

**MOTOROLA SOLUTIONS**MS ISO/IEC 17025
TESTING

SAMM No.0826



CERTIFICATE 2518.05

Exhibit 7B: SAR Test Report Photographs**Motorola Solutions Inc****EME Test Laboratory**

Motorola Solutions Malaysia Sdn Bhd (Innoplex)
Plot 2A, Medan Bayan Lepas
Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.

*Tiong*

Tiong Nguk Ing
Deputy Technical Manager (Approved Signatory)
Approval Date: 3/22/2019

Report Revision History

Date	Revision	Comments
3/18/2019	A	Initial release

1.0 Highest SAR Test Position per body location

1.1 Body

DUT w/ antenna PMAE4049A with offered battery NNTN9087A and body worn kit PMLN7947A w/ NTN8266B against the phantom with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and battery.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	*9-11	27	*42-48
KT000026A01	*10-11	27	*51-54
PMAE4022B	*9-11	27	*44-48
PMAE4102A	*9-11	27	*35-37
PMAE4100A	11	27	37
PMAD4088B	11	29	53
PMAD4094A	*8-11	29	40
PMAD4095A	11	29	40
PMAF4022A	*10-11	29	38
NAF5080A	11	29	50
AN000296A01	*10-11	29	*36-46

(*) Depending on applicable offered battery

1.2 Face

Back of DUT w/ antenna PMAE4049A with offered battery NNTN9087A separated 2.5cm from the phantom without an audio accessory attached. Same position used for the other applicable offered antennas and battery.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	26	31	39
KT000026A01	26	31	42
PMAE4022B	26	31	39
PMAE4102A	26	31	37
PMAE4100A	26	31	37
PMAD4088B	25	31	43
#PMAD4093A	25	31	42
PMAD4094A	25	31	42
PMAD4095A	25	31	42
PMAF4022A	25	31	36
NAF5080A	25	31	42
AN000296A01	25	31	35

Note: # Antenna outside FCC range.

1.3 Head
Not applicable

1.4 Hand
Not applicable

2.0 Other SAR tested positions at the body

2.1 Body worn

DUT with antenna PMAE4049A with offered battery NNTN9087A and body worn kit PMLN7947A w/ PMLN7965A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	*5-10	29	*49-50
KT000026A01	*7-9	29	*56-57
PMAE4022B	*5-10	29	50
PMAE4102A	*5-10	29	*39-41
PMAE4100A	10	29	41
PMAD4088B	8	32	65
PMAD4094A	*5-8	32	*45-47
PMAD4095A	8	32	45
PMAF4022A	9	29	42
NAF5080A	9	29	56
AN000296A01	*7-9	29	*39-40

(*) Depending on applicable offered battery

DUT with antenna PMAE4049A with offered battery NNTN9087A and body worn kit PMLN7948A w/ NTN8266B with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and battery.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	10	30	47
KT000026A01	10	30	55
PMAE4022B	10	30	47
PMAE4102A	10	30	41
PMAE4100A	10	30	41
PMAD4088B	10	32	55
PMAD4094A	10	32	43
PMAD4095A	10	32	43
PMAF4022A	8	32	40
NAF5080A	8	32	55
AN000296A01	8	32	40

DUT with antenna PMAE4049A with offered battery NNTN9087A and body worn kit PMLN7948A w/ PMLN7965A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	8	34	54
KT000026A01	8	35	62
PMAE4022B	8	34	53
PMAE4102A	8	34	45
PMAE4100A	8	34	45
PMAD4088B	8	35	70
#PMAD4093A	8	35	45
PMAD4094A	8	35	49
PMAD4095A	8	35	49
PMAF4022A	8	35	46
NAF5080A	8	35	62
AN000296A01	8	35	42

Note: # Antenna outside FCC range.

DUT with antenna PMAE4049A with offered battery NNTN9087A, and body worn kit PMLN7948A w/ PMLN5407A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	15	53	83
KT000026A01	15	53	90
PMAE4022B	15	53	83
PMAE4102A	15	53	68
PMAE4100A	15	53	65
PMAD4088B	15	55	95
PMAD4094A	15	55	75
PMAD4095A	15	55	75
PMAF4022A	15	53	66
NAF5080A	15	53	92
AN000296A01	15	53	62

DUT with antenna PMAE4049A with offered battery NNTN9087A, and body worn kit PMLN7948A w/ PMLN5408A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	3	60	113
KT000026A01	3	53	105
PMAE4022B	3	60	113
PMAE4102A	3	60	84
PMAE4100A	3	60	84
PMAD4088B	8	60	120
PMAD4094A	8	60	90
PMAD4095A	8	60	90
PMAF4022A	3	53	72
NAF5080A	3	53	96
AN000296A01	3	53	65

DUT with antenna PMAE4049A with offered battery NNTN9087A, and body worn kit PMLN7948A w/ PMLN5409A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	5	57	96
KT000026A01	5	57	110
PMAE4022B	5	57	96
PMAE4102A	5	57	73
PMAE4100A	5	57	73
PMAD4088B	8	53	115
PMAD4094A	8	53	80
PMAD4095A	8	53	80
PMAF4022A	8	53	75
NAF5080A	8	53	100
AN000296A01	8	53	70

DUT with antenna PMAE4102A with offered battery NNTN9089A, and body worn kit PMLN7964A w/ NNTN8266B with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4102A	8	32	41
KT000026A01	8	32	53
PMAE4022B	8	32	45
PMAE4049A	8	32	45
PMAE4100A	8	32	41
PMAD4088B	8	33	55
PMAD4094A	8	33	43
PMAD4095A	8	33	43
PMAF4022A	8	33	43
NAF5080A	8	33	53
AN000296A01	8	33	40

DUT with antenna PMAE4102A with offered battery NNTN9089A, and body worn kit PMLN7964A w/ PMLN7965A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4102A	5	36	45
KT000026A01	5	36	62
PMAE4049A	5	36	59
PMAE4022B	5	36	59
PMAE4100A	5	36	45
PMAD4088B	5	38	65
PMAD4094A	5	38	48
PMAD4095A	5	38	48
PMAF4022A	5	38	48
NAF5080A	5	38	62
AN000296A01	5	38	45

DUT with antenna PMAE4102A with offered battery NNTN9089A, and body worn kit PMLN7964A w/ PMLN5407A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4102A	10	58	70
KT000026A01	10	58	98
PMAE4049A	10	58	86
PMAE4022B	10	58	86
PMAE4100A	10	58	70
PMAD4088B	10	58	110
PMAD4094A	10	58	70
PMAD4095A	10	58	70
PMAF4022A	10	53	73
NAF5080A	10	53	92
AN000296A01	10	53	66

DUT with antenna PMAE4102A with offered battery NNTN9089A, and body worn kit PMLN7964A w/ PMLN5408A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4102A	7	58	76
KT000026A01	7	58	105
PMAE4049A	7	58	94
PMAE4022B	7	58	94
PMAE4100A	7	58	76
PMAD4088B	7	53	115
PMAD4094A	5	53	74
PMAD4095A	5	53	74
PMAF4022A	5	58	74
NAF5080A	5	58	100
AN000296A01	5	58	72

DUT with antenna PMAE4102A with offered battery NNTN9089A, and body worn kit PMLN7964A w/ PMLN5409A with an audio accessory PMMN4123A attached. Same position used for the other applicable offered antennas and batteries.



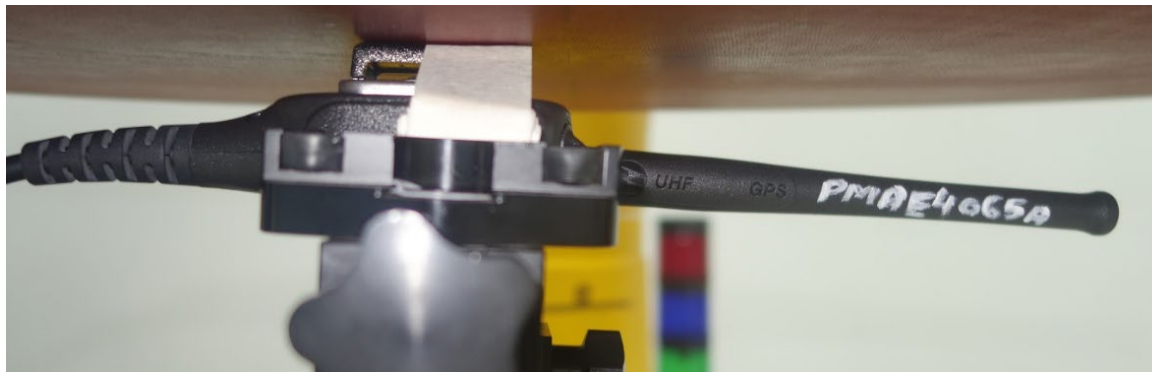
Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4102A	3	58	70
KT000026A01	3	58	101
PMAE4049A	3	58	90
PMAE4022B	3	58	90
PMAE4100A	3	58	70
PMAD4088B	3	56	109
PMAD4094A	3	56	82
PMAD4095A	3	56	82
PMAF4022A	3	53	70
NAF5080A	3	53	100
AN000296A01	3	53	66

PSM model PMAE4059B against the phantom and with UHF band antenna PMAE4065A attached. Same position used for the other applicable offered PSMs. Same position used for the other applicable offered antenna.



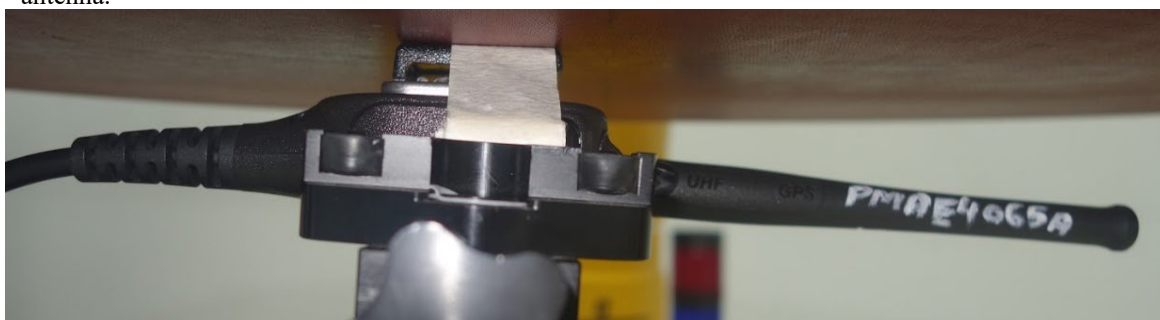
Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4065A	13	20	30
PMAF4002A	12	22	28

PSM model PMAE4060B against the phantom and with UHF band antenna PMAE4065A attached. Same position used for the other applicable offered PSMs. Same position used for the other applicable offered antenna.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4065A	13	20	30
PMAF4002A	12	22	28

PSM model PMAE4061B against the phantom and with UHF band antenna PMAE4065A attached. Same position used for the other applicable offered PSMs. Same position used for the other applicable offered antenna.



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4065A	13	20	30
PMAF4002A	12	22	28

2.2 Front Side against phantom
Not applicable.

2.3 Back side against phantom
Not applicable.

2.4 Front 2.5cm separation
Not applicable

2.5 Antenna 2.5cm separation
Not applicable

2.6 Back 2.5cm separation
Not applicable

3.0 Other SAR tested positions at the face

3.1 Back of DUT at 2.5cm separation
Refer to section 1.2

3.2 Front of DUT at 2.5cm separation
Front of DUT w/ antenna PMAE4049A with offered battery NNTN9087A separated 2.5cm from the phantom without an audio accessory attached



Antenna kit #	Separation Distances (mm)		
	@ bottom surface of the DUT	@ antenna's base	@ antenna's tip
PMAE4049A	25	47	60
KT000026A01	25	47	62
PMAE4022B	25	47	60
PMAE4102A	25	47	52
PMAE4100A	25	47	52
PMAD4088B	25	47	56
PMAD4094A	25	46	51
PMAD4095A	25	46	51
PMAF4022A	25	47	50
NAF5080A	25	47	60
AN000296A01	25	47	50

4.0 Other SAR tested positions at the head

- 4.1 Left ear touch**
Not applicable
- 4.2 Left ear tilt**
Not applicable
- 4.3 Right ear touch**
Not applicable
- 4.4 Right ear tilt**
Not applicable

5.0 Other SAR tested positions at the hand

- 5.1 Left side**
Not applicable.
- 5.2 Right side**
Not applicable.
- 5.3 Top side**
Not applicable.
- 5.4 Bottom side**
Not applicable.
- 5.5 Back side**
Not applicable.

6.0 DUT and Accessory Photos

The purpose of these photos is to illustrate the tested accessories. Refer to Part 1 of 2, section 7.0 for additional details on the offered accessories.

6.1 Antenna dimension and photo:

Antenna Kit #	Physical Length (mm)	Electrical Length
KT000026A01	200	½ wave
PMAE4049A	160	¼ wave
PMAE4022B	160	¼ wave
*PMAE4065A	140	¼ wave
PMAE4102A	90	¼ wave
PMAE4100A	90	¼ wave
PMAD4088B	215	5/8 wave
#PMAD4093A	110	¼ wave
PMAD4094A	110	¼ wave
PMAD4095A	110	¼ wave
*PMAF4002A	80	¼ wave
PMAF4022A	80	¼ wave
NAF5080A	200	¼ wave
AN000296A01	63.5	¼ wave

Notes:

“*” For PSM only

Antenna outside FCC range



Top to Bottom (VHF): PMAD4088B, KT000026A01, PMAD4095A, PMAD4094A, PMAD4093A



Top to Bottom (UHF): KT000026A01, PMAE4049A, PMAE4022B, PMAE4065A, PMAE4102A, PMAE4100A



Top to Bottom (7800MHz): AN000296A01, PMAF4002A, PMAF4022A, NAF5080A, KT000026A01

6.2 Body worn accessories



PMLN7948A with PMLN5409A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7948A with PMLN5408A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7948A with PMLN5407A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7948A with NNTN8266B (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7948A with PMLN7965A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7964A with PMLN5409A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7964A with PMLN5408A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7964A with PMLN5407A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7964A with PMLN7965A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7964A with NNTN8266B (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7947A with PMLN7965A (Left to Right): DUT Back view, DUT Front View, DUT Side view



PMLN7947A with NNTN8266B (Left to Right): DUT Back view, DUT Front View, DUT Side view

6.3 Battery accessories:



Side, Front and Back View: NNTN9089A



Side, Front and Back View: NNTN9087A

6.4 Audio accessories:



PMMN4123A



PMMN4106D (2.8m)



PMMN4106D (2m)



PMMN4065A



PMLN6852A



PMLN6129A



NMN6274B



HMN4101B



BDN6738B w RLN5312B



PMMN4061B (PSM)



PMMN4060B (PSM)



PMMN4059B (PSM)

6.5 DUT Dimensions

	Height (mm)	Width (mm)	Depth (mm)
Radio only (w/o battery)	135	78	43
Radio with battery NNTN9087A	137	78	43
Radio with battery NNTN9089A	177	78	43

For illustration purposes only - the following figure reflects the location of the device's dimensions.



Note: H = Height; W = Width; D = Depth

$W1 = (\text{Width @ Top}) / (\text{Width @ PTT})$

$D2 = (\text{Depth @ Bottom}) / (\text{Depth @ PTT})$