

Notice 2025-DRS0008

December 1st, 2025

Requirements on camera protrusion measurements for specific absorption rate compliance

Consultation closes February 10, 2026

Through the release of this Notice, Innovation, Science and Economic Development Canada (ISED) clarifies the requirements on specific absorption rate (SAR) assessment of camera protrusions (also known as camera bumps) in accordance with section 5.14 of [RSS-102.SAR.MEAS](#).

1. Introduction

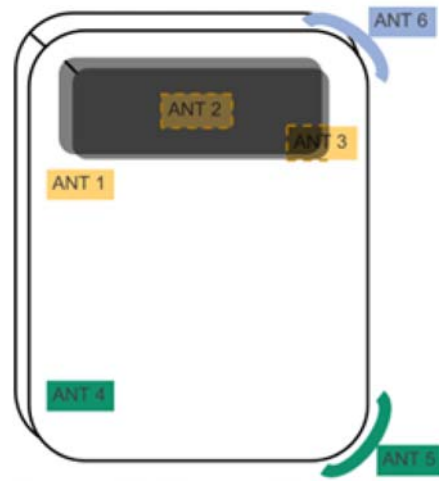
As per section 7.2 of the [IEC/IEEE 62209-1528](#), an equipment under test (EUT) shall be positioned parallel to the flat phantom at the applicable separation distances. In addition, the requirements below shall be followed:

- measurement area shall not be closer than 20 mm from the phantom side wall as per clause 7.4.2 b) 2) of IEC/IEEE 62209-1528, and
- 1 g or 10 g cube shall not touch the boundary of the zoom scan volume as per clause 7.4.2 d) 3) of IEC/IEEE 62209-1528.

In certain smartphone designs, due to the presence of camera protrusions, as shown in Figure 1, the testing procedure must be adapted to reliably assess compliance in a repeatable/reproducible manner.

Figure 1: Example of extrusion on an EUT with a camera protrusion





► Description of Figure 1

Since [IEC/IEEE 62209-1528](#) does not contain testing procedures specifically for EUT with camera protrusions, section 5.14 of [RSS-102.SAR.MEAS](#) was introduced to allow SAR measurements to be conducted by tilting the EUT. The following sections detail accepted testing procedures for smartphones by expanding on the requirements of section 5.14 of [RSS-102.SAR.MEAS](#). These procedures will allow the measurement system's probe to be positioned as close as possible to the areas near the protrusion while maintaining a consistent separation distance.

Note:

The separation distance is in relation to the main body of the EUT and not from the outermost surface of the protrusion.

2. Body-worn configurations

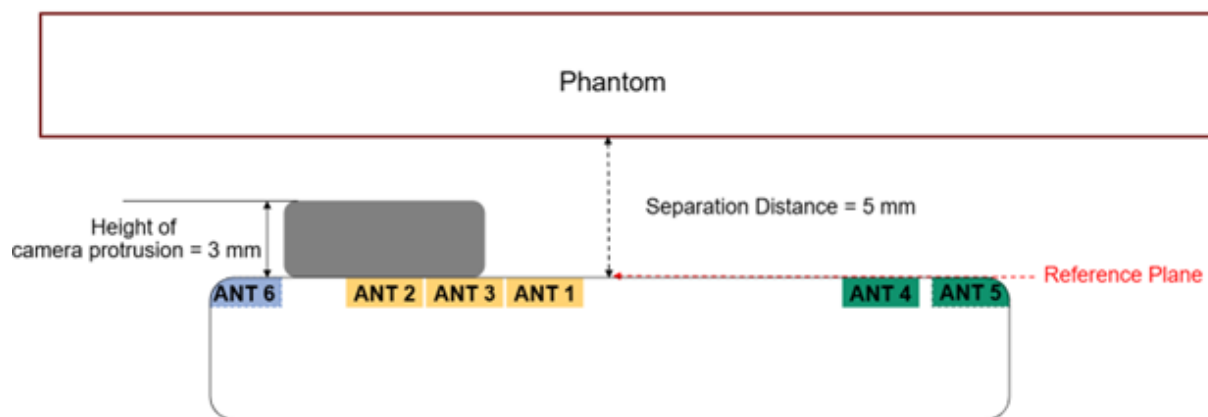
For body-worn configurations, the scenarios in section 2 are permitted.

2.1. EUTs with small camera protrusion compared to separation distance

When the applicable separation distance for the exposure condition is greater than or equal to the height of the camera protrusion, the SAR measurements shall be performed with the EUT positioned parallel to the phantom.

For example, Figure 2 illustrates the EUT depicted in Figure 1 with a 3 mm camera protrusion. Since the height of the protrusion is smaller than the 5 mm separation distance, the EUT is positioned parallel to the phantom for testing.

Figure 2: Side view of the EUT illustrated in Figure 1



► Description of Figure 2

2.2. EUTs with large camera protrusion compared to the separation distance

When the height of the camera protrusion is larger than the separation distance, the following procedures shall apply.

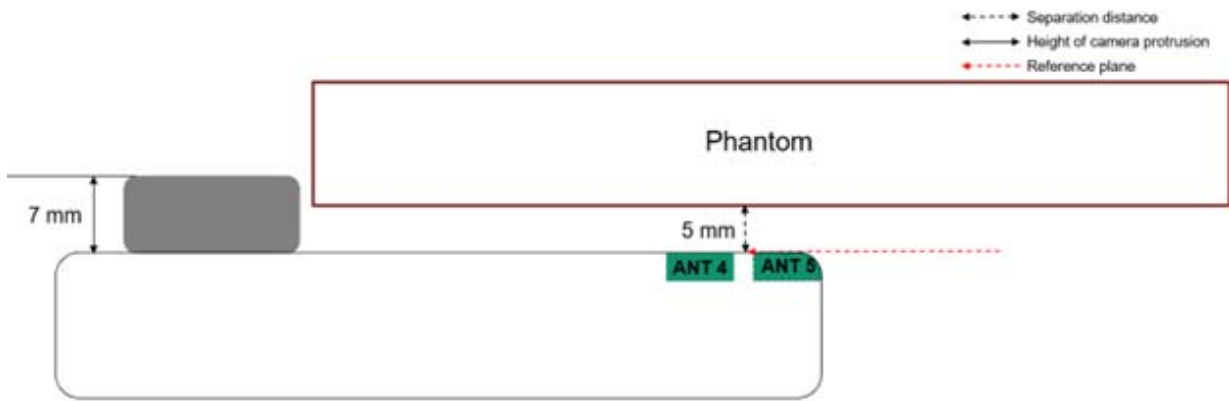
2.2.1. EUTs with antenna locations far from the camera protrusion

- In situations where the two following situations are met, the EUT shall be tested parallel to the phantom to assess the certain antennas, as

shown in Figure 3. The applicable separation distance is less than the camera protrusion's height, and

- certain antenna locations allow for testing with the phantom positioned parallel to the EUT.

Figure 3: Side view (bottom antennas)



► Description of Figure 3

2.2.2. EUTs with antenna(s) located near the camera protrusion

In situations where antenna(s) are located **near** the camera protrusion, for which testing is not possible with the phantom positioned parallel to the EUT at the required separation distance, these antennas shall be tested with the camera protrusion touching the phantom and the EUT tilted to obtain the required separation distance for the relevant side or edge.

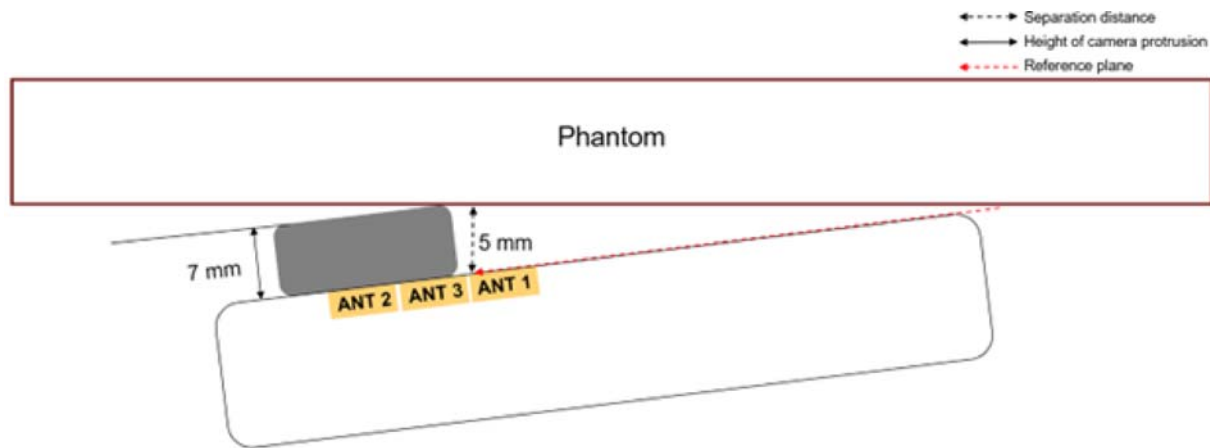
Note:

To ensure consistent and repeatable EUT orientation with respect to the phantom, a precision spacer (representing the separation distance) can be used to position or tilt the EUT.

Requirements pertaining to permitted tilts for EUT:

- For antennas located **near** or **underneath** the camera protrusion, testing shall be performed with the bottom part of the camera protrusion in contact with the phantom and the bottom part of the EUT tilted upward towards the phantom to obtain the required separation distance, as shown in Figure 4.

Figure 4: Side view (underneath the camera protrusion)

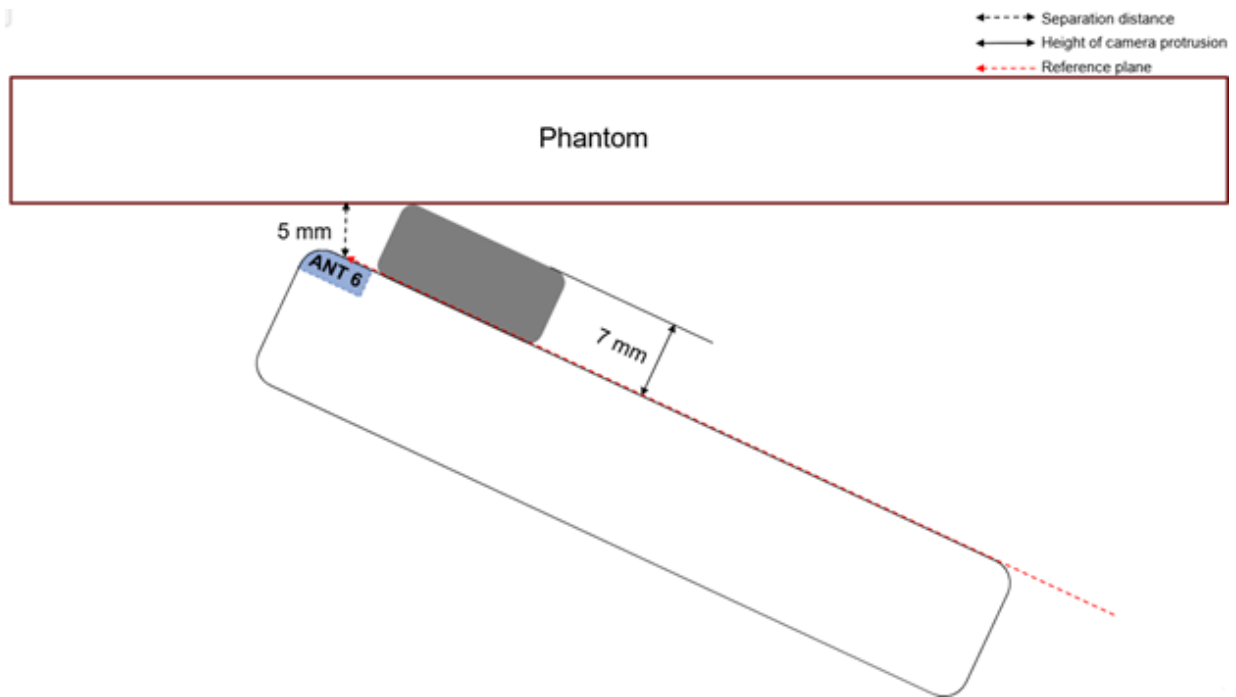


► Description of Figure 4

2.2.3. EUTs with antenna(s) located on the top edge

For antennas located on the **top** edge, testing shall be performed with the top part of the camera protrusion in contact with the phantom and the bottom part of EUT tilted downward away from the phantom to obtain the separation distance, as shown in Figure 5.

Figure 5: Side view (top antenna)

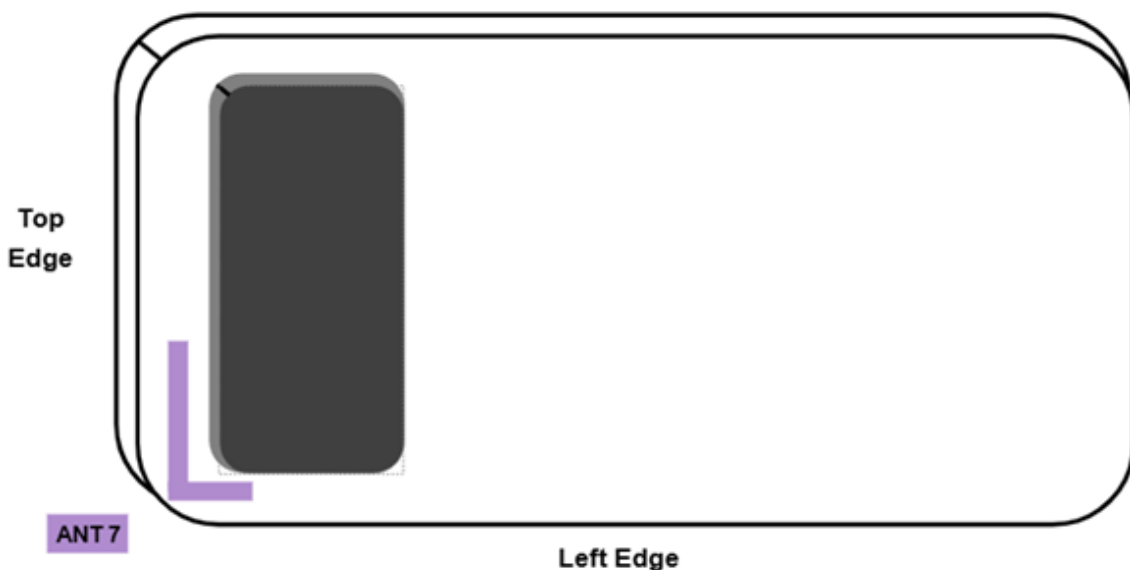


► Description of Figure 5

2.2.4. EUTs with corner-mounted antennas

For corner-mounted antennas, when an antenna is located along two edges as shown in Figure 6, two options for compliance testing are available.

Figure 6: Back view of corner-mounted antenna along the top and left edge



► Description of Figure 6

Option 1

Compliance testing can be performed with both edges at a tilt position as illustrated in Figures 7 and 8.

Option 2

The compliance testing can be performed using one of the procedures below (“a” or “b”) to identify the worst-case edge with the highest SAR value and determine where the tilt position(s) can be applied.

a. Procedure if using a routine SAR evaluation:

- i. If the difference between the routine SAR values for the two edges is **greater than** 30%, only the edge with the highest SAR value shall be tested at tilt position, or
- ii. If the difference between the routine SAR values for the two edges is **less than or equal** to 30%, both edges shall be tested at tilt position.

For example, for the EUT in Figure 6 above, if the 1g SAR values from the routine SAR evaluation for the top and left edges are respectively 1.2 W/kg and 0.8 W/kg, as the top edge has the highest SAR value and the difference between the two edges is greater than 30%, only the top edge shall be tested in the tilt position.

b. Procedure if performing a full SAR or fast SAR test:

A full SAR (i.e., area scan or zoom scan) or a fast SAR test can be performed to identify the worst-case SAR at the two sides. The EUT shall be positioned parallel and centered to the phantom, with the camera protrusion touching the phantom. The full SAR or fast SAR test shall be conducted for

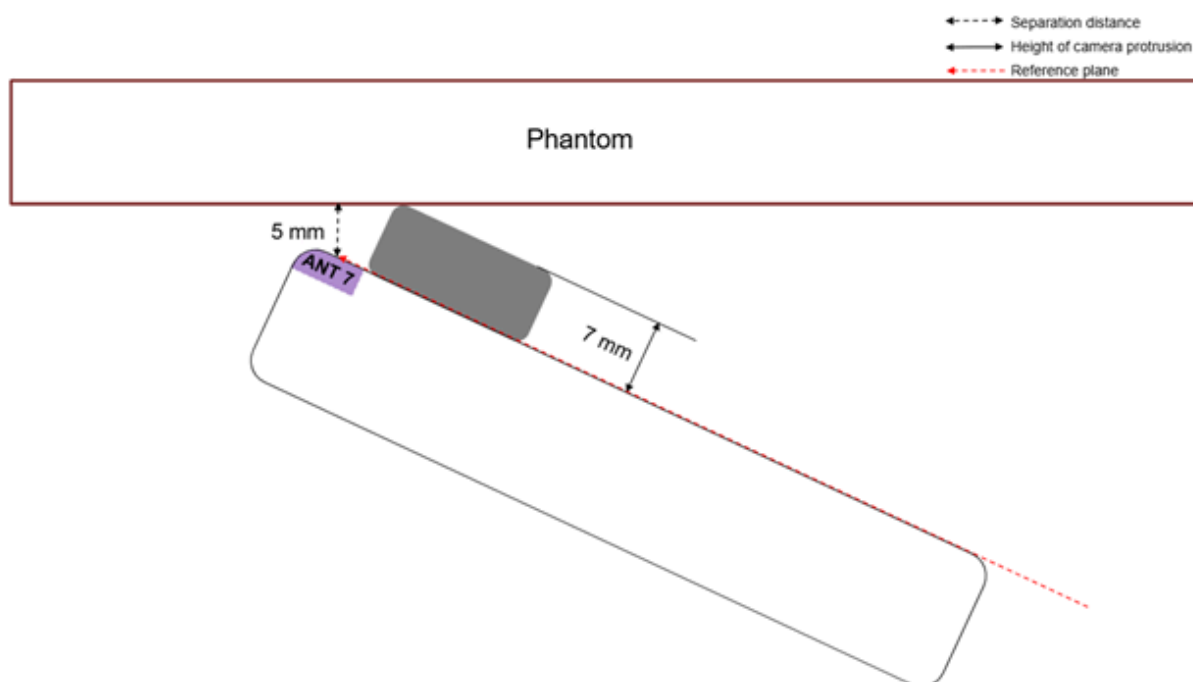
all required bands/modes at the configurations with the highest SAR in standalone. The requirements in RSS-102.SAR.MEAS section 5.1.1 shall be applied.

- i. If the difference between the SAR values of the two edges is **greater than** 30%, only the edge with the highest SAR value shall be tested at tilt position, or
- ii. If the difference between the SAR values of the two edges is **less than or equal** to 30%, both edges shall be tested at tilt position.

When the results are above 80% of the applicable SAR limit , only the zoom scan shall be used.

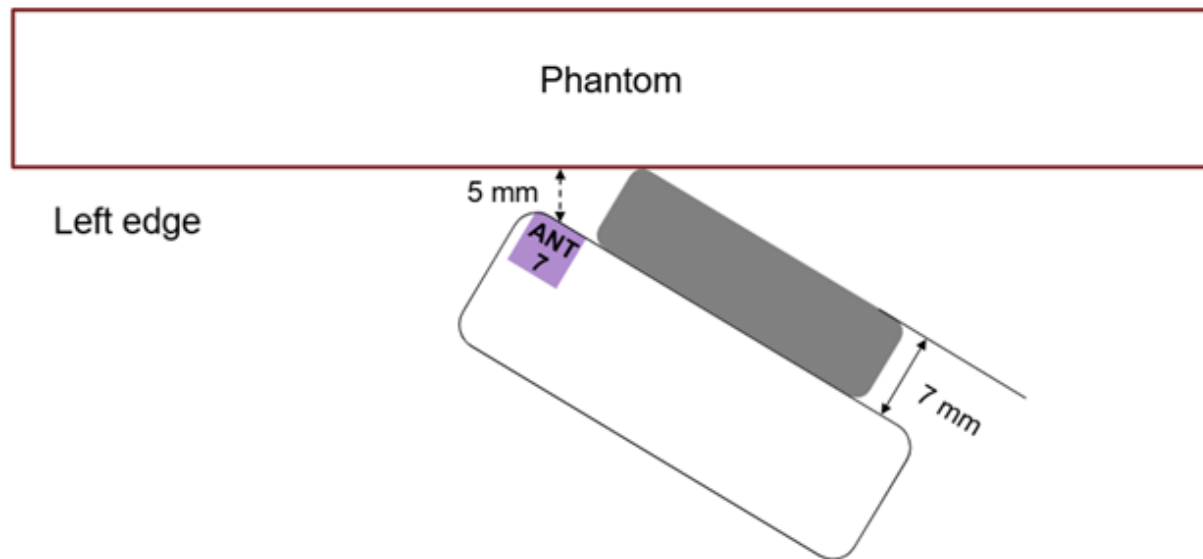
Regardless whether procedure “a” or “b” detailed above is used, once the worst-case edge has been identified, compliance testing shall always subsequently be measured with a full SAR system.

Figure 7: Top tilt position of EUT from Figure 6



► Description of Figure 7

Figure 8: Left edge tilt position of EUT from Figure 6



► Description of Figure 8

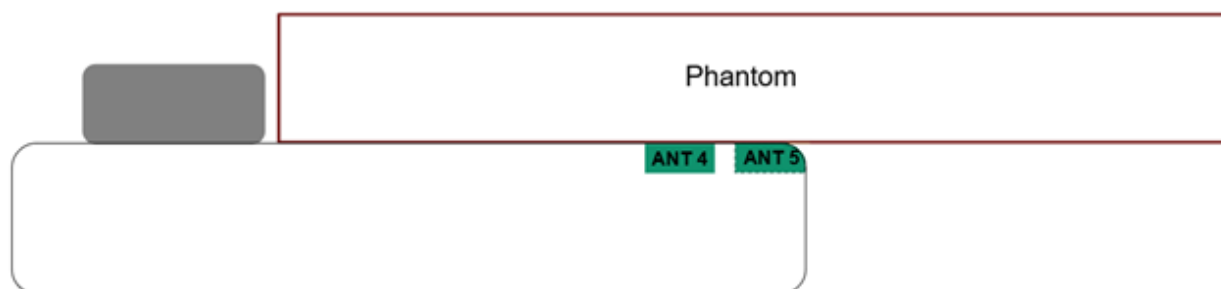
3. Limb-worn configurations

For limb-worn configurations, as per RSS-102.SAR.MEAS, the separation distance shall be 0 mm . The procedures in section 3 shall be used.

3.1. EUTs with antenna(s) located far from the camera protrusion

EUTs with a camera protrusion shall be tested at touch position (0 mm) in parallel to the phantom if the antenna locations allow the phantom to be positioned in parallel to the EUT, as shown in Figure 9.

Figure 9: Side view (bottom antennas)



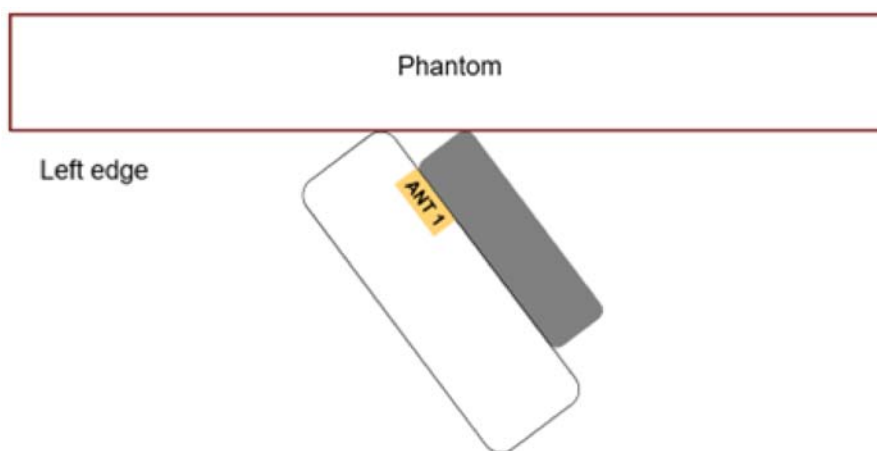
► Description of Figure 9

3.2. EUTs with antenna(s) located beside the camera protrusion

For antennas located **beside** the camera protrusion, testing shall be performed with the corresponding side of the camera protrusion and EUT in contact with the phantom along the respective edge to obtain the touch position.

- Figure 10 illustrates the tilt position for an antenna close to the camera protrusion on the left side, with the left edge of the EUT positioned towards the phantom.

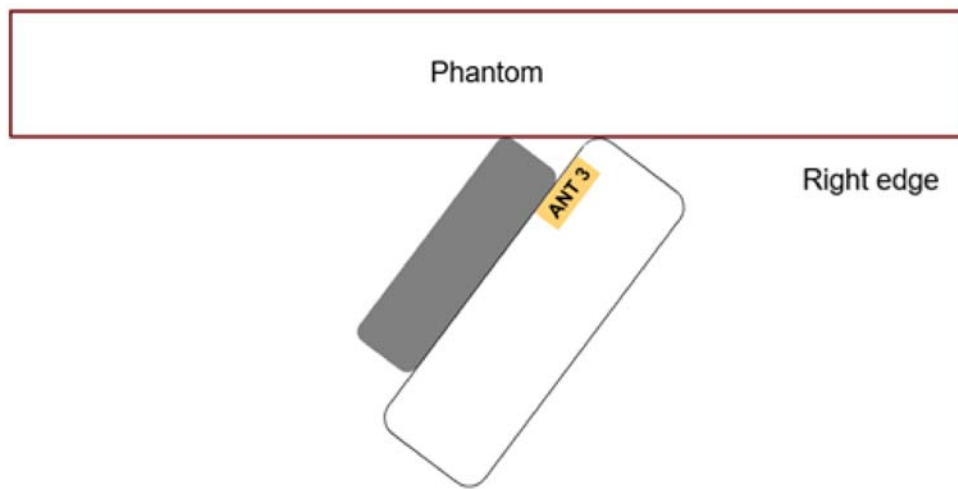
Figure 10: Bottom view (left antenna)



► Description of Figure 10

- Figure 11 illustrates the tilt position for an antenna partially underneath the camera protrusion on the right side, with the right edge of the EUT positioned towards the phantom.

Figure 11: Bottom view (right antenna)



► Description of Figure 11

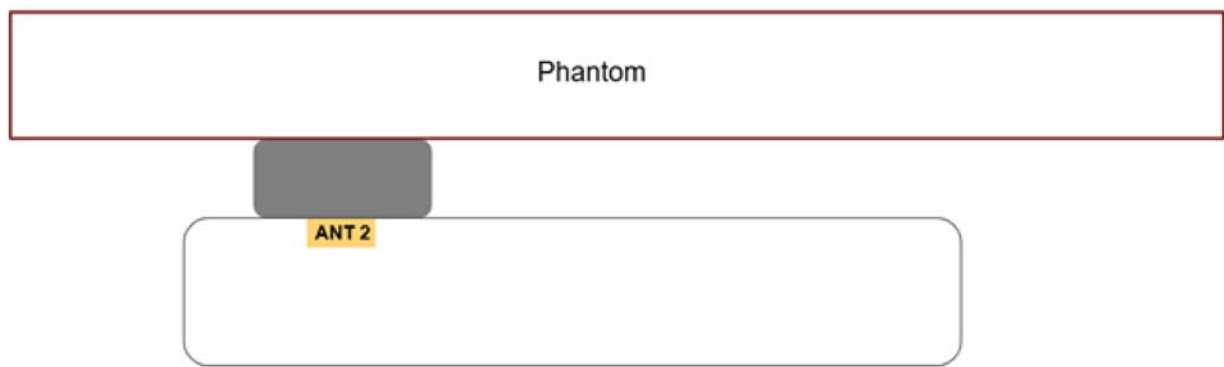
3.3. EUTs with antenna(s) located underneath the camera protrusion

There are two types of EUTs with antenna(s) located underneath the camera protrusion.

3.3.1. EUT(s) with antenna(s) located underneath the camera protrusion with no offset to one side

When all antennas are entirely **underneath** the camera protrusion **with no offset to one side**, as is the case of antenna 2 shown in Figure 1, testing shall be performed with the EUT positioned parallel to the phantom and the top part of the camera protrusion in contact with the phantom, as shown in Figure 12. Although the camera protrusion creates a separation distance, the camera protrusion shall be in direct contact with the phantom so that the antenna underneath the camera protrusion is as close as possible to the phantom.

Figure 12: Side view of the EUT (antenna is centered underneath the camera protrusion)

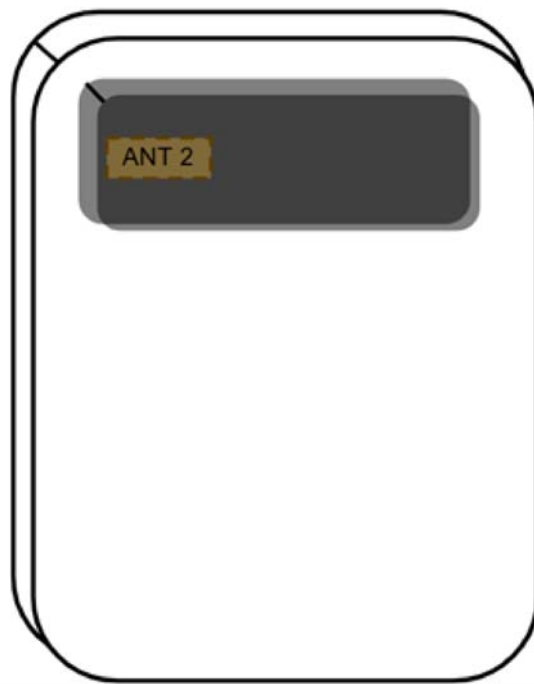


► Description of Figure 12

3.3.2. EUTs with antenna(s) located underneath the camera protrusion with offset to one side

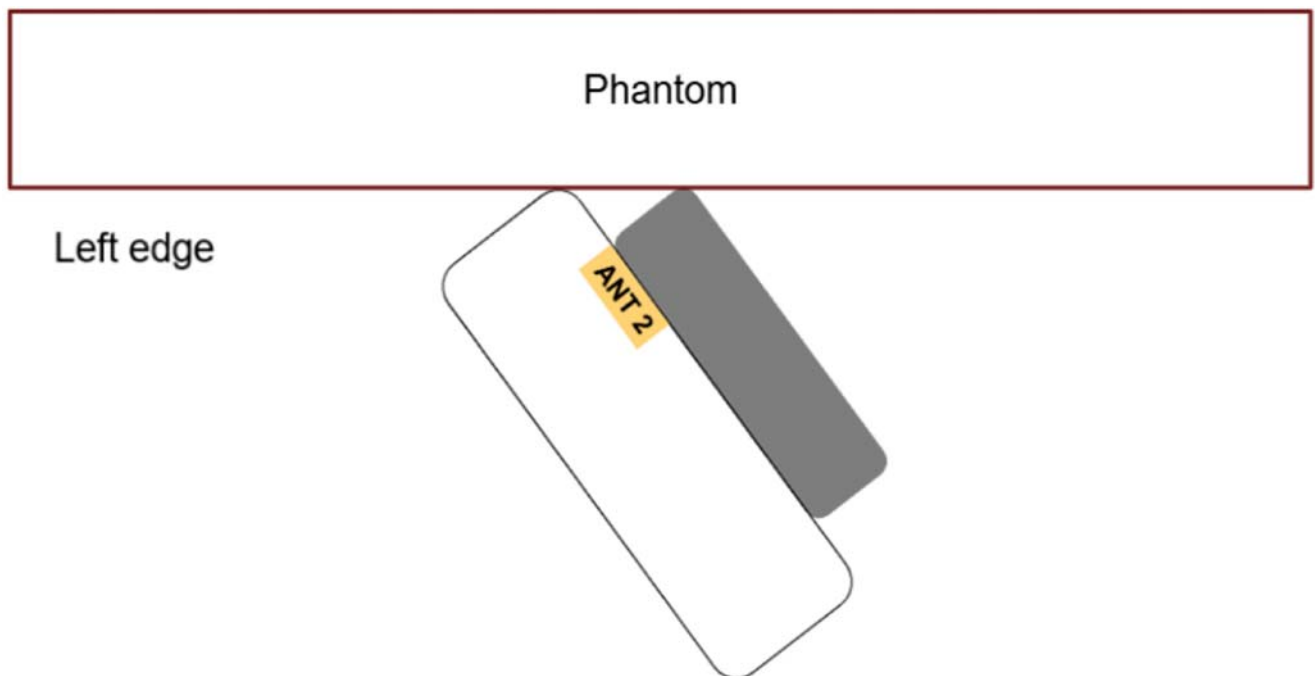
In cases where the antennas are entirely underneath the camera protrusion, **with offset to one side** as shown in Figure 13, the required testing becomes the same as what is required for antennas located **beside** the camera protrusion, as outlined in section 3.1 of this notice. Testing shall be performed with the corresponding side of the camera protrusion and EUT in contact with the phantom along the respective edge to obtain a position as close as possible to the touch position as depicted in Figure 14.

Figure 13: Back view of EUT with entire antenna underneath the camera protrusion



► Description of Figure 13

Figure 14: Bottom view of Figure 13

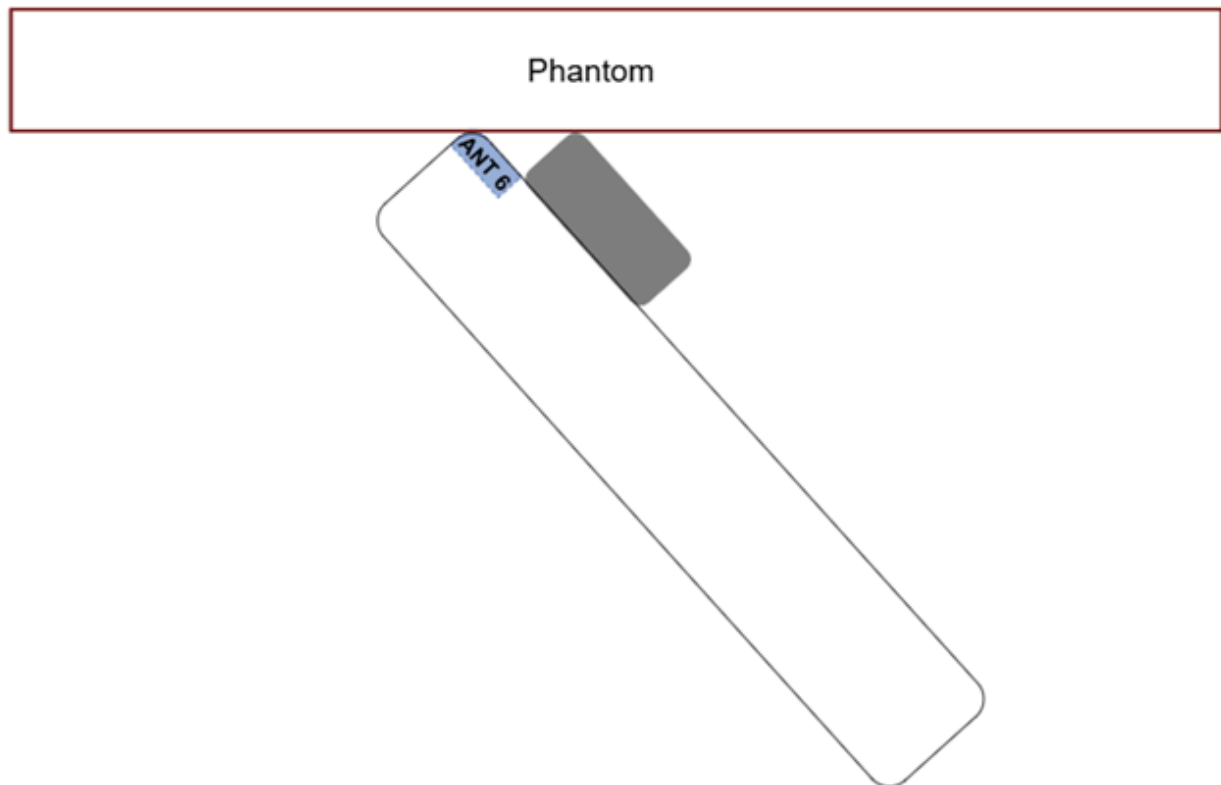


► Description of Figure 14

3.4. EUTs with antenna(s) located on the top edge

For antennas on the **top** edge, testing shall be conducted with the top part of the camera protrusion and EUT in contact with the phantom and the bottom part of the EUT tilted downward away from the phantom to obtain the touch position, as shown in Figure 15.

Figure 15: Side view (top antenna)



► Description of Figure 15

3.5. EUTs with corner-mounted antennas

For corner-mounted antennas, the same procedure as outlined in section 2.2.3 of this notice shall be followed; however with a separation distance of 0 mm.

4. Consideration for simultaneous spatially separated transmitters evaluations

Compliance of an EUT with multiple transmitters capable of simultaneous transmission shall continue to be assessed in accordance with section 5.5 of RSS-102.SAR.MEAS.

Evaluations for spatially separated transmitters, based on the SAR to peak location separation ratio (SPLSR) method, where testing is conducted at a tilt, shall be performed using either of the following procedures:

- a. The calculation of the SPLSR shall be performed using the most conservative scenario to determine the closest distance between the two transmitters; or
- b. A full SAR (i.e., area scan or zoom scan) or fast SAR test shall be performed to determine the coordinate locations of the peak SAR values.
 - i. The locations of the peak SAR values shall be based on the full SAR or fast SAR test results and the SAR values from the tilt positions.
 - ii. The full SAR or fast SAR test shall be conducted for all required bands/modes at the configurations with the highest SAR in standalone mode.
 - iii. The EUT shall be positioned parallel and centered to the phantom, with the camera protrusion touching the phantom.
 - iv. The requirements in RSS-102.SAR.MEAS section 5.1.1 shall be applied.

When the results are above 80% of the applicable SAR limit , only the zoom scan shall be used.

Comments related to these requirements may be submitted before February 10, 2026, at consultationradiostandards-consultationnormesradio@ised-isde.gc.ca.

Date modified:

2025-12-02