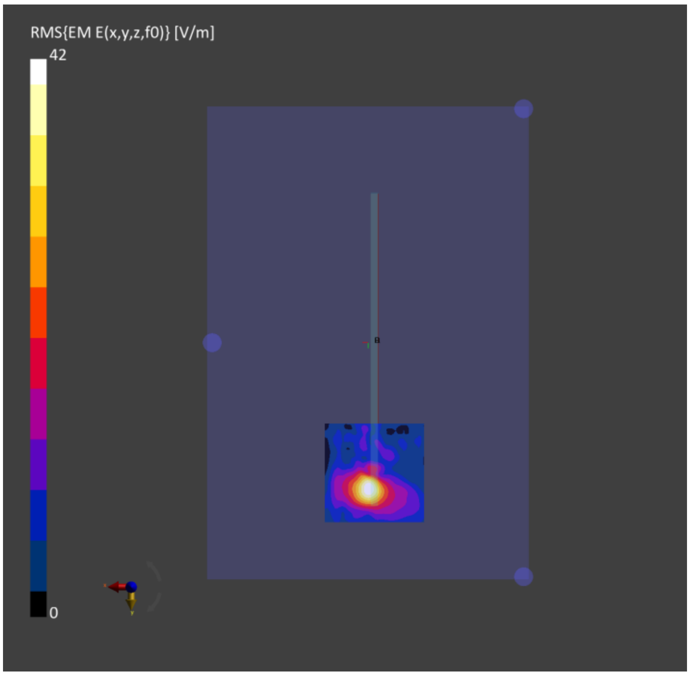
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air---	EUmmWV4 - SN9607_F1-55GHz, 2024-02-12	DAE4 Sn1711, 2024-03-18

Scan Setup

	5G Scan
Grid Extents [mm]	100.0 x 100.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	2.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2024-11-26
Avg. Area [cm^2]	4.00
psPDn+ [W/m^2]	2.44
psPDtot+ [W/m^2]	2.70
psPDmod+ [W/m^2]	2.86
E_{max} [V/m]	42.0
Power Drift [dB]	-0.43



ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SH2490675-AW.pdf”.

ANNEX D POWER DENSITY TEST SETUP PHOTOS

Please refer the document “BL-SH2490675-AS-2.pdf”.

ANNEX E POWER DENSITY CALIBRATION REPORT

Please refer the document “BL-SH2490675-AC-2.pdf”.

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--END OF REPORT--