

# An Accuracy Test of Qibla Direction Measurement of Mosques and Prayer Rooms

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**Abstract**—Qibla direction plays a pivotal role and is one of the requirements for the validity of prayer (salah). If someone performs the prayer without facing the qibla, the prayer is considered to be invalid accordingly. The mosque and prayer room buildings around the campus of Universitas Islam Bandung precisely in Bandung Wetan district, are necessary to be re-examined for the accuracy of their qibla direction seeing that there are several mosques found by researchers are not in accordance with the actual qibla direction. This study aims to verify the accuracy of the direction of the mosques and the prayer rooms in order that it can be mapped which ones follow the accurate direction of the qibla and vice versa. A qualitative approach was used in this study so as the data obtained directly from field observations could be analyzed for its validity. The measurement of qibla direction is inseparable from a number of cosmographical instruments such as theodolite, mizwala, compass sunto, google earth, and GPS. The results of this study are that most mosque buildings merely make use of a magnetic compass to locate qibla direction without firstly carrying out calibration. The largest deviation is  $7^{\circ} 6'$  (seven degrees six minutes) to the south.

**Keywords:** *Qibla direction accuracy, mosque, prayer*

## I. INTRODUCTION

Qibla direction is an endless issue to be continuously studied. This has become a joint study for observers and practitioners of cosmography, that until recently the application and socialization related to the Qibla direction is necessarily intensified even more. A great number of mosque administrators found by researchers as yet do not possess an understanding about the importance of directing the range of the prayer facing the Kaaba, particularly that much-sophisticated equipment has been found presently and helpful to get the intended direction, such as theodolite, mizwala, google earth, Stellarium, compass sunto, and other cosmographical instruments [1,2]. These include the mosques and the prayer rooms located in Bandung Wetan district, the city of Bandung.

Some mosque constructions in Bandung Wetan sub-district are necessarily tested for the accuracy of the Qibla direction, seeing that the mosques that have been measured by researchers making use of falakiyah instruments yet, exhibit the

value of deviations toward the Qibla direction. For example, the direction of al-Islam Sulanjana Mosque building with azimuth value of 277.78 degrees NESW (Latitude  $6^{\circ} 53'56.96''$  S and Longitude  $107^{\circ} 36'28.38''$  E) and also At-Takwa mosque (Latitude  $6^{\circ} 54.034''$  S and Longitude  $107^{\circ} 36.400''$  E) with azimuth value of 287.9 degrees NESW, whereas the Qibla direction for the city of Bandung is 295 degrees. This elucidates that the mosques and the prayer rooms located at the research area, Bandung Wetan District, are necessarily examined for the accuracy of its prayer rows.

## II. METHODS

This study uses a descriptive qualitative approach that is by describing the real conditions of the qibla direction of each mosque and prayer room. Field observations were carried out in this study in order to combine initial data observations via Google Earth with actual conditions in the field. Data collection techniques used in this study were interview and observation techniques.

In the wake of the necessary data has been collected, the next step is to process and analyze the data in several stages as follows: 1) Inventorying data, 2) Classifying data, namely by making a classification between the prayer line facing accurate qibla direction and the imprecise prayer line that need to be rectified, 3) Analyzing the formulation of the problem related to the method of measuring the direction of the mosque and the prayer room, as well as the magnitude of the deviation, and 4) The last is collecting data, namely by making conclusions from the results of research.

## III. RESULT AND DISCUSSION

### A. Other Previous Relevant Studies

Based on the search results, there are several studies relating to the qibla direction, including those conducted by Hamdani, Fawzi, and Syahid on the mosque and prayer room buildings located in Areng Lembang Village and Rancabango Garut [1]. The research explained that there were several mosque and prayer room buildings that had not yet been verified their qibla direction and required follow-up to carry out ongoing socialization along with guidance to the

surrounding community, including the mosque and prayer room prosperity council (DKM).

Another study conducted by Ardi [2], Ritonga and Butar-Butar [3], Hosen and Ghafiruddin [4], Nurkhanif [5], Budiwati and Aziz [6], and Mulyadi [7] also provides significant information to the qibla measurement, where the myth remain strong in the people who live in rural areas to the historical value of building mosques or prayer rooms. In addition, there has been no widespread understanding of the importance of facing the qibla during prayer, that prayer facing qibla is a critical requirement for the validity of prayer. The study also explains the diversity of classical to modern methods carried out by previous and recent people to be able to direct the line of prayer toward the Kaaba.

In contrast to research conducted outside Indonesia such as research conducted by Kouider and Ivashko in Algeria [8], where the study was carried out on different architectural forms of mosque buildings in each period. The form of the study focused more on the direction of the mosque building that had been built since the beginning, indeed it had faced the Qibla without being explained by the measurement process. As in Turkey, a similar study was carried out by Ulusoy, Üstün, and Kolsal [9], also by İlçi, Ozulu, Arslan, and Alkan [10], and Doyle [11] where the architectural style of his mosque actually kept historical measurements the direction of Qibla using the GNSS Geodetic Science method, assisted by the time of the

Sun's shadow in the direction of the Qibla, or better known in Indonesia as the rashdul Qibla. The equipment used includes the Sun clock (Sundial), compass, and Qibla Pointers.

In contrast to the above studies, in this study, the researcher look forward to revealing the direction of the mosque and prayer room history so as it can contribute the socialization process which according to the researcher is no less crucial than the measurement of the direction of the prayer line. The results of verifying the qibla direction will be in vain if the surrounding community rejects it or ignores the importance of the verification. In addition, the topography will also be carried out for the purposes of research at a later stage, for example, measuring and verifying the qibla direction supported by an official statement in the form of a certificate of prayer line alignment.

#### *B. Mosques and Musolas Data in Bandung Wetan District*

There are a major number of mosques and prayer rooms in Bandung Wetan Sub district. This area has three villages, namely Tamansari Village, Citarum Village, and Cihapit Village, which have officially registered the mosques and prayer rooms to the Bandung city ministry of religion. The recapitulation of mosque and prayer room data can be accessed on the official website of the ministry of religion, namely <http://simas.kemenag.go.id/>. These data are collected in the following table according to the village:

TABLE I. DATA ON MOSQUES AND PRAYER ROOMS IN TAMANSARI SUBDISTRICT, BASED ON SIMAS 2019 DATA

No	Name of Mosque/ Prayer Room	Address	Surface Area	Building Area	Year of Building
1.	Nurul Falah Prayer Room	Gg. Bongkaran Pulosari RT. 10/15	26 m <sup>2</sup>	-	1978
2.	At-Thahariyyah Prayer Room	Jl. Cihampelas Cimaung No. 22/25 RT. 03/07 Kel. Tamansari	80 m <sup>2</sup>	80 m <sup>2</sup>	1982
3.	Al-Ikhlās Prayer Room	Jl. Pelesiran No. 87 RT. 01 RW. 06 Kel. Tamansari	8 m <sup>2</sup>	8 m <sup>2</sup>	1970
4.	Awalul Huda Prayer Room	Jl. Cihampelas Gg. Bongkaran RT. 07 RW. 15 Kel. Tamansari	18 m <sup>2</sup>	18 m <sup>2</sup>	1980
5.	Al-Hikmah Prayer Room	Jl. Tamansari Gg. Lurah Hormat RT. 01 RW. 13 Kel. Tamansari	74 m <sup>2</sup>	70 m <sup>2</sup>	1957
6.	Al-Muslimun Prayer Room	Gg. Bongkaran 108/25 RT. 03 RW. 15 Kel. Tamansari	-	66 m <sup>2</sup>	2007
7.	Yakeswa Prayer Room	Jl. Dr. Hatta No. 54/29B RT. 05 RW. 17 Kel. Tamansari	32 m <sup>2</sup>	12 m <sup>2</sup>	2005
8.	Al-Hikmah Prayer Room	Jl. Tamansari Bawah RT. 01 RW. 13 Kel. Tamansari	70 m <sup>2</sup>	60 m <sup>2</sup>	1977
9.	Al-Khoir Prayer Room	Nangkasuni RT. 06 RW. 18	160 m <sup>2</sup>	-	1960
10.	Fastabiqul Khoir Prayer Room	Nangkasuni RT. 01 RW. 18 Kel. Tamansari	36 m <sup>2</sup>	36 m <sup>2</sup>	1964
11.	Ak-Hasanah Prayer Room	Gg. Bongkaran RT. 08 RW. 15	55 m <sup>2</sup>	56 m <sup>2</sup>	2009
12.	Ukhuwatul Islam Mosque	Jl. Tamansari atas Gg. Karya Laksana RT. 03 RW. 14	206 m <sup>2</sup>	400 m <sup>2</sup>	1966
13.	Ak-Ijabah Mosque	Jl. Cihampelas GG. Pangumbahan RT. 02 RW. 17	190 m <sup>2</sup>	190 m <sup>2</sup>	1959
14.	Al-Hidayah Mosque	Jl. Kebon Kembang Gg. Pancasila No. 4 RT. 07 RW. 12	250 m <sup>2</sup>	200 m <sup>2</sup>	1959
15.	An-Nur Mosque	Jl. Pelesiran VI Blakang No. 75 RT. 03 RW. 06	153 m <sup>2</sup>	145 m <sup>2</sup>	2015
16.	Al-Asy'ari Mosque Unisba	Jl. Tamansari No. 1	400 m <sup>2</sup>	400 m <sup>2</sup>	1960
17.	Al-Mukhtariyah Mosque	Jl. Tamansari Bawah RT. 07/20	50 m <sup>2</sup>	48 m <sup>2</sup>	1980

**Table 1. Cont.**

18.	Matlaul Khoeriyah Mosque	Jl. Tamansari Bawah RT. 05 RW. 20	150 m <sup>2</sup>	300 m <sup>2</sup>	1960
19.	Jamiyatul Huda Mosque	Jl. Merdeka RT. 01 RW. 19	42 m <sup>2</sup>	84 m <sup>2</sup>	1954
20.	Al-Mubarakah Mosque	Jl. Nangkasuni RT. 04 RW. 08	110 m <sup>2</sup>	110 m <sup>2</sup>	1977
21.	Sabilussalam Mosque	Jl. Dr. Hatta RT. 05 RW. 07	160 m <sup>2</sup>	160 m <sup>2</sup>	1969
22.	Baabussalam Mosque	Jl. Wastukencana RT. 02 RW. 16	200 m <sup>2</sup>	100 m <sup>2</sup>	1987
23.	Ah-Tholib Mosque	Gg. Linggawastu RT. 07 RW. 16	49 m <sup>2</sup>	49 m <sup>2</sup>	1964
24.	Ah-Taqwa Mosque	GG. Linggawastu RT. 05 RW. 16	120 m <sup>2</sup>	80 m <sup>2</sup>	1960

**TABLE II. DATA ON MOSQUES AND PRAYER ROOMS IN CIHAPIT VILLAGE, BANDUNG WETAN DISTRICT, BASED ON SIMAS 2019 DATA.**

No.	Name Mosque/ Prayer Room	Address	Surface Area	Building Area	Year of building
1.	Musola Al-Hikmah	Jl. Lapang Supratman	30 m <sup>2</sup>	30 m <sup>2</sup>	1980
2.	Musola An-Nisa	Jl. L.L. R.E. Martadinata No. 84	-	-	2013
3.	Musola OCBC NISP	Jl. Taman Cibeunying No. 31 RT. 03 RW. 02	16 m <sup>2</sup>	16 m <sup>2</sup>	1941
4.	At-taubah Mosque Bandung District Court Special Class 1A	Jl. RE. Martadinata No. 74-80 RT. 07 RW. 01	-	-	2017
5.	Istiqomah Mosque	Jl. Cihapit No. 8A RT. 02 RW. 01	470 m <sup>2</sup>	350 m <sup>2</sup>	1926
6.	Miftahul Hidayah Mosque	Jl. Mangga RT. 06 RW. 08	1.500 m <sup>2</sup>	334 m <sup>2</sup>	1997
7.	Al-Lathiif Mosque	Jl. Saninten No. 2 RT. 02 RW. 05	1.600 m <sup>2</sup>	1.200 m <sup>2</sup>	1966
8.	Al-Ikhlash Mosque	Jl. Lapangan Supratman No. 8 RT. 05 RW. 06	110 m <sup>2</sup>	220 m <sup>2</sup>	1990

**TABLE III. DATA ON MOSQUES AND PRAYER ROOMS IN CITARUM VILLAGE, BANDUNG WETAN DISTRICT, BASED ON SIMAS 2019 DATA**

No.	Name Mosque/ Prayer Room	Address	Surface Area	Building Area	Year of building
1.	BIP (Bandung Indah Plaza) Prayer Room	Jl. Merdeka No. 56 RT. 01 RW. 01 Kel. Citarum	100 m <sup>2</sup>	100 m <sup>2</sup>	2008
2.	Bank Mandiri Prayer Room	Jl. Surapati No. 1	24 m <sup>2</sup>	24 m <sup>2</sup>	1999
3.	Al-Maghfirah Mosque West Java Province Inspectorate	Jl. Surapati No. 4	-	-	2007
4.	Ash-Shobirin Mosque	Jl. Gempol Kulon No. 37A RT. 01 RW. 06	135 m <sup>2</sup>	100 m <sup>2</sup>	1971
5.	An-Nuur Mosque	Jl. Wira Angun 2 RT. 01 RW. 03	77 m <sup>2</sup>	77 m <sup>2</sup>	1983
6.	Masjid Istiqomah	Jl. Taman Citarum	5.112 m <sup>2</sup>	551 m <sup>2</sup>	1969

### C. Circumstances of Mosques and Prayer Rooms in Bandung Wetan District

The condition of mosques and prayer rooms in this area has been exceptionally diverse. On average, some mosques are in the right direction for qibla. However, a huge number of mosques that do not point right towards the Kaaba based on mathematical calculations of astronomy has been permanently in existence. The following is the circumstances of the mosques located in the three villages that are the focus of this study:

1) *Ah-Tholib mosque*: Ah-Tholib Mosque is located at Linggawastu Alley RT.07 RW. 16, Tamansari Urban Village. This mosque was established in 1963 with an area size of waqf 49m<sup>2</sup>. The condition of this mosque is convenient to utilize for worship, although there was a landslide before the mosque was built, subsequently the child of the landowner dreamed that his residence would be a Madrasa and a place of recitation for children after every Asr prayer with the agreement of all

his siblings, where there was an agreement had become a gold mine, thereafter, a permanent mosque was built and there was no special renovation. Ah-Tholib Mosque was previously named the As-Shiraj Mosque, which was changed according to the wishes of the person who donated this land named Pak Tholib.

The mosque has latitude coordinates of -06°54,085 'LS and longitude 107°36,392' BT, and *altitude* 2398 ft, and an accuracy of 4.37 *yd.* the direction area is 279° (left side) 279° (right side). The direction of the prayer line is straight in accordance with the direction of the building. The direction of the prayer line is measured by the qibla direction measurement method using a compass, which is tilted to the right slightly. There was a change later on pointed by the Bandung Islamic University that the direction of the qibla is heading north slightly to the right. Later there was news from the radio that the sun was right in the middle of the Kaaba between June-July and the direction of the qibla was measured again and it turned

out straight and therefore the direction of the qibla was tilted to the left.

2) *At-Takwa mosque*: At-Takwa Mosque is located at Linggawastu Alley RT. 05 RW. 16, Tamansari Urban Village. At-Takwa Mosque is located in a densely populated settlement next to a river. The shape of the mosque building is irregular as the mosque location is close to people's houses and the land provided for the mosque is also finite. The coordinates of this mosque are at latitudes -06.054,034 'LS, longitude 107°36,400' BT, and altitude 2439 ft, and accuracy of 4.27 yd. The direction of the building is 270° (left side) 275° (right side). The direction of the prayer is straight to the main building of the mosque.

3) *Al-Ijabah mosque*: This mosque is located at Jl. Cihampelas Gg. Pangumbahan RT.02 RW. 17, Tamansari Urban Village. This mosque is located in the middle of a densely populated settlement. The mosque is quite spacious, two stories, where the ablution place is located inside, unfortunately, this mosque does not have a parking lot. The mosque's coordinates are located at latitude -06°54.134 ', longitude 107°36.287' BT, and altitude 2438 ft, and its accuracy is 5.25 yd. The direction of the mosque building is 281° (left side) 281° (right side). The direction of the prayer line is straight.

4) *Al-Muslimun mosque*: Al-Muslimun Mosque is located at Gang Bongkaran 108/25 RT.03 RW. 15, Kelurahan Tamansari. This mosque is located under Jalan Pasupati Flyover. This mosque also has adequate parking facilities, has one floor, and where the ablution is outside. The coordinates of this mosque are located at latitude -06°53,996 'LS, longitude 107°36.336' BT, and altitude 2413 ft, and accuracy of 4.48 yd. The direction of the mosque building is 274° (left side) 275° (right side). The direction of the prayer is straight.

5) *An-Nur mosque*: This mosque is located at Jl. Pelesiran VI Belakang No.75 RT.03 RW. 06, Tamansari Village. the location of this mosque is in a narrow alley not far from a large alley. The mosque is quite large and has an ample parking space for motorbikes. This mosque also only consists of one floor. The coordinates of this mosque are in the latitude -06°53.729 'latitude, longitude 107°36.333', altitude 2472 ft, and accuracy 4.16 yd. The direction of the mosque building is 305° (left side) 310° (right side). The direction of the prayer is straight.

6) *Jamiyatul Huda mosque*: This mosque is located at Jl. Merdekali RT.01/19, Tamasari village. This mosque is located in the middle of a densely populated settlement. This mosque coincides with people's homes and has limited land. The coordinates of this mosque are located at latitude -06°51,855 'LS, longitude 107°36.151' BT, altitude 2450 ft, and accuracy of 1342 yd. The direction of the mosque building is 309° (left side). The direction of the prayer is straight with the mosque building.

7) *Al-Mubarakah mosque*: This mosque is located at Jl. Nangkasuni RT.04 RW. 08, Tamansari village. This mosque is located in the middle of residential areas. The mosque has

enough land, two floors, where the ablution place is separate from the mosque. The coordinates of this mosque are located at latitude -06°54,290 'LS, longitude 107°36.350' BT, an altitude of 2397 ft, and accuracy of 5.25 yd. The direction of the mosque building is 306° (left side) 294° (right side). The direction of the prayer is straight.

8) *Sabilussalam mosque*: This mosque is located at Jl. Dr.Hatta RT.05 RW.07, Tamansari Village. This mosque is located near Yakeswa Elementary School, a mosque that has ample land, adequate parking, has two floors. The mosque is similar to a building like a minimalist home. The coordinates of this mosque are located at latitude -06°54.156 'LS, longitude 107°36.221' BT, altitude 2420 ft, and accuracy 3.94 yds. The direction of the mosque building is 286° (left side) 272° (right side). The direction of the prayer is straight.

9) *Baabussalam mosque*: This mosque is located at Jl. Wastukencana RT.02 RW. 16, Tamansari Urban Village. This mosque is located near the flower market not far from the highway. This mosque does not look like a mosque in general. the place of prayer that is quite limited. The history of this mosque was first built in 1987 in a flower market environment. Previously, it was only limited to 4 square meters of the mosque. However, after renovation, the mosque was formed which is now becoming spacious and included in the Jami mosque. This mosque has routine recitation activities every Friday night and Wednesday night conducted by local men.

The coordinates of this mosque are located at latitude -06°54.301 'LS, longitude 107°36.452' BT, altitude 2410 ft, and accuracy of 3.50 yd. The direction of the building is 275° (left side) 249° (right side). The direction of the prayer is slight to the right. The qibla direction was measured using a compass and if there is a chance they only change the direction of the prayer mat. some time ago the mosque management had asked *pesantren* administrators to re-measure the direction of the qibla and the results were the same as the initial measurements, there was no change at all.

10) *Al-Hidayah mosque*: This mosque is located at Jalan Kebon Kembang Gg. Pancasila with latitude coordinates -06o53.954 'LS longitude 107o36.480 East. The mosque, which was established in 1959, has a land area of 250 m2, and a building area of 200 m2, the main building in the Al-Hidayah mosque is 12 m2. 3, the direction of the building at 180o is measured at the front view, and the direction of the prayer at 295,16o. The history of the qibla direction obtained from the source, namely the qibla direction at the mosque at the beginning of its measurement using the Sun (the sun's shadow) exactly towards the Kaaba, and the measurement of the qibla direction facing West is slightly tilted, and the initial measurements were made by the elders.

Based on the results of direct calculations, mosques and prayer rooms in this area on average have inaccuracies in determining the direction of qibla. The following is the inaccuracy of mosques & prayer rooms data based on degree units.

**TABLE IV. THE DIFFERENCE IN QIBLA DIRECTION**

No	Name of Mosque	Address	Latitude & Longitude	Difference
1	Ath-Tholib Mosque	Jl. Gang. Linggawastu Rt. 07/Rw 16	S 06°54.085' E 107°36.392'	2°24'
2	At-Takwa Mosque	Jl. Gang Linggawastu Rt. 05/Rw 16	S 06°54.034' E 107°36.400'	7°6'
3	Al-Ikjabah Mosque	Jl.Cihampelas Gang. Pangumbahan Rt. 02/Rw.17	S 06°54.134' E 107°36.287'	6°42'
4	Al-Muslimun Mosque	Jl. Gang Bongkaran 108/25 Rt.03 Rw.15	S 06°53.996' E 107°36.336'	0°12'
5	An-Nur Mosque	Jl. Pelesiran VI Belakang No. 75 Rt. 03/06 (Deket Kebon Bibit Gang Samping Ciwalk	S 06°53.729' E 107°36.333'	1°14'
6	Jamiyatul Huda Mosque	Jl. Merdekali Rt. 01/19	S 06°51.855' E 107°36.151'	0°18'
7	Al-Mubarakah Mosque	Jl. Nangkasuni Rt. 04/08	S 06°54.290' E 107°36.350'	0°0'
8	Sabullusalam Mosque	Jl. Dr. Hatta Rt. 05/07 Cihampelas	S 06°54.156' E 107°36.221'	0°24'
9	Babusallam Mosque	Jl. Wastukencana Rt. 02/16 (Sebrang Gang Merdekali)	S 06°54.301' E 107°36.452'	2°36'
10	Ukhwatul Islam	Jl. Tamansari Atas Gang. Karya Laksana RT.03/14	S 06°90.7340' E 107°60.761'	0°12'
11	Al-Hikmah	Jl. Tamansari, Gang. Lurah Hormat, RT. 01/13	S 06°54.026' E 107°60.729'	0°6'
12	Al-Hidayah	Jl. Kebon Kembang, Gang. Pancasila.	S 06°89.4913' E 107°60.861'	1°42'
13	At-Thahariyyah	Jl. Cihampelas Cimaung, No. 22/25 RT. 03. RW. 07.	S 06°53.788' E 107°36.287'	0°6'
14	Matlaul Khoeriyah	Jl. Tamansari Bawah. RT. 05, RW. 20.	S 06°90.307' E 107°60.643'	1°24'
15	Al-Ikhlash	Jl. Pelesiran No. 87, RT. 01, RW. 06.	S 06°53.735' E 107°36.311'	0°
16	Awalulhuda	Jl. Cihampelas Gang. Bongkaran, RT. 07, RW. 15.	S 06°89.825' E 107°60.655'	0°6'
17	Fastabiqul Khoir	Gang. Nangkasuni Wastukencana.	S 06°90.755' E 107°60.729'	0°24'
18	Al-Khoir	Gang. Nangkasuni, RT. 06, RW. 18	S 06°90.489' E 107°60.732'	0°
19	Al-Hasanah	Gang. Bongkaran, RT. 08, RW. 15	S 06°90.015' E 107°60.729'	0°18'
20	Yakeswa	Jl. Dr. Hatta. No. 54, Cihampelas (SD Yakeswa)	S 06°54.186' E 107°36.232'	0°9'
21	OCBC NISP (Mushala Perkantoran)	Jl. Taman Cibeunying No. 31. RT. 03. RW.02. Kelurahan Cihapit	S 06°90.150' E 107°60.839'	0°42'
22	Miftahul Hidayah	Jl. Mangga. RT. 06. RW. 08. Kelurahan Cihapit.	S 06°90.150' E 107°60.839'	0°12'
23	Al-Lathiif	Jl. Saninten, No. 2. RT. 02. RW. 05. Kelurahan Cihapit	S 06°53.501' E 107°36.432'	0°36'
24	Al-Ikhlash	Jl. Lapangan Supratman. No. 8. RT. 05. RW. 06.	S 06°54.72' E 107°36.274'	0°24'
25	An-Nuur	Jl. RE. Martadinata. No. 74. RT. 07. RW. 01	S 06°90.04'' E 107°60.756'	0°18'
26	Istiqamah	JL. Taman Citarum, Kelurahan Citarum	S 06°53.291' E 107°36.431'	1°0'
27	Mushala BIP	JL. Merdeka NO. 56, Bandung Wetan, Kelurahan Citarum.	S 06°90.936' E 107°61.061'	0°24'

#### IV. CONCLUSIONS

Conclusions from the results of this study, including:

- The method employed in measuring the direction of the mosque and the prayer room in Bandung Wetan District is utilizing a magnetic compass without performing a calibration beforehand, while the others only follow the

direction of the wind that is just to the West by dragging a little to the North.

- The greatest value of the inaccuracy of the direction of the mosque and prayer room building with a magnitude of deviation of  $7^{\circ}6'$  (seven degrees six minutes), At-Takwa Mosque in particular, with the azimuth value of the qibla/prayer direction of  $287-54'$ , while the qibla direction for the city of Bandung is  $295^{\circ}$ .

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