PMMN4156A WIFI BT ANTENNA GAIN MEASUREMENT REPORT

REPORT NO.: 2023-AG-PEN003
MODEL NO.: PMMN4156A
TESTED DATE: 2023.09.15
ISSUED: 2023.09.15

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-PEN003	Original release	2023.09.15

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1 General Information

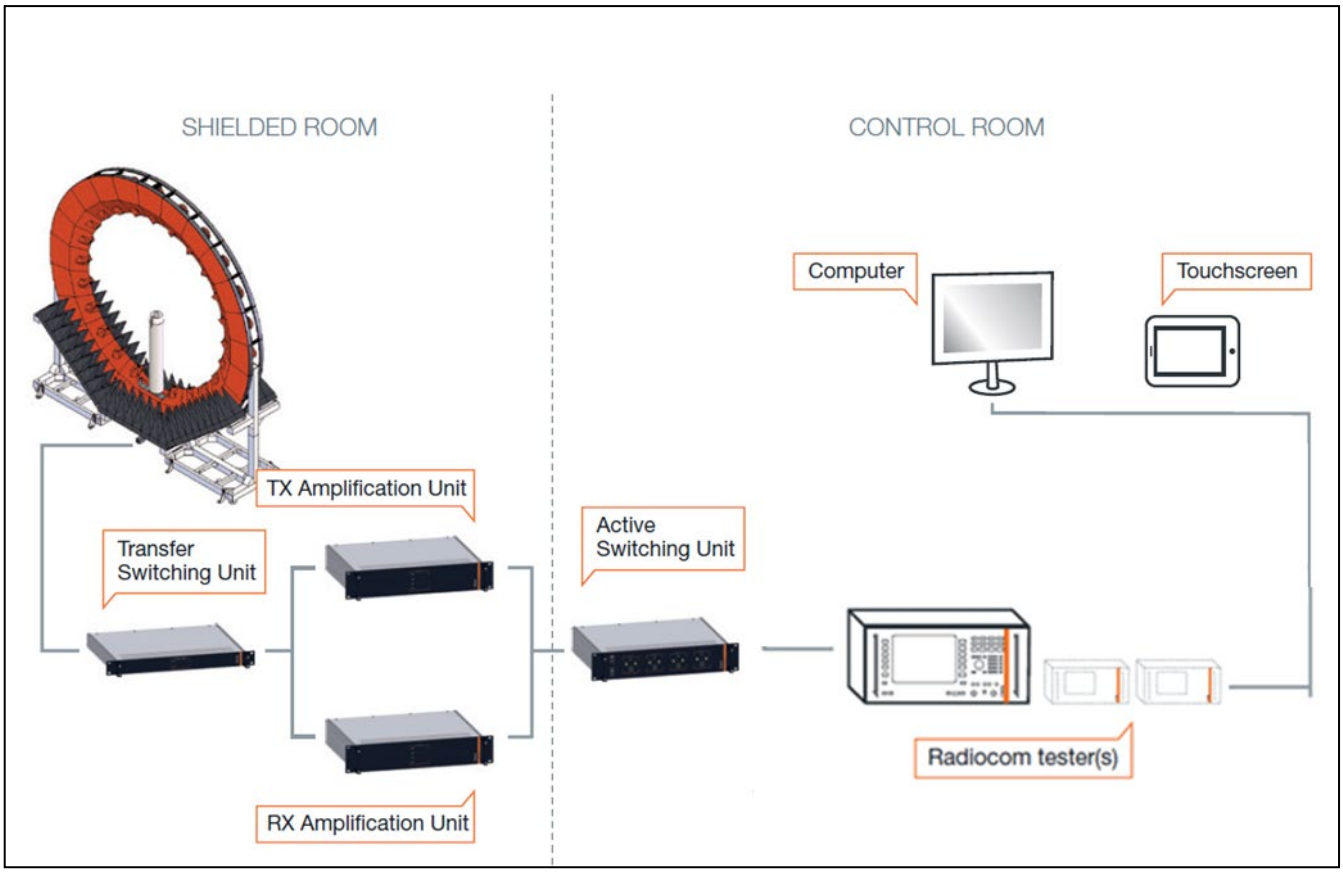
APPLICANT:	Motorola Solutions, Inc
MANUFACTURER:	Motorola Solutions, Inc
MODEL NO:	PMMN4156A
SERIAL NUMBER/ESN/IMEI:	CAB56WMA01P5
HARDWARE VERSION:	Prepilot
SOFTWARE VERSION:	D01.00.60
PRODUCT TYPE:	Portable Radio
BLUETOOTH ANTENNA:	AN000012A03, Embedded.

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 Aug 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

7 Evaluation Summary

7.1 Conducted Power, TRP, EIRP

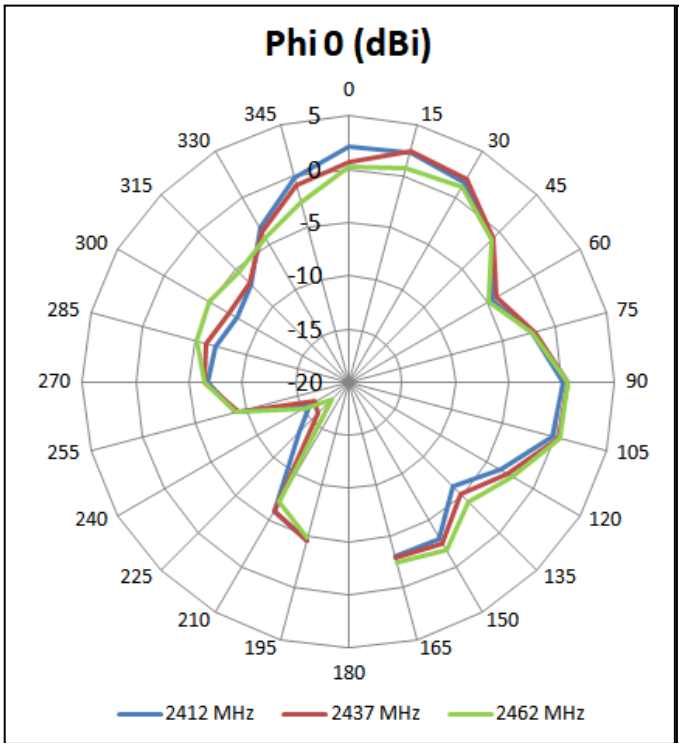
Protocol	Frequency (MHz)	Conducted Power	TRP	EIRP	Peak Gain = EIRP – Conducted Power
BT, DH5	2402	11.97	11.01	14.54	2.57
	2441	11.72	10.98	14.62	2.9
	248	11.32	10.8	14.22	2.9

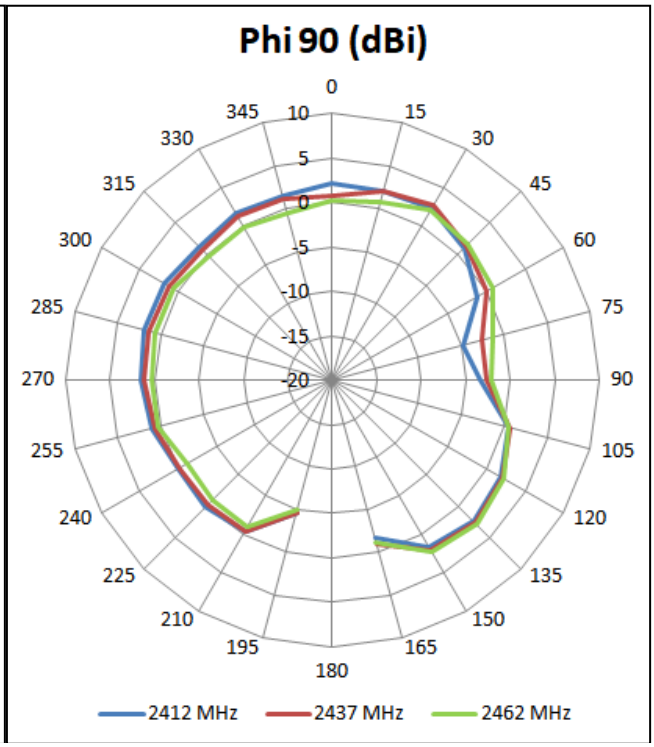
Measurement uncertainty for transmit parameters and antenna gain is as listed below, corresponding to 95% confidence level.

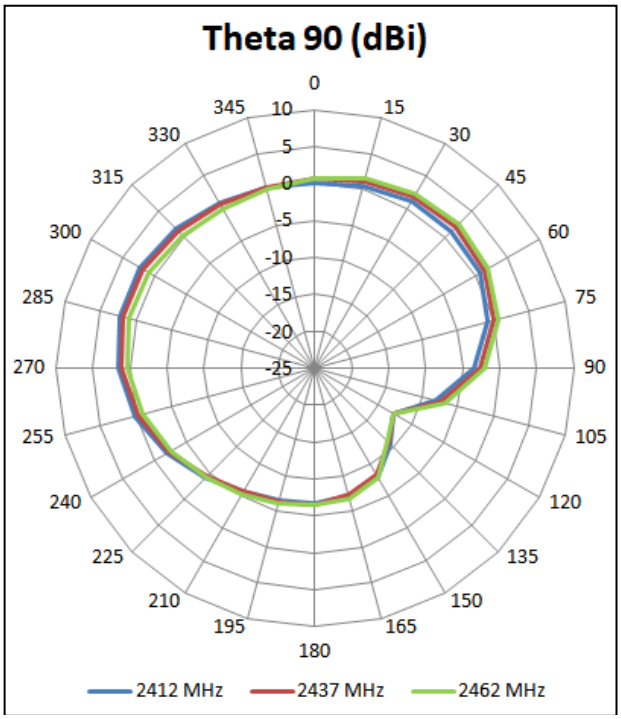
	Measurement Uncertainty (dB)	
Test Configuration	LTE/WLAN 2300-2800 MHz	LTE/WLAN 5150-5925 MHz
Free Space	1.60	1.72

7.2 Antenna patterns

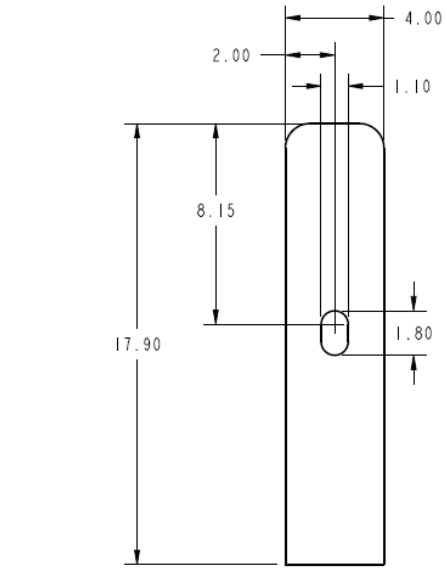
2.4GHz BT



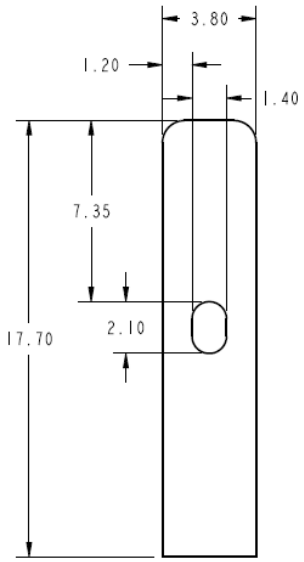




8 Antenna Photographs / drawings



ANTENNA, BLUETOOTH ELEMENT



KAPTON TAPE