APX N50 UHF WIFI BT ANTENNA GAIN MEASUREMENT REPORT

REPORT NO.: 2023-AG-PEN004
MODEL NO.: H25XDF9PW6AN
TESTED DATE: 2023.10.04
ISSUED: 2023.10.05

MANUFACTURER: Motorola Solutions Inc.

ADDRESS : 2000 Progress Parkway, SCHAUMBURG IL 60196, UNITED STATES

ISSUED BY: Motorola Solutions Malaysia Sdn Bhd.

ADDRESS : Motorola Solutions, 11900 Bayan Lepas, Penang, Malaysia

TEST LOCATION : Motorola Solutions, 11900 Bayan Lepas, Penang, Malaysia

RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
2023-AG-PEN004	Original release	2023.10.05

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1 General Information

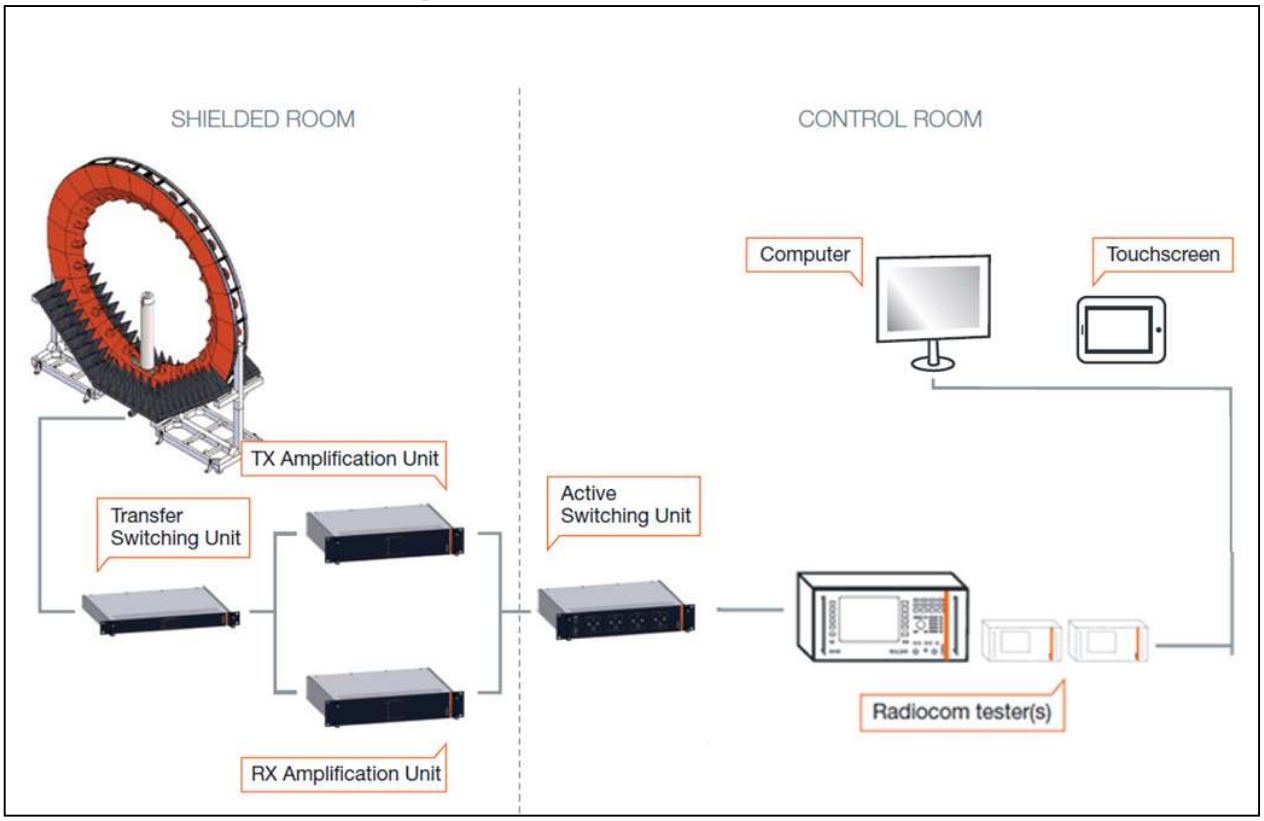
APPLICANT:	Motorola Solutions, Inc
MANUFACTURER:	Motorola Solutions, Inc
MODEL NO:	H25XDF9PW6AN
SERIAL NUMBER/ESN/IMEI:	287TZT0229
HARDWARE VERSION:	Proto 1
SOFTWARE VERSION:	D31.50.21
PRODUCT TYPE:	Portable Radio
BLUETOOTH ANTENNA:	AN000410A01, Embedded.
WiFi 2.4GHz ANTENNA:	AN000410A01, Same physical antenna as above
WiFi 5GHz ANTENNA:	AN000410A01, Same physical antenna as above

The above equipment has been tested by **Motorola Solutions Malaysia Sdn Bhd**

PREPARED BY: Mohamad Jamadi Mohamad Sukeri

APPROVED BY: Teik Yang Goh

2 Measurement Setup



Overview of the SG24 multi-probe antenna measurement system from Microwave Vision Group.

3 Test Procedure

Device Under Test mounted on Antenna Chamber turntable. Measurements, including conducted power, TRP, and Peak EIRP and obtained by the MVG SG24 test system across low, mid and hi portions of the frequency band and across a 360 degree sphere. Peak antenna gain is determined from the maximum EIRP measured across the sphere with respect to the conducted power.

4 Test Lab Environment Conditions

Temperature	20°C to 30°C
Humidity	30% to 70%

5 Test Equipment List

Type of Equipment	Model Number	Serial Number	Calibration Due Date
Antenna Chamber	MVG SG24		N/A
Call Box	R&S CMW500	141537	16 August 2024

6 Device Configuration

6.1 Bands and Protocols Supported by Each Antenna

Antenna Label	Bands and Protocols for Which the Antenna Is Connected to RF front end
A	BT, 2.4GHz WiFi, 5GHz WiFi

7 Evaluation Summary

7.1 Conducted Power, TRP, EIRP

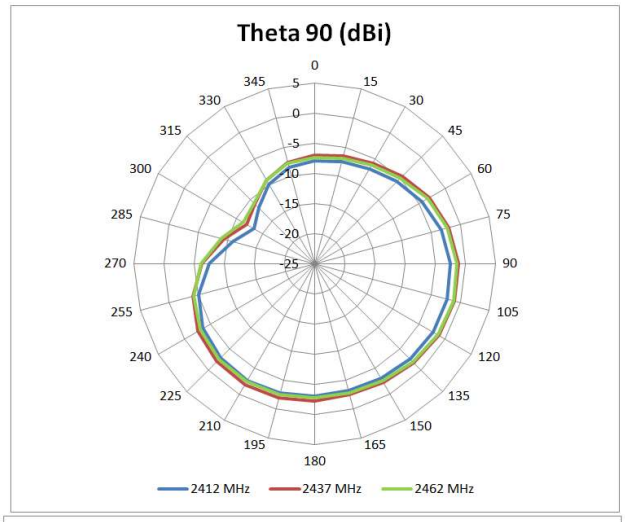
Protocol	Frequency (MHz)	BW (MHz)	Rate (Mbps)	Conducted Power	TRP	EIRP	Peak Gain = EIRP – Conducted Power
802.11g	2412	20	6	14.37	9.94	14.65	0.28
	2437	20	6	17.19	13.66	18.67	1.48
	2462	20	6	14.10	10.23	15.01	0.91
802.11a	5180	20	6	12.23	9.76	16.43	4.20
	5500	20	6	7.04	3.40	11.92	4.88
	5825	20	6	11.81	8.69	14.31	2.50

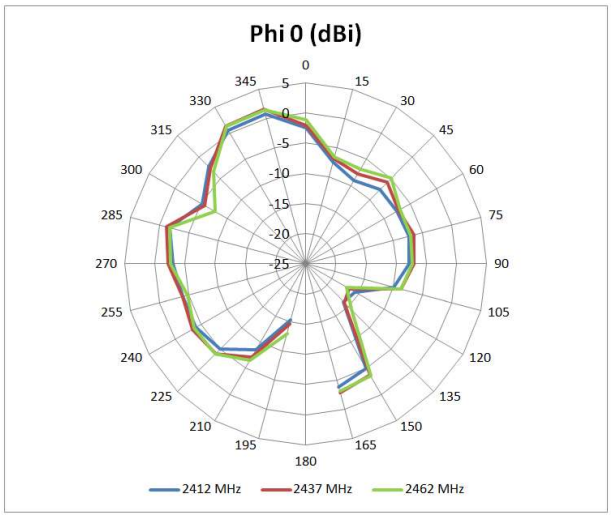
Measurement uncertainty for transmit parameters and antenna gain is as listed below, corresponding to 95% confidence level.

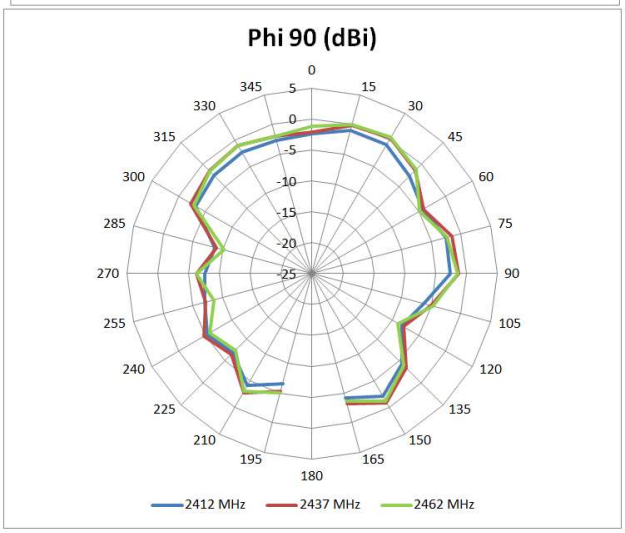
	Measurement Uncertainty (dB)	
Test Configuration	LTE/WLAN 2300-2800 MHz	LTE/WLAN 5150-5925 MHz
Free Space	1.60	1.72

7.2 Antenna patterns

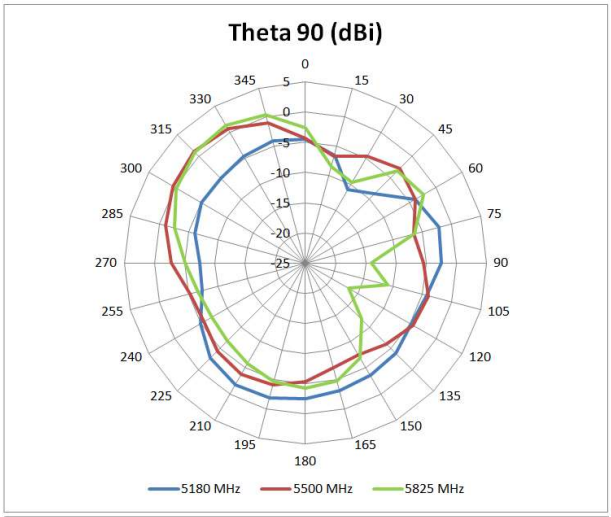
2.4GHz WIFI







5GHz WIFI


Theta 90 (dBi)
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45
60
75
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105
120
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150
165
180
195
210
225
240
255
270
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315
330
345
5
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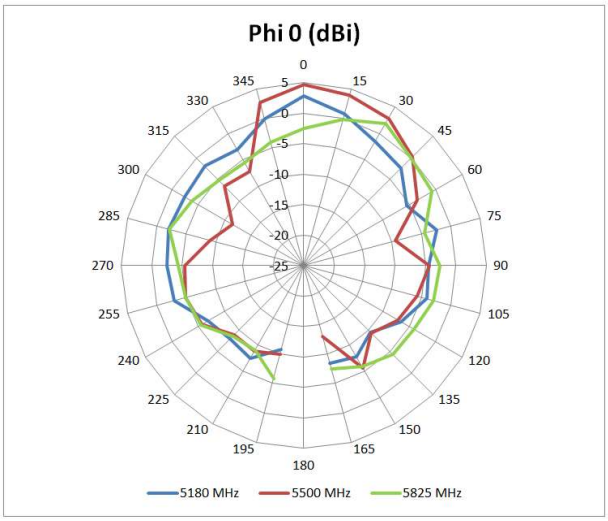
-5
-10
-15
-20
-25
5180 MHz
5500 MHz
5825 MHz


Phi 0 (dBi)
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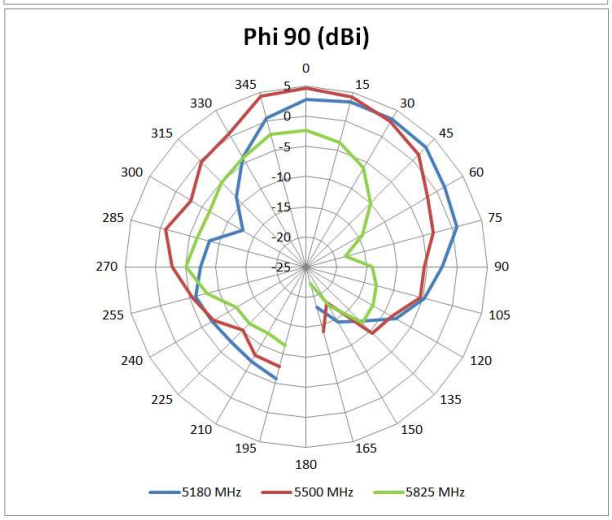
-10
-15
-20
-25
5180 MHz
5500 MHz
5825 MHz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5180 MHz
5500 MHz
5825 MHz

8 Antenna Photographs / drawings