

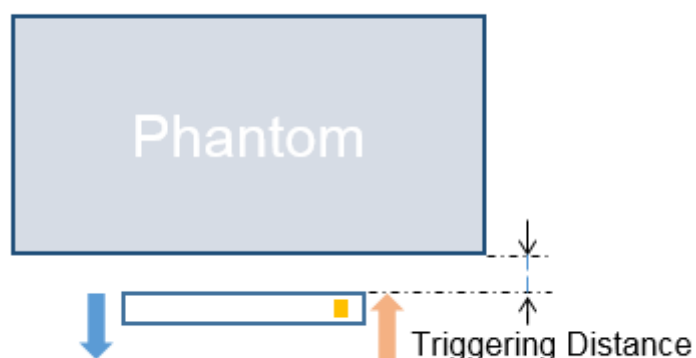
Appendix F. Power Reduction Verification

Proximity Sensor Triggering Distance (KDB 616217 §6.2)

Rear, Right Edge, Right Corner, Left Edge, Left Corner and Top of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement.

It was confirmed separately that the output power was altered according to the proximity sensor status indication. This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power contains both the full and reduced conducted power measurements.



LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Rear		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.1	18mm	18mm	17mm
5000 Head		18mm	18mm	17mm
2450 Head	WLAN Ant.2	17mm	17mm	16mm
5000 Head		17mm	17mm	16mm

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Proximity Sensor Triggering Distance Measurement Results – Rear Side (Ant.1)

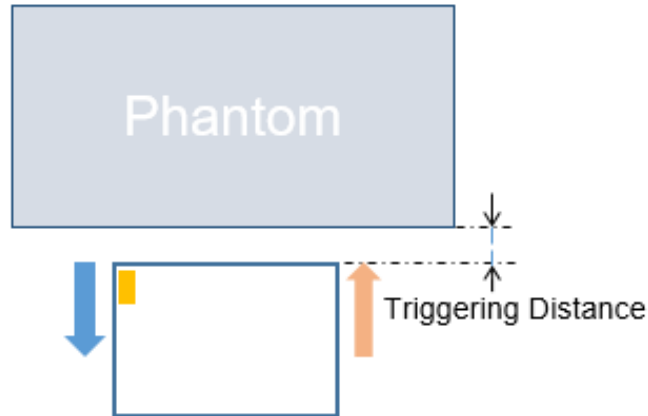
DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT Output Power (dBm)										
Distance (mm)	23	22	21	20	19	18	17	16	15	14
2.4 GHz 802.11b	17.24	17.24	17.32	17.28	17.26	11.77	11.74	11.74	11.75	11.71
2.4 GHz 802.11g	17.39	17.38	17.22	17.36	17.37	11.77	11.70	11.79	11.71	11.77
2.4 GHz 802.11n	16.15	16.28	16.21	16.28	16.10	11.90	11.81	11.93	11.82	11.84
5 GHz 802.11a	16.47	16.44	16.59	16.49	16.40	8.63	8.67	8.63	8.55	8.62
5 GHz 802.11n 20MHz	16.69	16.58	16.63	16.66	16.55	8.99	9.08	9.01	9.01	8.95
5 GHz 802.11n 40MHz	16.20	16.26	16.27	16.38	16.33	8.77	8.75	8.80	8.72	8.64
5 GHz 802.11ac 20MHz	16.47	16.48	16.42	16.31	16.39	8.67	8.65	8.66	8.62	8.66
5 GHz 802.11ac 40MHz	16.43	16.59	16.54	16.48	16.52	9.10	9.06	9.00	9.04	9.00
5 GHz 802.11ac 80MHz	16.45	16.49	16.50	16.41	16.45	8.79	8.81	8.77	8.90	8.85



Proximity Sensor Triggering Distance Measurement Results – Rear Side (Ant.2)

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT Output Power (dBm)										
Distance (mm)	22	21	20	19	18	17	16	15	14	13
2.4 GHz 802.11b	14.87	14.91	14.85	15.00	14.89	11.55	11.62	11.57	11.67	11.54
2.4 GHz 802.11g	17.49	17.43	17.41	17.51	17.56	11.73	11.60	11.77	11.72	11.62
2.4 GHz 802.11n	16.32	16.36	16.23	16.38	16.23	11.52	11.60	11.54	11.70	11.50
5 GHz 802.11a	16.20	16.23	16.35	16.26	16.23	8.79	8.80	8.90	8.73	8.82
5 GHz 802.11n 20MHz	16.31	16.44	16.42	16.43	16.38	9.06	9.11	9.13	9.13	9.05
5 GHz 802.11n 40MHz	16.26	16.24	16.39	16.28	16.30	8.86	8.80	8.84	8.74	8.71
5 GHz 802.11ac 20MHz	16.63	16.59	16.52	16.56	16.69	8.56	8.65	8.64	8.59	8.55
5 GHz 802.11ac 40MHz	16.85	16.88	16.82	16.80	16.85	9.00	9.07	8.91	8.90	9.00
5 GHz 802.11ac 80MHz	16.54	16.45	16.44	16.41	16.44	8.59	8.69	8.55	8.64	8.65



LEGEND

-  Direction of DUT travel for determination of power reduction triggering point
-  Direction of DUT travel for determination of full power resumption triggering point

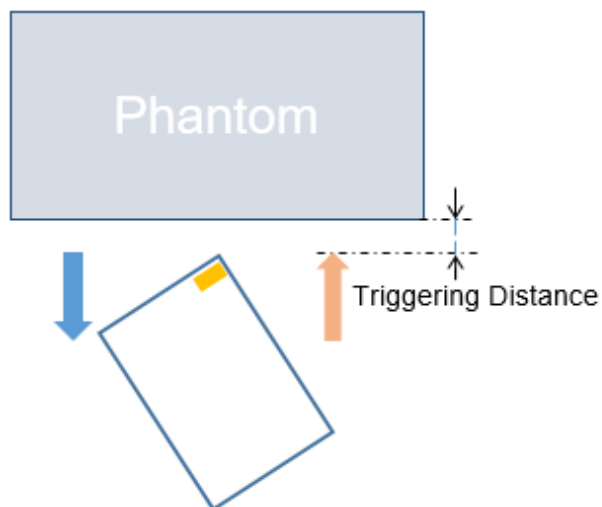
Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Right Edge		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.1	10mm	10mm	9mm
5000 Head		10mm	10mm	9mm
2450 Head	Bluetooth Ant.1	10mm	10mm	9mm

Proximity Sensor Triggering Distance Measurement Results – Right Edge

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	Distance to DUT Output Power (dBm)									
	15	14	13	12	11	10	9	8	7	6
2.4 GHz 802.11b	17.32	17.27	17.31	17.33	17.39	12.16	12.13	12.18	12.20	12.11
2.4 GHz 802.11g	17.60	17.56	17.51	17.55	17.50	12.04	11.91	11.98	12.05	12.09
2.4 GHz 802.11n	16.70	16.58	16.53	16.60	16.70	11.85	11.86	11.88	11.91	11.86
5 GHz 802.11a	16.15	16.10	16.30	16.14	16.17	8.50	8.63	8.52	8.63	8.56
5 GHz 802.11n 20MHz	16.37	16.38	16.21	16.22	16.20	9.10	8.93	8.92	8.96	9.10
5 GHz 802.11n 40MHz	16.24	16.33	16.31	16.29	16.31	8.85	8.98	8.80	8.98	8.83
5 GHz 802.11ac 20MHz	16.51	16.54	16.45	16.57	16.58	8.68	8.71	8.78	8.71	8.65
5 GHz 802.11ac 40MHz	16.33	16.48	16.37	16.39	16.30	8.59	8.69	8.57	8.61	8.69
5 GHz 802.11ac 80MHz	16.67	16.67	16.79	16.64	16.76	8.63	8.73	8.68	8.76	8.61
Bluetooth BDR_DH5	17.32	17.45	17.43	17.39	17.33	10.52	10.5	10.55	10.53	10.51



LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

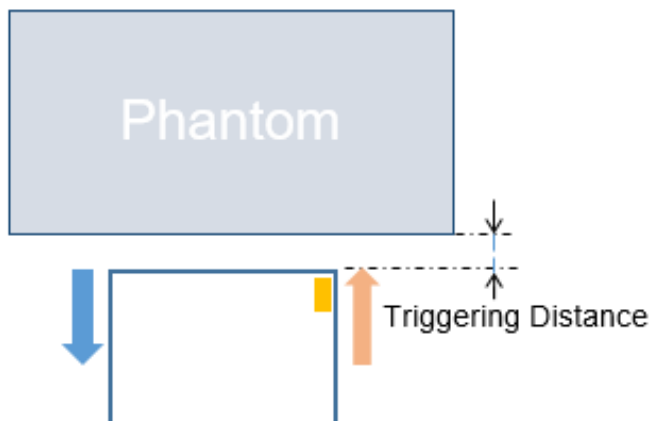
Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Right Corner		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.1	16mm	16mm	15mm
5000 Head		16mm	16mm	15mm
2450 Head	Bluetooth Ant.1	16mm	16mm	15mm

Proximity Sensor Triggering Distance Measurement Results – Right Corner

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT Output Power (dBm)										
Distance (mm)	21	20	19	18	17	16	15	14	13	12
2.4 GHz 802.11b	17.15	17.18	17.29	17.11	17.14	11.37	11.47	11.41	11.34	11.35
2.4 GHz 802.11g	17.34	17.32	17.39	17.22	17.38	11.50	11.58	11.58	11.59	11.43
2.4 GHz 802.11n	16.24	16.14	16.18	16.24	16.11	11.72	11.84	11.70	11.77	11.71
5 GHz 802.11a	16.41	16.45	16.42	16.52	16.57	8.88	8.82	8.96	8.98	8.92
5 GHz 802.11n 20MHz	16.42	16.45	16.48	16.36	16.30	8.93	8.94	9.01	8.92	9.03
5 GHz 802.11n 40MHz	16.62	16.56	16.68	16.57	16.64	8.74	8.81	8.79	8.71	8.80
5 GHz 802.11ac 20MHz	16.51	16.58	16.48	16.58	16.55	8.98	8.99	8.85	8.90	8.99
5 GHz 802.11ac 40MHz	16.67	16.68	16.50	16.54	16.69	8.91	9.07	9.01	8.93	8.98
5 GHz 802.11ac 80MHz	16.88	16.71	16.72	16.85	16.73	9.05	9.20	9.03	9.12	9.19
Bluetooth BDR_DH5	17.60	17.53	17.56	17.61	17.55	10.42	10.49	10.51	10.43	10.46



LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

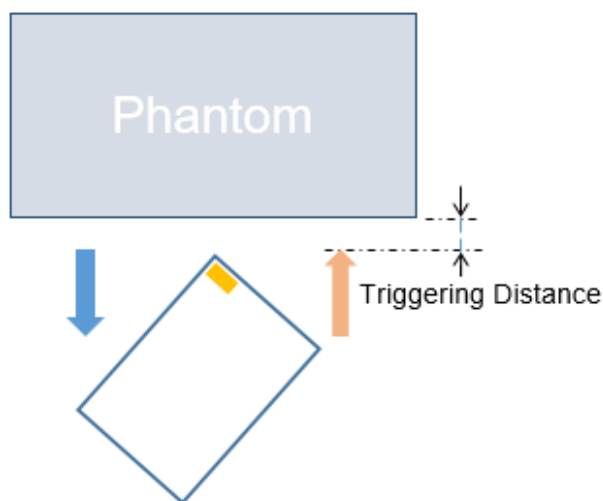
Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Left Edge		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.2	7mm	7mm	6mm
5000 Head		7mm	7mm	6mm

Proximity Sensor Triggering Distance Measurement Results – Left Edge

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	Distance to DUT Output Power (dBm)									
	12	11	10	9	8	7	6	5	4	3
2.4 GHz 802.11b	15.08	15.05	15.06	15.00	14.96	11.62	11.73	11.71	11.66	11.77
2.4 GHz 802.11g	17.36	17.24	17.35	17.27	17.37	11.76	11.70	11.76	11.63	11.67
2.4 GHz 802.11n	16.31	16.37	16.25	16.39	16.20	11.76	11.88	11.73	11.89	11.84
5 GHz 802.11a	16.26	16.29	16.29	16.23	16.13	8.91	8.94	8.91	8.99	8.98
5 GHz 802.11n 20MHz	16.31	16.22	16.22	16.26	16.37	9.10	8.97	9.04	8.92	8.93
5 GHz 802.11n 40MHz	16.48	16.57	16.50	16.54	16.49	8.89	8.83	8.95	8.86	8.93
5 GHz 802.11ac 20MHz	16.42	16.49	16.57	16.54	16.56	8.75	8.75	8.76	8.83	8.88
5 GHz 802.11ac 40MHz	16.83	16.72	16.77	16.84	16.85	8.95	9.10	9.07	8.96	9.03
5 GHz 802.11ac 80MHz	16.54	16.53	16.70	16.51	16.61	8.82	8.75	8.78	8.77	8.74



LEGEND

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

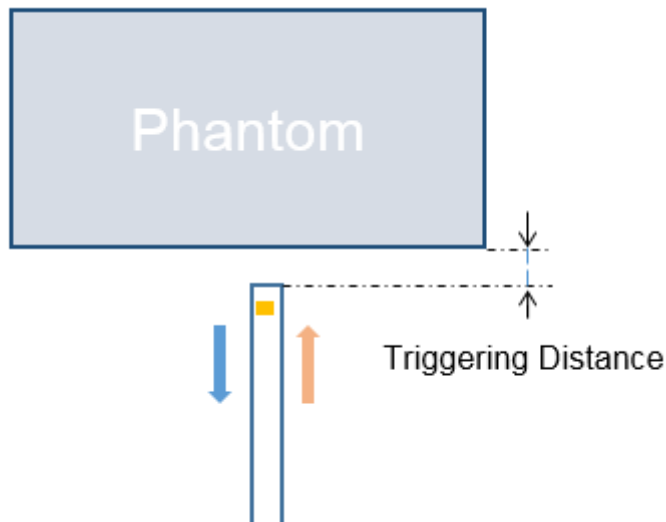
Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Left Corner		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.2	14mm	14mm	13mm
5000 Head		14mm	14mm	13mm

Proximity Sensor Triggering Distance Measurement Results – Left Corner

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance (mm)	Distance to DUT Output Power (dBm)									
	19	18	17	16	15	14	13	12	11	10
2.4 GHz 802.11b	14.91	14.82	14.92	14.84	14.90	11.51	11.67	11.60	11.51	11.70
2.4 GHz 802.11g	17.57	17.52	17.69	17.54	17.61	11.67	11.61	11.78	11.72	11.68
2.4 GHz 802.11n	16.41	16.49	16.53	16.44	16.47	11.91	11.83	11.95	11.93	11.83
5 GHz 802.11a	16.52	16.56	16.56	16.48	16.48	9.06	9.00	9.04	9.03	9.03
5 GHz 802.11n 20MHz	16.50	16.59	16.70	16.62	16.62	9.13	9.07	9.02	9.00	9.03
5 GHz 802.11n 40MHz	16.50	16.68	16.53	16.69	16.55	8.94	8.93	8.93	9.06	9.09
5 GHz 802.11ac 20MHz	16.48	16.44	16.45	16.45	16.60	8.90	8.81	8.97	8.90	8.90
5 GHz 802.11ac 40MHz	16.79	16.75	16.80	16.65	16.68	9.28	9.26	9.21	9.21	9.11
5 GHz 802.11ac 80MHz	16.52	16.43	16.55	16.40	16.60	8.80	8.64	8.77	8.72	8.63

**LEGEND**

- Direction of DUT travel for determination of power reduction triggering point
- Direction of DUT travel for determination of full power resumption triggering point

Resulting test positions for SAR measurements

Tissue simulating liquid	Band	Trigger distance – Top		
		Moving toward phantom	Moving from phantom	Worst case distance for SAR
2450 Head	WLAN Ant.1	21mm	21mm	20mm
5000 Head		21mm	21mm	20mm
2450 Head	WLAN Ant.2	20mm	20mm	19mm
5000 Head		20mm	20mm	19mm

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Proximity Sensor Triggering Distance Measurement Results – Top Side (Ant.1)

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT Output Power (dBm)										
Distance (mm)	26	25	24	23	22	21	20	19	18	17
2.4 GHz 802.11b	17.70	17.57	17.50	17.52	17.64	11.85	11.85	11.91	11.94	11.92
2.4 GHz 802.11g	17.51	17.50	17.58	17.49	17.40	11.98	12.05	11.95	11.97	12.00
2.4 GHz 802.11n	16.49	16.54	16.57	16.58	16.60	11.85	11.70	11.84	11.79	11.81
5 GHz 802.11a	16.32	16.45	16.46	16.38	16.42	8.77	8.89	8.85	8.74	8.85
5 GHz 802.11n 20MHz	16.45	16.43	16.49	16.53	16.54	9.08	9.02	8.98	9.07	8.99
5 GHz 802.11n 40MHz	16.71	16.72	16.65	16.63	16.72	8.94	8.95	8.91	8.98	9.00
5 GHz 802.11ac 20MHz	16.51	16.64	16.66	16.69	16.50	8.90	8.98	8.93	8.93	9.03
5 GHz 802.11ac 40MHz	16.44	16.55	16.45	16.60	16.57	9.00	9.06	9.20	9.04	9.11
5 GHz 802.11ac 80MHz	16.79	16.61	16.61	16.72	16.64	9.08	9.02	8.94	9.09	8.91

Proximity Sensor Triggering Distance Measurement Results – Top Side (Ant.2)

DUT Moving Toward (Trigger) and Away (Release) from the Phantom

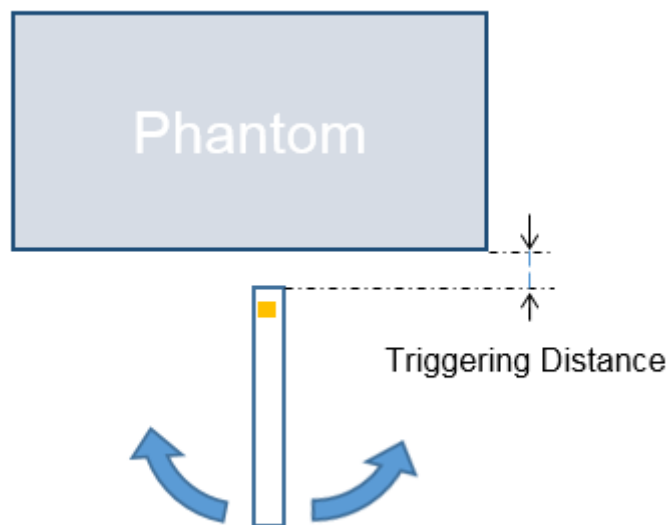
Distance to DUT Output Power (dBm)										
Distance (mm)	25	24	23	22	21	20	19	18	17	16
2.4 GHz 802.11b	15.10	15.06	14.95	14.94	14.98	11.99	11.94	11.93	11.94	12.00
2.4 GHz 802.11g	17.30	17.34	17.40	17.43	17.36	11.91	11.90	11.90	11.86	11.87
2.4 GHz 802.11n	16.44	16.50	16.44	16.33	16.46	12.11	12.11	12.10	12.08	12.19
5 GHz 802.11a	16.89	16.86	16.73	16.83	16.75	9.00	9.03	9.17	9.13	9.13
5 GHz 802.11n 20MHz	16.48	16.45	16.44	16.39	16.35	8.99	8.97	8.92	9.08	8.94
5 GHz 802.11n 40MHz	16.74	16.70	16.89	16.75	16.72	9.00	8.87	8.83	9.00	9.00
5 GHz 802.11ac 20MHz	16.42	16.43	16.39	16.31	16.34	8.95	8.83	8.80	8.83	8.86
5 GHz 802.11ac 40MHz	16.51	16.54	16.58	16.60	16.42	9.09	9.06	9.00	9.03	9.11
5 GHz 802.11ac 80MHz	16.30	16.36	16.24	16.34	16.36	8.83	8.72	8.81	8.77	8.83

Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom parallel to the base of the flat phantom for each band.

The EUT was rotated about Bottom for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated.

This procedure was repeated until the power remained reduced for all angles up to +/- 45°.

**Proximity sensor tilt angle assessment KDB 616217 §6.4****Summary of Tilt Angle Influence to Proximity Sensor Triggering (Top)**

Band [MHz]	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status											
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°	
2450 (Ant.1)	21 mm	21 mm	On	On	On	On	On	On	On	On	On	On	On	On
2450 (Ant.2)	20 mm	20 mm	On	On	On	On	On	On	On	On	On	On	On	On
5000 (Ant.1)	21 mm	21 mm	On	On	On	On	On	On	On	On	On	On	On	On
5000 (Ant.2)	20 mm	20 mm	On	On	On	On	On	On	On	On	On	On	On	On

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Summary of Tilt Angle Influence to Proximity Sensor Triggering (Left)

Band [MHz]	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 (Ant.2)	7 mm	7 mm	On	On	On	On	On	On	On	On	On	On	On
5000 (Ant.2)	7 mm	7 mm	On	On	On	On	On	On	On	On	On	On	On

Summary of Tilt Angle Influence to Proximity Sensor Triggering (Right)

Band [MHz]	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 (Ant.1)	10 mm	10 mm	On	On	On	On	On	On	On	On	On	On	On
5000 (Ant.1)	10 mm	10 mm	On	On	On	On	On	On	On	On	On	On	On

End of test report