

Power Density Evaluation Report

FCC ID : A4RGPQQ7
Equipment : Phone
Model Name : GPQQ7
Applicant : Google LLC
1600 Amphitheatre Parkway,
Mountain View, CA, 94043 USA
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Dec. 28, 2025 and testing was started from Jan. 21, 2026 and completed on Feb. 02, 2026. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR part2.1093 and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. Wensan Laboratory

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History of this test report

Report No.	Version	Description	Issued Date
FA5N0809-01B	01	Initial issue of report	May. 05, 2026
FA5N0809-01B	02	Update section 10, 12	May. 20, 2026



1. Summary

The maximum measured average power density found during testing for Google LLC, Phone, are as follows.

Standalone transmission				Max Ratio of simultaneous transmission analysis
RF Transmitter		Measured PD (mW/cm²)	Reported PD (mW/cm²)	
5G FR2	n258	0.234	0.75	0.958
	n260	0.217	0.75	
	n261	0.302	0.75	
Result		PASS		

Reviewed by: Jason Wang

Report Producer: Paula Chen

2. Guidance Applied

The Power Density testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2.1093
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- TCBC workshop notes
- IEC TR 63170
- SPEAG DASY6 Application Note (Interim Procedure for PD Point Scans)



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Phone
Model Name	GPQQ7
FCC ID	A4RGPQQ7
SN	5B111FDDX000D3, 5A311FDDX000H4
Frequency Band	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n13: 777 MHz ~ 787 MHz 5G NR n14: 788 MHz ~ 798 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n70: 1695 MHz ~ 1710 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz 5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz 5G NR n258: 24.25 GHz~24.45 GHz, 24.75GHz ~25.25GHz 5G NR n260: 37 GHz~40 GHz 5G NR n261: 27.5 GHz~28.35 GHz NTN NB IoT B23: 2000 MHz ~2020 MHz NTN NB IoT B255: 1626.5 MHz ~ 1660.5 MHz WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 5.9 GHz Band: 5850 MHz ~ 5895 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz~6525 MHz, 6525 MHz~6875 MHz, 6875 MHz~7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC: 13.56 MHz WPC: 110 kHz ~ 148.5 kHz(Rx)
Mode	GSM/GPRS/EGPRS UMTS: RMC/AMR 12.2Kbps, HSDPA, HSUPA LTE: QPSK, 16QAM, 64QAM, 256QAM NTN: BPSK, QPSK 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/HE20/HE40/HE80 Bluetooth BR/EDR/LE/CS NFC: ASK WPC: ASK

4. RF Exposure Limits

4.1 Uncontrolled Environment

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

4.2 Controlled Environment

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). 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. The 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.

The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure above 6GHz to radio frequency (RF) radiation as specified in §1.1310.

General Population Basic restriction for power density for frequencies between 1.5GHz and 100 GHz is $1.0 \text{ mW/cm}^2 = 10 \text{ W/m}^2$

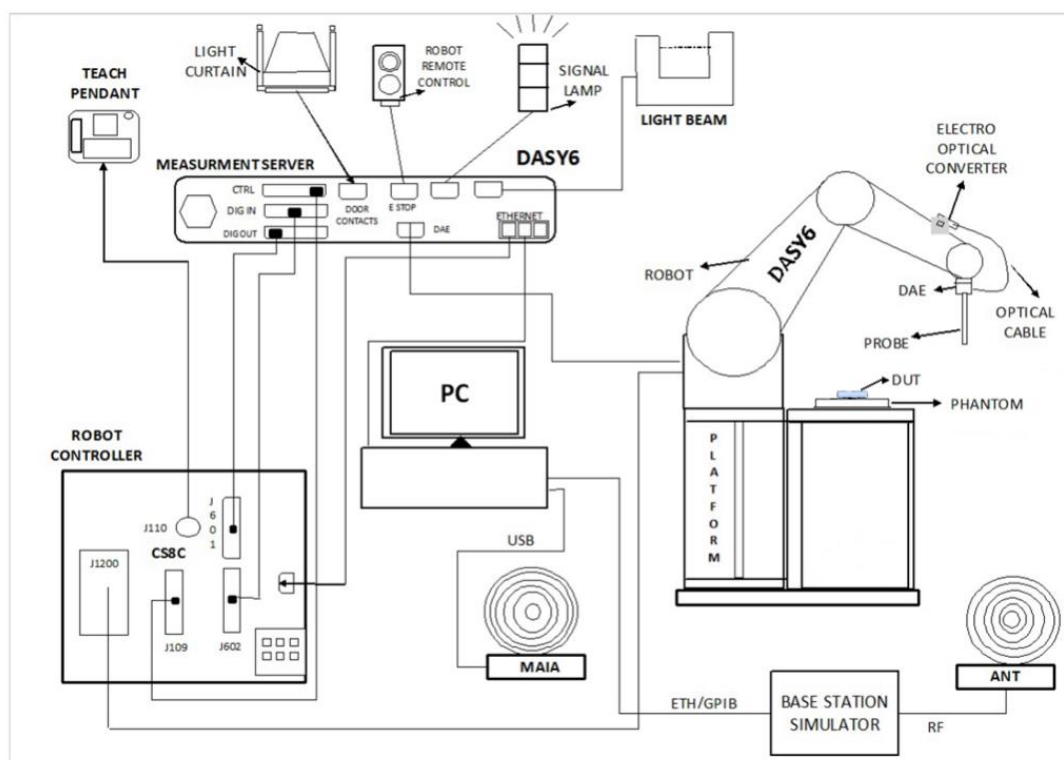
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			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
300-1500			f/1500	30
1500-100,000			1.0	30

Table 1 Limit For Maximum Permissible Exposure

5. System Description and Setup

The system to be used for the near field power density measurement

- SPEAG DASY6 system
- SPEAG cDASY6 5G module software
- EUmWVx probe
- 5G Phantom cover



5.1 Test Site Location

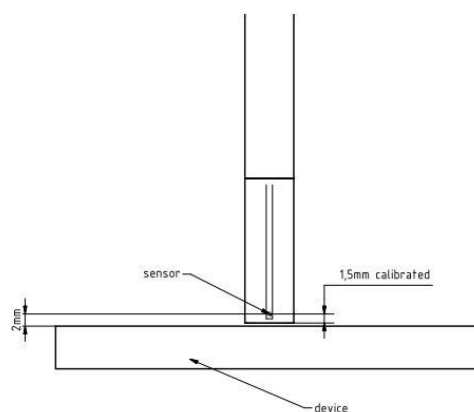
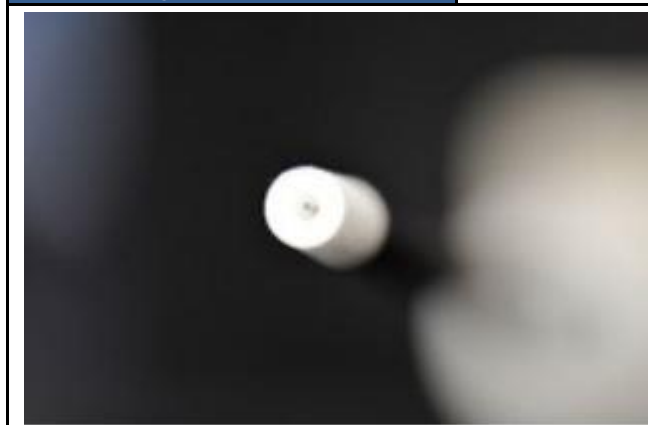
Sporton Lab and below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3786) and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	SPORTON INTERNATIONAL INC. Wensan Laboratory
Test Site Location	TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, CHINESE TAIPEI
Test Site No.	SAR17-HY

5.2 EUmmWave Probe / E-Field 5G Probe

The probe design allows measurements at distances as small as 2 mm from the sensors to the surface of the device under test (DUT). The typical sensor to probe tip distance is 1.5 mm.

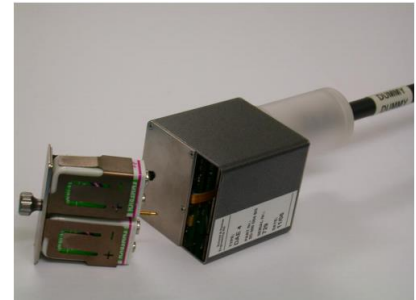
Frequency	750 MHz – 110 GHz
Probe Overall Length	320 mm
Probe Body Diameter	8.0 mm
Tip Length	23.0 mm
Tip Diameter	8.0 mm
Probe's two dipoles length	0.9 mm – Diode loaded
Dynamic Range	< 20 V/m - 10000 V/m with PRE-10 (min < 50 V/m - 3000 V/m)
Position Precision	< 0.2 mm
Distance between diode sensors 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



5.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and 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.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



5.4 Scan configuration

Fine-resolution scans on 2 different planes are performed to reconstruct the E- and H-fields as well as the power density; the z-distance between the 2 planes is set to $\lambda/4$.

The (x, y) grid step is also set $\lambda/4$, the grid extent is set to sufficiently large to identify the field pattern and the peak.

6. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	5G Verification Source	30GHz	1009	May. 14, 2025	May. 13, 2026
SPEAG	Data Acquisition Electronics	DAE4	699	Feb. 18, 2025	Feb. 17, 2026
SPEAG	EUmmWV Probe Tip Protection	EUmmWV4	9461	Oct. 15, 2025	Oct. 14, 2026
TESTO	Hygro meter	608-H1	45196600	Nov. 04, 2025	Nov. 03, 2026
Custom Microwave	Standard Horn antenna	M15RH	V91113-A	NCR	NCR

7. System Verification Source

The System Verification sources at 30 GHz and above comprise horn-antennas and very stable signal generators.

Model	Ka-band horn antenna
Calibrated frequency:	30 GHz at 5.55mm from the case surface
Frequency accuracy	± 100 MHz
E-field polarization	linear
Harmonics	-20 dBc
Total radiated power	14 dBm
Power stability	0.05 dB
Power consumption	5 W
Size	100 x 100 x 100 mm
Weight	1 kg



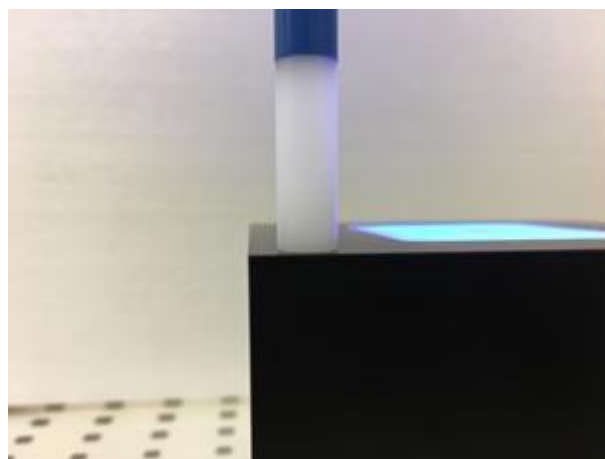
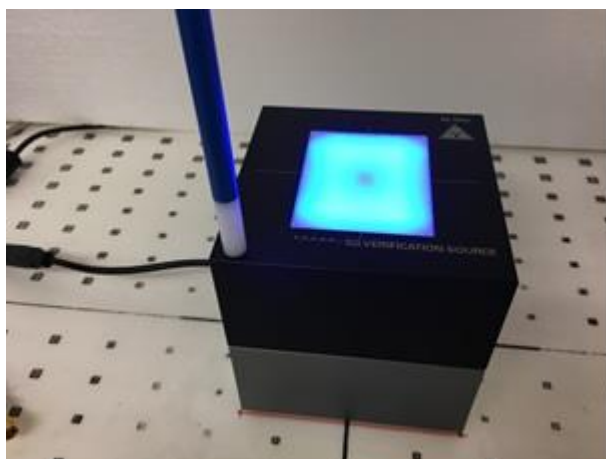
8. Power Density System Verification

The system performance check verifies that the system operates within its specifications.

The EUT is replaced by a calibrated source, the same spatial resolution, measurement region and the test separation used in the calibration was applied to system check. Through visual inspection into the measured power density distribution, both spatially (shape) and numerically (level) have no noticeable difference. The measured results should be within 0.66dB of the calibrated targets.

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	$0.25 \left(\frac{\lambda}{4}\right)$	120/120	16×16
30	$0.25 \left(\frac{\lambda}{4}\right)$	60/60	24×24
60	$0.25 \left(\frac{\lambda}{4}\right)$	32.5/32.5	26×26
90	$0.25 \left(\frac{\lambda}{4}\right)$	30/30	36×36

Settings for measurement of verification sources



Verification Setup photo

9. System Verification Results

Frequency (GHz)	5G Verification Source	Probe S/N	DAE S/N	Distance (mm)	Measured psPDtot 4 cm ² (W/m ²)	Targeted psPDtot 4 cm ² (W/m ²)	Deviation (dB)	Test Site	Date
30G	30GHz_1009	9461	699	5.55	31.7	31.8	-0.01	SAR17	2026/1/21
30G	30GHz_1009	9461	699	5.55	31.5	31.8	-0.04	SAR17	2026/1/28

Remark:

- The mmWave System check is also required before each series of continuous measurement and, as applicable, repeated at least weekly

9.1 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.

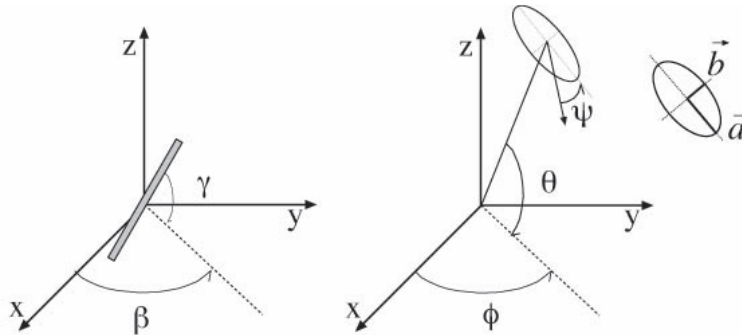


Illustration of the angles used for the numerical description of the sensor and the orientation of an ellipse in 3-D space.

For the reconstruction 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 expressed 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 number of free parameters is reduced from five to three, which means that at least three sensor readings are necessary to gain sufficient information for the reconstruction of the ellipse parameters. However, to suppress the noise and increase the reconstruction accuracy, it is desirable that the system of equations be over determined. The solution to use a probe consisting of two sensors angled by r_1 and r_2 toward the probe axis and to perform measurements at three angular positions of the probe, i.e., at β_1 , β_2 and β_3 , results in over-determinations by a factor of two. If there is a need for more information or increased accuracy, more rotation angles can be added. The reconstruction of the 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 shift of 90 degree ($r_2 = r_1 + 90$ degree), and to simplify, the first rotation angle of the probe (β_1) can be set to 0 degree.

9.2 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 Maxwell's equations. 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 EUmWV2 probe.

The average of the reconstructed power density is evaluated over a circular area in each measurement plane. Two average power density values can be computed, the average total power density and the average incident power density, and the average total power density is used to determine compliance.

- $|Re\{S\}|$ is the total Poynting vector
- $\mathbf{n} \cdot Re\{S\}$ is the normal Poynting vector

The software post-processing reports to values, "S avg tot" and "S avg inc". "S avg tot" represents average total power density (all three xyz components included), and "S avg inc" represents average normal power density. The average total power density "S avg tot" is reported to determine the device compliance.

9.3 Test Positions

Band	Antenna Module	Measurement Plane					
		S1 (Front)	S2 (Back)	S3 (Left)	S4 (Right)	S5 (Top)	S6 (Bottom)
FR2 258/260/261	Plane B sub-module	V	V	V	X	V	X

Note: From the Part 0 and simulation report, beam IDs with highest PD and corresponding input power limit were selected to be tested for each antenna module and for each frequency band.

10. RF Exposure Evaluation Results

General Note:

- The PD test was performed of a 2mm separation between sensor and EUT surface (the probe tip is 0.5mm to the EUT surface).
- According to TCBC Workshop in October 2018, 4 cm² averaging area are used.
- This device is enabled with MediaTek TAS feature, TAS will manage and ensure LTE and 5G simultaneous transmission is compliant. The validation of the time-averaging algorithm and compliance under the Tx varying transmission scenario for WWAN technologies are reported in Part 2 report.
- Input power limit parameter for 5G mmW NR radio was calculated in RF Exposure Part 0 test report.
- The TAS methodology is capable of actively and dynamically controlling mmWave output power
- For devices that employ time-averaged SAR methodologies or algorithms together with mmWave transmitters, mmWave IPD testing is performed using a continuous wave (CW) signal, in accordance with the guidance provided during the TCB workshop held on April 27, 2022.
- Run PD test, from the beam ID with the highest simulated for selected side at middle channel
 - Horizontal polarization (H-only), CW tone signal.
 - Vertical polarization (V-only), CW tone signal.
 - Horizontal + Vertical polarization (H+V) , CW tone signal
 - If step b to c result > 50% limit, then repeat for 2nd highest beam ID. If 2nd beam ID result is also > 50% limit, then repeat for 3rd beam ID
 - For Maximum among 2)–3), test low and high channel
 - For Maximum among 2)–4), test other sides, which is within 2.5 cm from the mmwave antenna module
 - Apply the ratio from simulation to scale PD values@2 mm separation distance to PD values@ 5mm separation distance.
- It's illustrated in Part 0 report that, for 5G mmW NR since there is total design-related uncertainty arising from TPC and device-to-device variation, the worst-case RF exposure should be determined by accounting for this device uncertainty of 2.0 dB, as well as PD design target of 4.72 W/m². Therefore, 5G mmW NR RF exposure for this DUT is evaluated by reported PD calculated as:

$$\text{Reported PD} = \text{PD design target} + 2.0 \text{ dB} = 7.5 \text{ W/m}^2 = 0.75 \text{ mW/cm}^2$$

Plot No.	Antenna Module	H	V	Band	Frequency (GHz)	Exposure Surface	Input Power limit	Test Separation (mm)	Modulation	Epeak (V/m)	Hpeak (A/m)	Measured results Savg inc 4cm ² (W/m ²)	Measured results Savg tot 4cm ² (W/m ²)
01	Plane B sub-module	24	-	n258	24.75	Back (S2)_Visor	-1.13	2mm	CW	56.4	0.151	1.47	2.17
	Plane B sub-module	-	12	n258	24.75	Back (S2)_Visor	-1.08	2mm	CW	49.2	0.124	1.06	1.8
	Plane B sub-module	44	44	n258	24.75	Back (S2)_Visor	-5.4	2mm	CW	47	0.112	0.922	1.37
	Plane B sub-module	24	-	n258	24.25	Back (S2)_Visor	-1.13	2mm	CW	63.3	0.154	1.06	2.34
	Plane B sub-module	24	-	n258	25.25	Back (S2)_Visor	-1.13	2mm	CW	58.8	0.129	1.01	1.68
	Plane B sub-module	24	-	n258	24.25	Front (S1)	-1.13	2mm	CW	14.5	0.042	0.213	0.273
	Plane B sub-module	24	-	n258	24.25	Left (S3)	-1.13	2mm	CW	26.2	0.068	0.996	1.22
	Plane B sub-module	24	-	n258	24.25	Top (S5)	-1.13	2mm	CW	36.1	0.088	0.987	1.1
02	Plane B sub-module	19	-	n260	38.5	Back (S2)_Visor	0.57	2mm	CW	61.2	0.146	0.728	1.15
	Plane B sub-module	-	12	n260	38.5	Back (S2)_Visor	0.59	2mm	CW	51.6	0.118	0.746	0.961
	Plane B sub-module	35	35	n260	38.5	Back (S2)_Visor	-3.09	2mm	CW	52.5	0.121	0.724	0.993
	Plane B sub-module	19	-	n260	37	Back (S2)_Visor	0.57	2mm	CW	64.7	0.165	1.11	1.55
	Plane B sub-module	19	-	n260	40	Back (S2)_Visor	0.57	2mm	CW	71.9	0.169	1.48	2.17
	Plane B sub-module	19	-	n260	40	Front (S1)	0.57	2mm	CW	11.7	0.03	0.08	0.103
	Plane B sub-module	19	-	n260	40	Left (S3)	0.57	2mm	CW	25.1	0.067	0.779	0.894
	Plane B sub-module	19	-	n260	40	Top (S5)	0.57	2mm	CW	41	0.094	0.797	0.95
03	Plane B sub-module	25	-	n261	27.925	Back (S2)_Visor	-2.5	2mm	CW	59.8	0.168	1.23	2.17
	Plane B sub-module	-	1	n261	27.925	Back (S2)_Visor	-2.34	2mm	CW	50.8	0.142	2.27	2.77
	Plane B sub-module	37	37	n261	27.925	Back (S2)_Visor	-6.5	2mm	CW	46.7	0.119	0.716	1.37
	Plane B sub-module	-	1	n261	27.5	Back (S2)_Visor	-2.34	2mm	CW	54.7	0.154	2.37	2.86
	Plane B sub-module	-	1	n261	28.35	Back (S2)_Visor	-2.34	2mm	CW	53.2	0.157	2.63	3.02
	Plane B sub-module	-	1	n261	28.35	Front (S1)	-2.34	2mm	CW	10.5	0.031	0.043	0.073
	Plane B sub-module	-	1	n261	28.35	Left (S3)	-2.34	2mm	CW	10.2	0.031	0.1	0.126
	Plane B sub-module	-	1	n261	28.35	Top (S5)	-2.34	2mm	CW	38.6	0.098	1.5	1.67

11. 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by MediaTek TAS, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

During TER analysis, the **reported time-averaged PD** (assuming *input.power.limit* for at least one beam < NV setting *P_{max}*) applies only to the worst-surface of the device. For other surfaces, worst-case PD needs to be calculated to assess TER for the corresponding surface. To determine worst-case PD for other surfaces, using simulation results

1. Calculate ratio of simulated PD for desired surface to simulated PD of worstsurface for a given beam
2. Repeat 1 to obtain ratios for all supported beams, and determine maximum ratio
3. Repeat 1~2 to obtain the corresponding worst-case PD for rest of surfaces (non worst-case surfaces) needed for TER analysis.

For example, if the back surface of device has highest PD and is determined as worst-surface, then,

- **Back_surface_worst-case_PD = reported time-averaged PD**
where, **reported time-averaged PD** = *PD_{design_target}* + mmW device design related uncertainty
- **For other surfaces**
 - **front_surface_worst-case_PD = PD_ratio_front_to_back * reported time-averaged PD**
where, $PD_ratio_front_to_back = \max \left\{ \frac{simulated\ PD_{front(i)}}{simulated\ PD_{back(i)}}, beam\ i = 1, 2 \dots N \right\}$, N= total N beams (all beams) supported by the mmW module being evaluated being evaluated.
 - Follow similar approach to determine worst-case PD for bottom/top/left/right (if applicable).
- **For body-worn and hotspot scenario, if SAR was measured at 5mm, respectively, then the worst-case PD at 5mm separation distance should be determined per surface as**
 - **5mm_worst-case_PD = PD_ratio_5mm_to_2mm * reported time-averaged PD**
Here, $PD_ratio_5\ mm_to_2mm = \max \left\{ \frac{simulated\ Pd\ at\ 5\ mm\ (i)}{simulated\ PD\ at\ 2\ mm\ (i)}, beam\ i = 1, 2 \dots N \right\}$, , N = total number of beams (**all** beams) supported by the mmW module being evaluated.
 - Note the validated model/simulation should be used in worst-case PD determination.

12. Simultaneous-Tx analysis

Exposure Condition	Tx mode	Capable TX Configurations	WWAN Power	WiFi Power	BT Power		
Head	WWAN standalone	WWAN	ECI 2				
	WiFi standalone	WiFi 2.4G SISO		Index 1			
		WiFi 2.4G MIMO/CDD					
		WiFi 5G MIMO		Index 2			
		WiFi 6E MIMO					
		WiFi 2.4G SISO + WiFi 5G SISO		Index 2			
		WiFi 2.4G SISO + WiFi 5G SISO					
	BT standalone	Bluetooth SISO / MIMO		Index 1			
	WiFi +BT	WiFi 5G MIMO + Bluetooth SISO/MIMO	Index 1	Index 1			
		WiFi 6E MIMO + Bluetooth SISO/MIMO					
	WWAN + WiFi	WWAN + WiFi 2.4G SISO	ECI 3	Index 3			
		WWAN + WiFi 2.4G MIMO/CDD					
		WWAN + WiFi 5G MIMO		Index 4			
		WWAN + WiFi 6E MIMO					
		WWAN + WiFi 2.4G SISO + WiFi 5G SISO		Index 4			
		WWAN + WiFi 2.4G SISO + WiFi 6G SISO					
WWAN + BT				Index 1			
WWAN + WiFi +BT		WWAN + WiFi 5G MIMO + Bluetooth SISO		Index 4		Index 1	
	WWAN + WiFi 6E MIMO + Bluetooth SISO						
Body	WWAN standalone	WWAN	ECI 4				
	WiFi standalone	WiFi 2.4G SISO		Index 5			
		WiFi 2.4G MIMO/CDD					
		WiFi 5G MIMO		Index 6			
		WiFi 6E MIMO					
		WiFi 2.4G SISO + WiFi 5G SISO		Index 6			
		WiFi 2.4G SISO + WiFi 6G SISO					
	BT standalone	Bluetooth SISO / MIMO		Index 2			
	WiFi +BT	WiFi 5G MIMO + Bluetooth SISO	Index 6	Index 3			
		WiFi 6E MIMO + Bluetooth SISO					
	WWAN + WiFi	WWAN + WiFi 2.4G SISO	ECI 5 / ECI 6 (Hotspot)	Index 7			
		WWAN + WiFi 2.4G MIMO/CDD					
		WWAN + WiFi 5G MIMO		Index 8			
		WWAN + WiFi 6E MIMO					
		WWAN + WiFi 2.4G SISO + WiFi 5G SISO		Index 8			
		WWAN + WiFi 2.4G SISO + WiFi 6G SISO					
WWAN + BT	WWAN + Bluetooth SISO	ECI 5 / ECI 6 (Hotspot)		Index 3			
WWAN + WiFi +BT	WWAN + WiFi 5G MIMO + Bluetooth SISO	ECI 5 / ECI 6 (Hotspot)	Index 9	Index 4			
	WWAN + WiFi 6E MIMO + Bluetooth SISO						

General Note:

- The FR2 plimit is fixed regardless of use cases.
- The WLAN/Bluetooth/NFC SAR test results were referring the report of FCC ID: A4RGPQQ7 (Sporton SAR Report No. FA5N0809-01C).
- The NFC are share the same Body Sim-Tx configuration with WWAN/WiFi/BT operations and only consider in extremity conduction.
- For LTE+5G NR+WiFi+BT, due to the TAS control, simultaneous transmission compliance can be assessed on LTE+WiFi/BT and 5G NR +WiFi/BT, and the validation of the time-averaging algorithm and compliance under the Tx varying transmission scenario for WWAN technologies are reported in Part 2 report. For 5G NR FR2 with WiFi, total exposure ratio is calculated as below formula, LTE/FR1 + WiFi simultaneous transmission analysis referring from the report of FCC ID: A4RGPQQ7 (Sporton SAR Report No. FA5N0809-01C).

The $[\sum \text{ of (the highest measured or estimated SAR for each standalone antenna configuration adjusted for maximum tune-up tolerance) / 1.6 W/kg} + [\sum \text{ of MPE ratios}]] \leq 1.0$.

12.1 Simultaneous transmission analysis for WiFi/BT + 5G NR

*Ratio is highest ratio of (PD on desired exposure plane) / (PD on worst-surface) out of all beams and out of all channels illustrated in Power Density Simulation Report.

NR Band	Antenna Module	Exposure condition	Surface	Evaluation	Ratio*	PD_Design Target +Total uncertainty (W/m ²)	PD_Design Target + Total uncertainty * Ratio (W/m ²)
				Distance			
				(mm)			
n258	Plane B sub-module	Head	Front Surface	2 mm	0.041	7.50	0.31
n260	Plane B sub-module		Front Surface	2 mm	0.035	7.50	0.26
n261	Plane B sub-module		Front Surface	2 mm	0.043	7.50	0.32

NR Band	Antenna Module	Exposure condition	Surface	Evaluation	Ratio*	PD_Design Target +Total uncertainty (W/m ²)	PD_Design Target + Total uncertainty * Ratio (W/m ²)
				Distance			
				(mm)			
n258	Plane B sub-module	Body Worn/Hotspot	worst-surface	5 mm	0.671	7.50	5.03
n260	Plane B sub-module		worst-surface	5 mm	0.668	7.50	5.01
n261	Plane B sub-module		worst-surface	5 mm	0.662	7.50	4.96

NR Band	Antenna Module	Exposure condition	Surface	Evaluation	Ratio*	PD_Design Target +Total uncertainty	PD_Design Target +Total uncertainty)*Ratio
				Distance			
				(mm)		(W/m^2)	(W/m^2)
n258	Plane B sub-module	Extremity	Front Surface	2 mm	0.041	7.50	0.31
			Back Surface	2 mm	1.000	7.50	7.50
			Left Edge	2 mm	0.282	7.50	2.11
			Right Edge	2 mm	Excluded		
			Top Edge	2 mm	0.488	7.50	3.66
			Bottom Edge	2 mm	Excluded		
n260	Plane B sub-module		Front Surface	2 mm	0.035	7.50	0.26
			Back Surface	2 mm	1.000	7.50	7.50
			Left Edge	2 mm	0.257	7.50	1.93
			Right Edge	2 mm	Excluded		
			Top Edge	2 mm	0.400	7.50	3.00
			Bottom Edge	2 mm	Excluded		
n261	Plane B sub-module		Front Surface	2 mm	0.043	7.50	0.32
			Back Surface	2 mm	1.000	7.50	7.50
			Left Edge	2 mm	0.379	7.50	2.84
			Right Edge	2 mm	Excluded		
			Top Edge	2 mm	0.439	7.50	3.30
			Bottom Edge	2 mm	Excluded		

<Head Exposure Condition>
<5G FR2, WLAN Index 3>

NR Band	Antenna Module	Exposure Position	1	2	3	4	5	Reported SAR/1.6 + PD/10 Summation			
			WLAN2.4GHz Ant 4	WLAN2.4GHz Ant 3	WLAN2.4GHz Ant 4+3	WLAN5/6GHz Ant 4+3	PD	1+5 Summed	2+5 Summed	3+5 Summed	4+5 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)				
n258	Plane B sub-module	Right Cheek	0.145	0.341	0.272	0.250	0.31	0.187	0.187	0.187	0.187
		Right Tilted	0.002	0.056	0.171	0.161	0.31	0.132	0.132	0.132	0.132
		Left Cheek	0.249	0.154	0.209	0.333	0.31	0.239	0.239	0.239	0.239
		Left Tilted	0.281	0.002	0.231	0.270	0.31	0.200	0.200	0.200	0.200
n260	Plane B sub-module	Right Cheek	0.145	0.341	0.272	0.250	0.26	0.182	0.182	0.182	0.182
		Right Tilted	0.002	0.056	0.171	0.161	0.26	0.127	0.127	0.127	0.127
		Left Cheek	0.249	0.154	0.209	0.333	0.26	0.234	0.234	0.234	0.234
		Left Tilted	0.281	0.002	0.231	0.270	0.26	0.195	0.195	0.195	0.195
n261	Plane B sub-module	Right Cheek	0.145	0.341	0.272	0.250	0.32	0.188	0.188	0.188	0.188
		Right Tilted	0.002	0.056	0.171	0.161	0.32	0.133	0.133	0.133	0.133
		Left Cheek	0.249	0.154	0.209	0.333	0.32	0.240	0.240	0.240	0.240
		Left Tilted	0.281	0.002	0.231	0.270	0.32	0.201	0.201	0.201	0.201

<5G FR2, WLAN Index 4, BT Index 1>

NR Band	Antenna Module	Exposure Position	1	2	3	4	5	6	Reported SAR/1.6 + PD/10 Summation		
			WLAN2.4GHz Ant 3	WLAN5/6GHz Ant 4	WLAN5/6GHz Ant 4+3	Bluetooth Ant 4	Bluetooth Ant 3	PD	1+2+6 Summed	3+4+6 Summed	3+5+6 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)			
n258	Plane B sub-module	Right Cheek	0.299	0.065	0.116	0.091	0.226	0.31	0.259	0.160	0.245
		Right Tilted	0.032	0.065	0.084	0.073	0.026	0.31	0.092	0.129	0.100
		Left Cheek	0.108	0.189	0.222	0.230	0.097	0.31	0.217	0.314	0.230
		Left Tilted	0.023	0.169	0.203	0.228	0.014	0.31	0.151	0.300	0.167
n260	Plane B sub-module	Right Cheek	0.299	0.065	0.116	0.091	0.226	0.26	0.253	0.155	0.240
		Right Tilted	0.032	0.065	0.084	0.073	0.026	0.26	0.087	0.124	0.095
		Left Cheek	0.108	0.189	0.222	0.230	0.097	0.26	0.212	0.308	0.225
		Left Tilted	0.023	0.169	0.203	0.228	0.014	0.26	0.146	0.295	0.162
n261	Plane B sub-module	Right Cheek	0.299	0.065	0.116	0.091	0.226	0.32	0.259	0.161	0.246
		Right Tilted	0.032	0.065	0.084	0.073	0.026	0.32	0.093	0.130	0.101
		Left Cheek	0.108	0.189	0.222	0.230	0.097	0.32	0.218	0.314	0.231
		Left Tilted	0.023	0.169	0.203	0.228	0.014	0.32	0.152	0.301	0.168

<Hotspot Exposure Condition>
<5G FR2, WLAN Index 7>

NR Band	Antenna Module	Exposure Position	1	2	3	4	5	Reported SAR/1.6 + PD/10 Summation			
			WLAN2.4GHz Ant 4	WLAN2.4GHz Ant 3	WLAN2.4GHz Ant 4+3	WLAN5/6GHz Ant 4+3	PD	2+5 Summed	3+5 Summed	4+5 Summed	5+5 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)				
n258	Plane B sub-module	Front	0.180	0.211	0.230	0.200	5.03	0.615	0.635	0.647	0.628
		Back	0.247	0.254	0.299	0.282	5.03	0.657	0.662	0.690	0.679
		Left Edge	0.001	0.321	0.378	0.321	5.03	0.504	0.704	0.739	0.704
		Right Edge	0.071	0.001	0.061	0.074		0.044	0.001	0.038	0.046
		Top Edge	0.351	0.001	0.268	0.236	5.03	0.722	0.504	0.670	0.650
		Bottom Edge						0.000	0.000	0.000	0.000
n260	Plane B sub-module	Front	0.180	0.211	0.230	0.200	5.01	0.613	0.633	0.645	0.626
		Back	0.247	0.254	0.299	0.282	5.01	0.655	0.660	0.688	0.677
		Left Edge	0.001	0.321	0.378	0.321	5.01	0.502	0.702	0.737	0.702
		Right Edge	0.071	0.001	0.061	0.074		0.044	0.001	0.038	0.046
		Top Edge	0.351	0.001	0.268	0.236	5.01	0.720	0.502	0.668	0.648
		Bottom Edge						0.000	0.000	0.000	0.000
n261	Plane B sub-module	Front	0.180	0.211	0.230	0.200	4.96	0.609	0.628	0.640	0.621
		Back	0.247	0.254	0.299	0.282	4.96	0.651	0.655	0.683	0.673
		Left Edge	0.001	0.321	0.378	0.321	4.96	0.497	0.697	0.733	0.697
		Right Edge	0.071	0.001	0.061	0.074		0.044	0.001	0.038	0.046
		Top Edge	0.351	0.001	0.268	0.236	4.96	0.716	0.497	0.664	0.644
		Bottom Edge						0.000	0.000	0.000	0.000

<5G FR2, WLAN Index 8>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/1.6 + PD/10 Summation
			WLAN2.4GHz Ant 3	WLAN5/6GHz Ant 4	PD	
			1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)	1+2+3 Summed
n258	Plane B sub-module	Front	0.192	0.479	5.03	0.922
		Back	0.251	0.443	5.03	0.937
		Left Edge	0.291	0.040	5.03	0.710
		Right Edge	0.001	0.157		0.099
		Top Edge	0.001	0.400	5.03	0.754
		Bottom Edge				0.000
n260	Plane B sub-module	Front	0.192	0.479	5.01	0.920
		Back	0.251	0.443	5.01	0.935
		Left Edge	0.291	0.040	5.01	0.708
		Right Edge	0.001	0.157		0.099
		Top Edge	0.001	0.400	5.01	0.752
		Bottom Edge				0.000
n261	Plane B sub-module	Front	0.192	0.479	4.96	0.916
		Back	0.251	0.443	4.96	0.930
		Left Edge	0.291	0.040	4.96	0.703
		Right Edge	0.001	0.157		0.099
		Top Edge	0.001	0.400	4.96	0.747
		Bottom Edge				0.000

<5G FR2, WLAN Index 9, BT Index 4>

NR Band	Antenna Module	Exposure Position	1	2	3	4	Reported SAR/1.6 + PD/10 Summation	
			WLAN5/6GHz Ant 4+3	Bluetooth Ant 4	Bluetooth Ant 3	PD	1+2+4 Summed	1+3+4 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)		
n258	Plane B sub-module	Front	0.147	0.144	0.093	5.03	0.685	0.653
		Back	0.224	0.169	0.105	5.03	0.749	0.709
		Left Edge	0.245	0.001	0.142	5.03	0.657	0.745
		Right Edge	0.059	0.053	0.002		0.070	0.038
		Top Edge	0.188	0.259	0.002	5.03	0.782	0.622
		Bottom Edge					0.000	0.000
n260	Plane B sub-module	Front	0.147	0.144	0.093	5.01	0.683	0.651
		Back	0.224	0.169	0.105	5.01	0.747	0.707
		Left Edge	0.245	0.001	0.142	5.01	0.655	0.743
		Right Edge	0.059	0.053	0.002		0.070	0.038
		Top Edge	0.188	0.259	0.002	5.01	0.780	0.620
		Bottom Edge					0.000	0.000
n261	Plane B sub-module	Front	0.147	0.144	0.093	4.96	0.678	0.646
		Back	0.224	0.169	0.105	4.96	0.742	0.702
		Left Edge	0.245	0.001	0.142	4.96	0.650	0.738
		Right Edge	0.059	0.053	0.002		0.070	0.038
		Top Edge	0.188	0.259	0.002	4.96	0.776	0.615
		Bottom Edge					0.000	0.000

<5G FR2, BT Index 3>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/1.6 + PD/10 Summation	
			Bluetooth Ant 4	Bluetooth Ant 3	PD	1+3 Summed	2+3 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)		
n258	Plane B sub-module	Front	0.275	0.211	5.03	0.675	0.635
		Back	0.323	0.239	5.03	0.705	0.652
		Left Edge	0.001	0.321	5.03	0.504	0.704
		Right Edge	0.101	0.001		0.063	0.001
		Top Edge	0.495	0.001	5.03	0.812	0.504
		Bottom Edge				0.000	0.000
n260	Plane B sub-module	Front	0.275	0.211	5.01	0.673	0.633
		Back	0.323	0.239	5.01	0.703	0.650
		Left Edge	0.001	0.321	5.01	0.502	0.702
		Right Edge	0.101	0.001		0.063	0.001
		Top Edge	0.495	0.001	5.01	0.810	0.502
		Bottom Edge				0.000	0.000
n261	Plane B sub-module	Front	0.275	0.211	4.96	0.668	0.628
		Back	0.323	0.239	4.96	0.698	0.646
		Left Edge	0.001	0.321	4.96	0.497	0.697
		Right Edge	0.101	0.001		0.063	0.001
		Top Edge	0.495	0.001	4.96	0.806	0.497
		Bottom Edge				0.000	0.000

<Body-Worn Exposure Condition>

<5G FR2, WLAN Index 7>

NR Band	Antenna Module	Exposure Position	1	2	3	4	5	Reported SAR/1.6 + PD/10 Summation			
			WLAN2.4GHz Ant 4	WLAN2.4GHz Ant 3	WLAN2.4GHz Ant 4+3	WLAN5/6GHz Ant 4+3	PD	2+5 Summed	3+5 Summed	4+5 Summed	5+5 Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)				
n258	Plane B sub-module	Front	0.180	0.211	0.230	0.447	5.03	0.615	0.635	0.647	0.782
		Back	0.247	0.254	0.299	0.553	5.03	0.657	0.662	0.690	0.849
n260	Plane B sub-module	Front	0.180	0.211	0.230	0.447	5.01	0.613	0.633	0.645	0.780
		Back	0.247	0.254	0.299	0.553	5.01	0.655	0.660	0.688	0.847
n261	Plane B sub-module	Front	0.180	0.211	0.230	0.447	4.96	0.609	0.628	0.640	0.776
		Back	0.247	0.254	0.299	0.553	4.96	0.651	0.655	0.683	0.842

<5G FR2, WLAN Index 8>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/1.6 + PD/10 Summation	
			WLAN2.4GHz Ant 3	WLAN5/6GHz Ant 4	PD	1+2+3 Summed	
			1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)		
n258	Plane B sub-module	Front	0.192	0.430	5.03	0.892	
		Back	0.251	0.477	5.03	0.958	
n260	Plane B sub-module	Front	0.192	0.430	5.01	0.890	
		Back	0.251	0.477	5.01	0.956	
n261	Plane B sub-module	Front	0.192	0.430	4.96	0.885	
		Back	0.251	0.477	4.96	0.951	

<5G FR2, WLAN Index 9, BT Index 4>

NR Band	Antenna Module	Exposure Position	1	2	3	4	Reported SAR/1.6 + PD/10 Summation	
			WLAN5/6GHz Ant 4+3	Bluetooth Ant 4	Bluetooth Ant 3	PD	1+2+4 Summed	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)		
n258	Plane B sub-module	Front	0.423	0.144	0.093	5.03	0.857	0.825
		Back	0.493	0.169	0.105	5.03	0.917	0.877
n260	Plane B sub-module	Front	0.423	0.144	0.093	5.01	0.855	0.823
		Back	0.493	0.169	0.105	5.01	0.915	0.875
n261	Plane B sub-module	Front	0.423	0.144	0.093	4.96	0.851	0.819
		Back	0.493	0.169	0.105	4.96	0.910	0.870

<5G FR2, BT Index 3>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/1.6 + PD/10 Summation	
			Bluetooth Ant 4	Bluetooth Ant 3	PD	1+3 Summed	
			1g SAR (W/kg)	1g SAR (W/kg)	4cm ² (W/m ²)		
n258	Plane B sub-module	Front	0.275	0.211	5.03	0.275	0.211
		Back	0.323	0.239	5.03	0.323	0.239
n260	Plane B sub-module	Front	0.275	0.211	5.01	0.275	0.211
		Back	0.323	0.239	5.01	0.323	0.239
n261	Plane B sub-module	Front	0.275	0.211	4.96	0.275	0.211
		Back	0.323	0.239	4.96	0.323	0.239

<Extremity Exposure Condition>

General Note:

Since the 2.4GHz WLAN and Bluetooth SAR was not perform, due to the Hotspot SAR is less than 1.2W/kg.

<5G FR2, WLAN Index 7>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/4.0 + PD/10 Summation
			WLAN5/6GHz Ant 4+3	NFC	PD	1+2+3
			10g SAR (W/kg)	10g SAR (W/kg)	4cm ² (W/m ²)	Summed
n258	Plane B sub-module	Front	0.606	0.006	0.31	0.184
		Back	0.510	0.006	7.50	0.879
		Left Edge	0.762	0.003	2.11	0.403
		Right Edge	0.108	0.001		0.027
		Top Edge	0.384	0.009	3.66	0.464
		Bottom Edge				0.000
n260	Plane B sub-module	Front	0.606	0.006	0.26	0.179
		Back	0.510	0.006	7.50	0.879
		Left Edge	0.762	0.003	1.93	0.384
		Right Edge	0.108	0.001		0.027
		Top Edge	0.384	0.009	3.00	0.398
		Bottom Edge				0.000
n261	Plane B sub-module	Front	0.606	0.006	0.32	0.185
		Back	0.510	0.006	7.50	0.879
		Left Edge	0.762	0.003	2.84	0.475
		Right Edge	0.108	0.001		0.027
		Top Edge	0.384	0.009	3.30	0.428
		Bottom Edge				0.000

<5G FR2, WLAN Index 8>

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/4.0 + PD/10 Summation
			WLAN5/6GHz Ant 4	NFC	PD	1+2+3
			10g SAR (W/kg)	10g SAR (W/kg)	4cm ² (W/m ²)	Summed
n258	Plane B sub-module	Front	0.721	0.006	0.31	0.213
		Back	0.486	0.006	7.50	0.873
		Left Edge	0.218	0.003	2.11	0.267
		Right Edge	0.103	0.001		0.026
		Top Edge	0.347	0.009	3.66	0.455
		Bottom Edge				0.000
n260	Plane B sub-module	Front	0.721	0.006	0.26	0.208
		Back	0.486	0.006	7.50	0.873
		Left Edge	0.218	0.003	1.93	0.248
		Right Edge	0.103	0.001		0.026
		Top Edge	0.347	0.009	3.00	0.389
		Bottom Edge				0.000
n261	Plane B sub-module	Front	0.721	0.006	0.32	0.214
		Back	0.486	0.006	7.50	0.873
		Left Edge	0.218	0.003	2.84	0.339
		Right Edge	0.103	0.001		0.026
		Top Edge	0.347	0.009	3.30	0.419
		Bottom Edge				0.000

**<5G FR2, WLAN Index 9, BT Index 4>**

NR Band	Antenna Module	Exposure Position	1	2	3	Reported SAR/4.0 + PD/10 Summation
			WLAN5/6GHz Ant 4+3	NFC	PD	1+2+3 Summed
			10g SAR (W/kg)	10g SAR (W/kg)	4cm^2(W/m^2)	
n258	Plane B sub-module	Front	0.440	0.006	0.31	0.143
		Back	0.519	0.006	7.50	0.881
		Left Edge	0.686	0.003	2.11	0.384
		Right Edge	0.151	0.001		0.038
		Top Edge	0.280	0.009	3.66	0.438
		Bottom Edge				0.000
n260	Plane B sub-module	Front	0.440	0.006	0.26	0.137
		Back	0.519	0.006	7.50	0.881
		Left Edge	0.686	0.003	1.93	0.365
		Right Edge	0.151	0.001		0.038
		Top Edge	0.280	0.009	3.00	0.372
		Bottom Edge				0.000
n261	Plane B sub-module	Front	0.440	0.006	0.32	0.143
		Back	0.519	0.006	7.50	0.881
		Left Edge	0.686	0.003	2.84	0.456
		Right Edge	0.151	0.001		0.038
		Top Edge	0.280	0.009	3.30	0.402
		Bottom Edge				0.000

Test Engineer : Kevin, Randy and Charles

13. Uncertainty Assessment

The budget is valid for evaluation distances $> \lambda/2\pi$. For specific tests and configurations, the Uncertainty could be considerably smaller.

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

cDASY6 Module mmWave Uncertainty Budget Evaluation Distances to the Antennas $> \lambda/2\pi$					
Error Description	Uncertainty Value ($\pm$ dB)	Probability	Divisor	(Ci)	Standard Uncertainty ($\pm$ dB)
Uncertainty terms dependent on the measurement system					
Probe Calibration	0.49	N	1	1	0.49
Probe correction	0.00	R	1.732	1	0.00
Frequency response ($BW \leq 1$ GHz)	0.20	R	1.732	1	0.12
Sensor cross coupling	0.00	R	1.732	1	0.00
Isotropy	0.50	R	1.732	1	0.29
Linearity	0.20	R	1.732	1	0.12
Probe scattering	0.00	R	1.732	1	0.00
Probe positioning offset	0.30	R	1.732	1	0.17
Probe positioning repeatability	0.04	R	1.732	1	0.02
Sensor mechanical offset	0.00	R	1.732	1	0.00
Probe spatial resolution	0.00	R	1.732	1	0.00
Field impedance dependence	0.00	R	1.732	1	0.00
Amplitude and phase drift	0.00	R	1.732	1	0.00
Amplitude and phase noise	0.04	R	1.732	1	0.02
Measurement area truncation	0.00	R	1.732	1	0.00
Data acquisition	0.03	N	1	1	0.03
Sampling	0.00	R	1.732	1	0.00
Field reconstruction	0.60	R	1.732	1	0.35
Forward transformation	0.00	R	1.732	1	0.00
Power density scaling	0.00	R	1.732	1	0.00
Spatial averaging	0.10	R	1.732	1	0.06
System detection limit	0.04	R	1.732	1	0.02
Uncertainty terms dependent on the DUT and environmental factors					
Probe coupling with DUT	0.00	R	1.732	1	0.0
Modulation response	0.40	R	1.732	1	0.2
Integration time	0.00	R	1.732	1	0.0
Response time	0.00	R	1.732	1	0.0
Device holder influence	0.10	R	1.732	1	0.1
DUT alignment	0.00	R	1.732	1	0.0
RF ambient conditions	0.04	R	1.732	1	0.0
Ambient reflections	0.04	R	1.732	1	0.0
Immunity / secondary reception	0.00	R	1.732	1	0.0
Drift of the DUT		R	1.732	1	
Combined Std. Uncertainty					0.76 dB
Expanded STD Uncertainty (95%)					1.52 dB
Declaration of Conformity:					
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.					
Comments and Explanations:					
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.					



14. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [3] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [4] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [5] 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
- [6] SPEAG DASY6 Application Note (Interim Procedure for PD Point Scans), January 2022