



PT PEMBANGKITAN JAWA-BALI

**REMAINING LIFE ASSESSMENT
(RLA)**


**LAPORAN ASSESSMENT GENERATOR TRANSFORMER UNIT 2
PLTU UBJOM PACITAN**



**UNIT PELAYANAN PEMELIHARAAN WILAYAH TIMUR
PT PEMBANGKITAN JAWA – BALI**


2018

*Produsen Listrik Terpercaya Kini dan
Mendatang*

	PT PEMBANGKITAN JAWA-BALI	No. Dokumen : :
	PJB INTEGRATED MANAGEMENT SYSTEM	Revisi : :
	FORMULIR	Tanggal Terbit : :
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	PT PEMBANGKITAN JAWA-BALI	No. Dokumen : FMH-17.2.4.007
	PJB INTEGRATED MANAGEMENT SYSTEM	Revisi : 03
	ASSESMENT TRANSFORMATOR	Tanggal Terbit : 19 Agustus 2015
	RESUME	Halaman : 1

Unit	: MAIN TRAF0 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016

No	Electrical Test	Hasil	Standart	Kesimpulan	Saran
1	Insulation Resistance	HV-G = 5,10 GΩ HV-LV = 13,62 GΩ LV-G = 6,43 GΩ	IEEE C57.152 – 2013 IR > KV + 1 MΩ	Baik	
2	Polarization Index	HV-G = 1,11 HV-LV = 1,52 LV-G = 1,57	IEEE C57.152 – 2013 PI > 1.3	Jelek, masih bisa diterima karena hasil megger > 5GΩ	
3	DC Resistance Test	R = 0,10 % S = 0,10 % T = - 0,20 % r = - 0,52 % s = 0,07 % t = 0,45 %	IEEE C57.152 – 2013 Deviasi < 5 %	Baik	
4	Dissipation Factor	HV = 0,200 % LV = 0,183 %	IEEE C57.152 – 2013 Tanδ < 0.5 untuk trafo baru Tanδ < 1 untuk trafo lama	Baik	
5	Sweep Frequency Response Analysis	Normal winding & Sebagai data awal	Omicron	Baik	
6	Dielectric Response Analysis	CHL = Dry CH = Moderately Wet CL = Dry Oil Category = Very Good	Omicron	Baik	
7	Turn to Turn Ratio	R = 0,06 % S = 0,03 % T = 0,06 %	IEEE C57.152 – 2013 < 0,5 %	Baik	

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	RESUME	Halaman : 2

Kesimpulan :

- Dari Seluruh hasil pengujian Electrical Assessment Main Trafo #2 PLTU UBJOM PACITAN semua hasil pengujian menunjukkan hasil baik kecuali pada pengujian Polarization Index (PI). Sesuai standart IEEE std.43-2013 hasil PI dapat diabaikan apabila hasil IR > 5000 MΩ

Saran :

1. Lakukan pengujian DGA setelah 2 minggu kondisi Main Trafo #2 operasi
2. Lakukan penggantian silica gel secara rutin
3. Pertahankan pemeliharaan secara maksimal
4. Lakukan Assesment rutin untuk mengetahui trend kesehatan trafo tersebut

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	INSULATION RESISTANCE & POLARISATION INDEX	Halaman : 3

Unit	: MAIN TRAFU 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016


INSULATION RESISTANCE (IR) & POLARISATION INDEX (PI)

Waktu (Menit ke)	Tegangan Megger 5000 VDC Tahanan Isolasi		
	HV – LV (GΩ)	HV – Ground (GΩ)	LV – Ground (GΩ)
1	13,62	5,10	6,43
2	15,96	5,19	6,96
3	16,42	5,39	7,32
4	17,04	5,50	7,72
5	17,49	5,37	7,99
6	18,22	5,36	8,42
7	19,24	5,86	9,18
8	20,80	6,24	9,60
9	20,40	5,84	9,87
10	20,70	5,66	10,09
PI	1,52	1,11	1,57

Measuring instrument : Megger MIT 1025

Standart : IEEE C57.152 – 2013

	TESTED BY			CHECKED BY	WITNESSED BY	
	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
DATE	27 FEBRUARI 2018			28 FEBRUARI 2018		
SIGNATURE						

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	ASESMENT TRANSFORMATOR	Tanggal Terbit : 19 Agustus 2015
	WINDING RESISTANCE	Halaman : 4

Unit	: MAIN TRAF0 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016


HASIL PENGUJIAN BEFORE

Tap Changer		Winding Resistance Test					
Position	Volt (KV)	HV SIDE			LV SIDE		
		U-N (mΩ)	V-N (mΩ)	W-N (mΩ)	u-v (mΩ)	v-w (mΩ)	w-u (mΩ)
9	150	45,392	41,228	40,717	1,8270	1,8380	1,8450
Deviasi (%)		6,94	- 2,87	- 4,07	- 0,52	0,07	0,45

HASIL PENGUJIAN AFTER TAP CHANGER DIRUBAH-RUBAH DAN DIKEMBALIKAN KE SEMULA

Tap Changer		Winding Resistance Test					
Position	Volt (KV)	HV SIDE			LV SIDE		
		U-N (mΩ)	V-N (mΩ)	W-N (mΩ)	u-v (mΩ)	v-w (mΩ)	w-u (mΩ)
9	150	40,417	40,416	40,295	1,8270	1,8380	1,8450
Deviasi (%)		0,10	0,10	- 0,20	- 0,52	0,07	0,45

- Deviasi maksimum – minimum HV (AFTER) = 0,30 %
- Deviasi maksimum – minimum LV (AFTER) = 0,97 %
- Interpretasi :
 - Dari hasil pengujian RDC (AFTER) kondisi koneksi dan tap changer belitan seimbang / bagus
- Standart :
 - IEEE C57.152 – 2013, deviasi maksimum 5%
- Peralatan :
 - Vanguard TRM-403

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	WINDING RESISTANCE	Halaman : 5

➤ Hasil Terlampir

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	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
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SIGNATURE						

LAMPIRAN

RDC HV SIDE AFTER




Vanguard Instruments Company, Inc.
www.vanguard-instruments.com

Filename: REC_002
 Date/Time: Feb 27, 2018 11:56 AM
 Company: PLTU 2 PACITAN
 Station: TRAF0 GT2
 Report Type: 3-Phase Y With Neutral Res Test
 KVA: 370 MVA

Manufacturer: LUNENG CHENMING
 Model: SFPZ10 370000 150 TH
 S/N: 200903016
 Operator: UPHT ENGINEERING
 Circuit: HV SIDE

Test	Time	I	Rm	Notes
1 A H/X1 - H/X0	00:00:00	20.026 A	40.417 m-Ohm	
1 B H/X2 - H/X0	00:01:00	20.030 A	40.416 m-Ohm	
1 C H/X3 - H/X0	00:02:00	20.027 A	40.295 m-Ohm	

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	WINDING RESISTANCE	Halaman : 6

RDC LV SIDE



Vanguard Instruments Company, Inc.
www.vanguard-instruments.com

Filename: REC_003	Manufacturer: LUNENG CHENMING
Date/Time: Feb 26, 2018 03:40 PM	Model: SFPZ10 370000 150 TH
Company: PLTU 2 PACITAN	S/N: 200903016
Station: TRAFO GT2	Operator: UPHT ENGINEERING
Report Type: 3-Phase D Res Test	Circuit: LV SIDE
KVA: 370 MVA	

Test	Time	I	Rm	Rw	Notes
1 C H/X3 - X/X2	00:02:00	40.058 A	1.2210 m-Ohm	1.8270 m-Ohm	
2 A H/X1 - H/X3	00:03:00	40.060 A	1.2250 m-Ohm	1.8380 m-Ohm	
2 B H/X2 - H/X1	00:04:00	40.061 A	1.2270 m-Ohm	1.8450 m-Ohm	


RDC HV SIDE BEFORE



Vanguard Instruments Company, Inc.
www.vanguard-instruments.com

Filename: REC_004	Manufacturer: LUNENG CHENMING
Date/Time: Feb 26, 2018 02:38 PM	Model: SFPZ10 370000 150 TH
Company: PLTU 2 PACITAN	S/N: 200903016
Station: TRAFO GT2	Operator: UPHT ENGINEERING
Report Type: 3-Phase Y With Neutral Res Test	Circuit: HV SIDE
KVA: 370 MVA	

Test	Time	I	Rm	Notes
1 A H/X1 - H/X0	00:00:00	20.027 A	45.392 m-Ohm	
1 B H/X2 - H/X0	00:01:00	20.030 A	41.228 m-Ohm	
1 C H/X3 - H/X0	00:02:00	20.031 A	40.717 m-Ohm	

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	PENGUKURAN DISSIPATION FACTOR	Halaman : 7

Unit	: MAIN TRAF0 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016

Interpretasi hasil:

Kondisi isolasi trafo bagus

Hasil uji DF < 1 %

Dissipation Factor HV = 0,200 %

Dissipation Factor LV = 0,183 %

Hasil pengukuran terlampir

Standart :

IEEE C57.152 – 2013

Tan δ < 0.5 baik, untuk trafo baru dan lama

Tan δ < 1 masih bisa diterima, untuk trafo lama

Tools :

Dobble M4000

Megger MIT 1025

	TESTED BY			CHECKED BY	WITNESSED BY	
	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
DATE	27 FEBRUARI 2018			28 FEBRUARI 2018		
SIGNATURE						



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PENGUKURAN DISSIPATION FACTOR	Halaman : 8

LAMPIRAN

200903016_X2



Report Source TwoWindingTransformer

Session Test Date 2/27/2018 8:24:54 AM

Nameplate - Two-winding Transformer


Company	PT Pembangkitan Jawa Bali	Serial Number	200903016
Location	PLTU UBJOM PACITAN	Special ID	MAIN TRAF0 #2
Division	ENGINEERING UPHT	Circuit Designation	
Manufacturer	Shandong Luneng Taishan Electric Equipment Co., Ltd.	Configuration	Y_D
Year Manufactured	2008	Tank Type	Sealed Conservation
Mfr Location	CHINA	Coolant	Air (Open)
Phases	Three	Class	OFAF
Oil Volume	65.5 TN	BIL	*
Weight	293.3 TN	VA Rating	370, *, *, *, MVA
kV	150, 20		

Test Date	2/27/2018	Test Time	8:24 AM	Weather	Sunny
Air Temperature	29°C	Tank Temperature	*	Rel. Humidity	59 %
Tested By		Work Order#		Last Test Date	
Checked By		Test Set Type		Retest Date	
Checked Date		Set Top S/N		Reason	
Last Sheet#		Set Bottom S/N		Travel Time	
P.O.#		Ins. Book#		Duration	
Copies		Sheet#		Crew Size	3

Overall Tests

	Insulation	Test kV	mA	Watts	% PF corr	Corr Fctr	Cap(pF)	FRANK™	Manual
1	CH+CHL	10.001	59.645	1.344	0.225	1	19177.400		
2	CH	9.999	25.877	0.670	0.259	1	8320.400		
3	CHL(UST)	10.000	33.748	0.672	0.199	1	10851.400		
4	CHL	0	33.768	0.674	0.200	1	10857.000		
5	CL+CHL	10.001	99.614	2.866	0.288	1	32029.050		
6	CL	10.001	65.845	2.247	0.341	1	21171.000		
7	CHL(UST)	9.999	33.746	0.671	0.199	1	10850.300		
8	CHL	0	33.769	0.619	0.183	1	10858.050		

LSR	mA: 59.645/59.645, 1/1	Watts: 1.344/1.344, 1/1	Cap (pF): 19177.400/19177.400, 1/1
LSR	mA: 25.877/25.877, 1/1	Watts: 0.670/0.670, 1/1	Cap (pF): 8320.400/8320.400, 1/1
LSR	mA: 33.748/33.748, 1/1	Watts: 0.672/0.672, 1/1	Cap (pF): 10851.400/10851.400, 1/1
LSR	mA: 33.768/33.768, 1/1	Watts: 0.674/0.674, 1/1	Cap (pF): 10857.000/10857.000, 1/1
LSR	mA: 99.614/99.614, 1/1	Watts: 2.866/2.866, 1/1	Cap (pF): 32029.050/32029.050, 1/1
LSR	mA: 65.845/65.845, 1/1	Watts: 2.247/2.247, 1/1	Cap (pF): 21171.000/21171.000, 1/1
LSR	mA: 33.746/33.746, 1/1	Watts: 0.671/0.671, 1/1	Cap (pF): 10850.300/10850.300, 1/1
LSR	mA: 33.769/33.769, 1/1	Watts: 0.619/0.619, 1/1	Cap (pF): 10858.050/10858.050, 1/1

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Unit	: MAIN TRAFU 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016

INTERPRETASI HASIL:

Dari hasil pengujian Sweep Frequency Analysis data yang diambil dibandingkan dengan dirinya sendiri pada saat pengujian MAIN TRAFU UNIT 2 PLTU UBJOM PACITAN dan digunakan sebagai data awal sebagai referensi untuk mengetahui kondisi trafo kedepan setelah operasi. Dari hasil perbandingan data dengan dirinya sendiri, menunjukkan bahwa trafo masih dalam kondisi baik.

Hasil pengukuran terlampir

	TESTED BY			CHECKED BY	WITNESSED BY	
	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
DATE	26 FEBRUARI 2018			28 FEBRUARI 2018		
SIGNATURE						



PT PEMBANGKITAN JAWA-BALI

No. Dokumen : FMH-17.2.4.007

PJB INTEGRATED MANAGEMENT SYSTEM

Revisi : 03

ASESMENT TRANSFORMATOR

Tanggal Terbit : 19 Agustus 2015

SWEEP FREQUENCY RESPONSE ANALYSIS

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LAMPIRAN

OMICRON FRAnalyzer 2.0

OH 2018

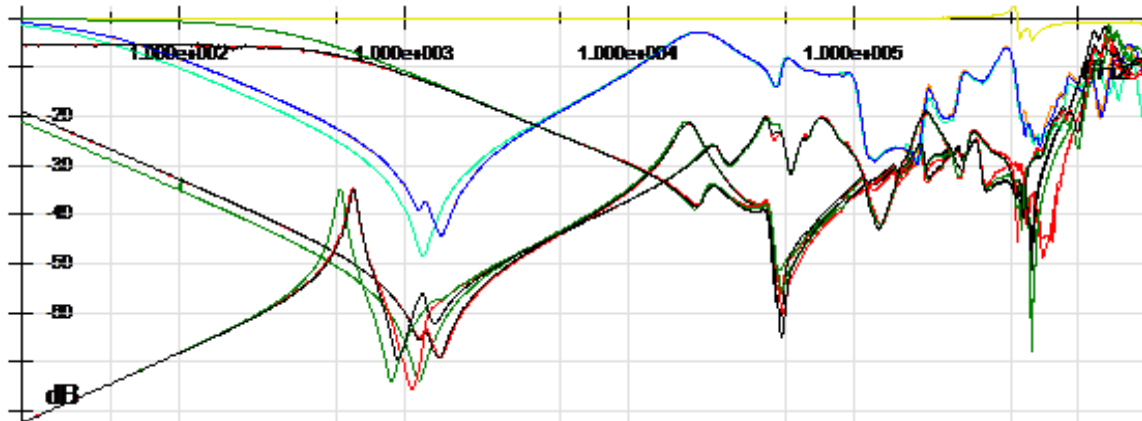
Tester: ENGINEERING UPHT
Date / Time: 2/26/2018 09:54:03 AM
Location: PLTU UBJOM PACITAN
Oil Temperature: 30 °C / 86 °F
Comment:














Transformer

Serial Number: 200903016
Manufacturer: LUNENG CHENMING
Type Code: SFPZ10-370000/150 TH
Year: 2009
Location: PLTU UBJOM PACITAN
Number: MAIN TRAF0 #2
MVA Rating: 370MVA
High Voltage: 150kV
Low Voltage: 20kV
Tertiary Voltage: 0kV
Phases: 3
Vector Group: YNd1

Test Traces

Name	Date/Time	Red	Blue	Tap Changer	Tertiary	Other	Device
Calibration	2/26/2018 08:48:56 AM	N	N	9	closed	open	FL335K
U N	2/26/2018 08:55:16 AM	U	N	9	closed	open	FL335K
V N	2/26/2018 08:35:11 AM	V	N	9	closed	open	FL335K
W N	2/26/2018 09:16:58 AM	W	N	9	closed	open	FL335K
u1 v1	2/26/2018 09:51:48 AM	u1	v1	9	closed	open	FL335K
v1 w1	2/26/2018 09:48:03 AM	v1	w1	9	closed	open	FL335K
w1 u1	2/26/2018 09:54:03 AM	w1	u1	9	closed	open	FL335K
U N (shorted)	2/26/2018 09:24:45 AM	U	N	9	closed	shorted	FL335K
V N (shorted)	2/26/2018 09:10:20 AM	V	N	9	closed	shorted	FL335K
W N (shorted)	2/26/2018 08:35:11 AM	W	N	9	closed	shorted	FL335K
U u1	2/26/2018 08:35:11 AM	U	u1	9	closed	open	FL335K
V v1	2/26/2018 09:38:49 AM	V	v1	9	closed	open	FL335K
W w1	2/26/2018 09:42:12 AM	W	w1	9	closed	open	FL335K



Calibration		UN		VN	
WN		u1 v1		v1 w1	
w1 u1		UN (shorted)		VN (shorted)	
WN (shorted)		U u1		V v1	
W w1					

Sweep Settings

Start Frequency:	20 Hz
Stop Frequency:	2 MHz
Sweep Mode:	see customized frequency ranges
Points / Sweep:	1000
Receiver Bandwidth:	<adapt automatically>
Attenuator:	<adapt automatically>
Input Impedance:	50 Ω

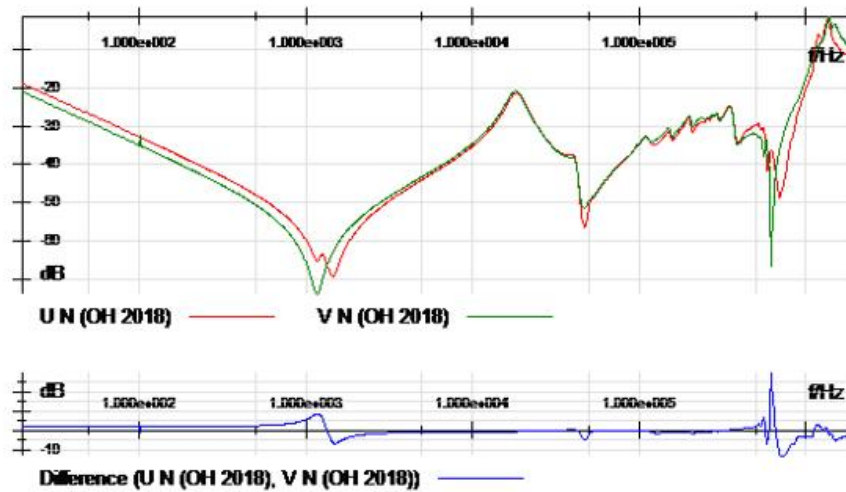
Customized Frequency Ranges:

From Frequency	To Frequency	Sweep Mode	Points
20 Hz	100 Hz	logarithmic	50
100 Hz	1 kHz	logarithmic	210
1 kHz	10 kHz	logarithmic	210
10 kHz	100 kHz	logarithmic	210
100 kHz	1 MHz	logarithmic	210
1 MHz	2 MHz	logarithmic	110

Assessments

1) U N - V N

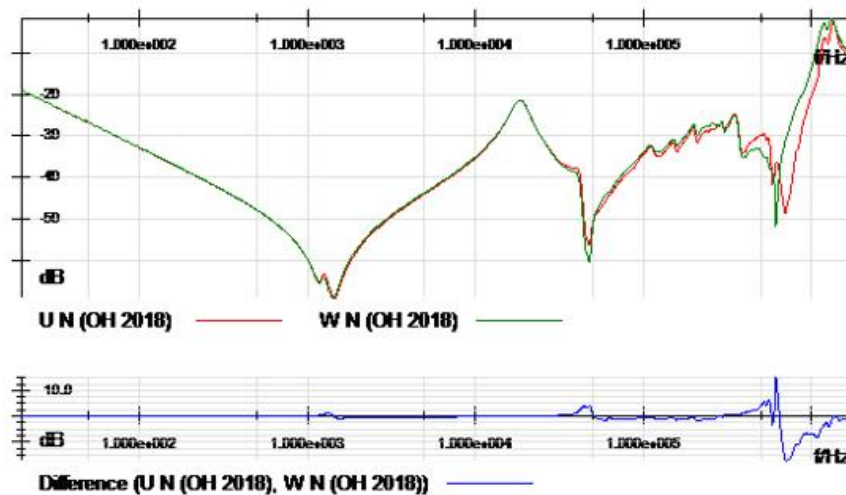
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.01	0.71	0.42	1.05	Slight Deformation	Normal Winding

2) U N - W N

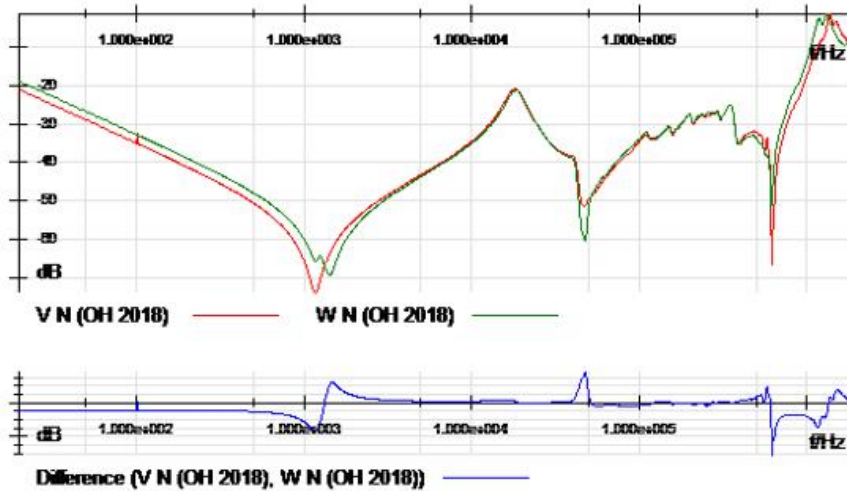
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
1.96	0.69	0.48	1.61	Slight Deformation	Normal Winding

3) V N - W N

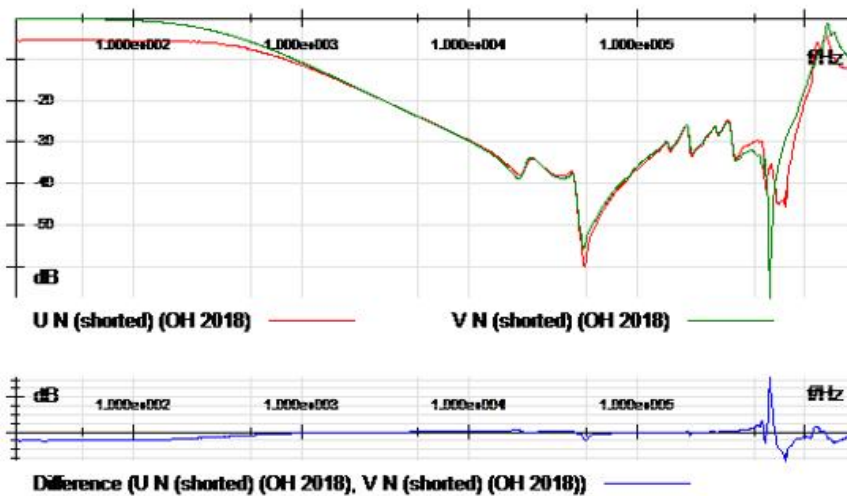
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
1.54	1.5	1.73	1.03	Slight Deformation	Normal Winding

4) U N (shorted) - V N (shorted)

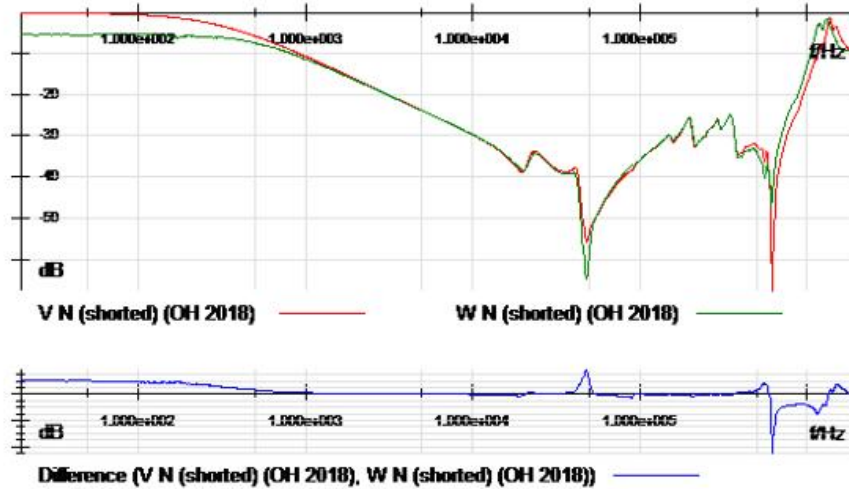
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.37	0.76	0.35	1.09	Slight Deformation	Normal Winding

5) V N (shorted) - W N (shorted)

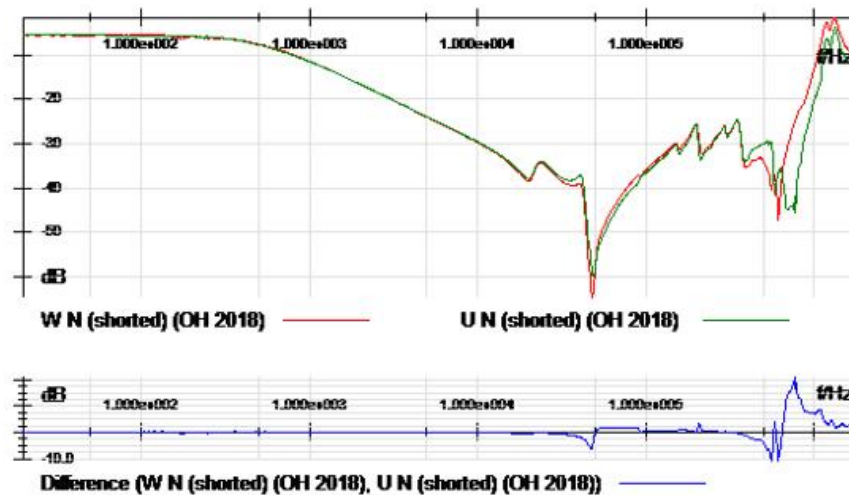
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
1.71	1.45	1.62	1.04	Slight Deformation	Normal Winding

6) W N (shorted) - U N (shorted)

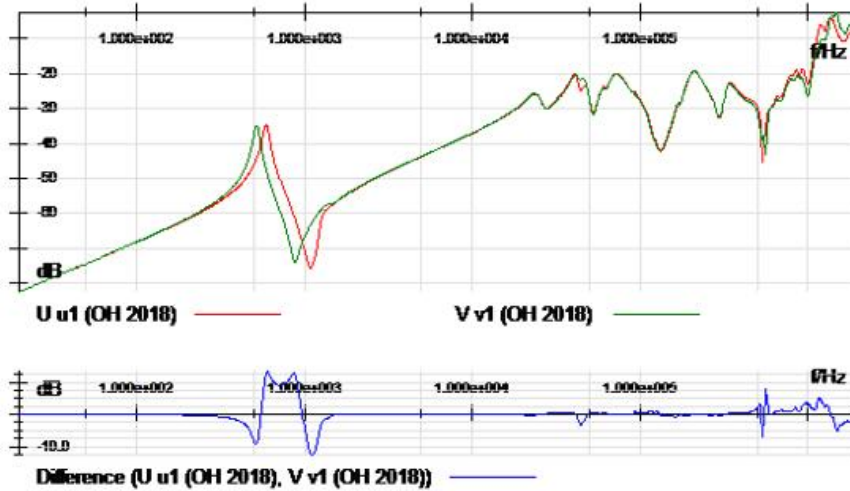
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
1.78	0.56	0.45	1.69	Obvious Deformation	Normal Winding

7) U u1 - V v1

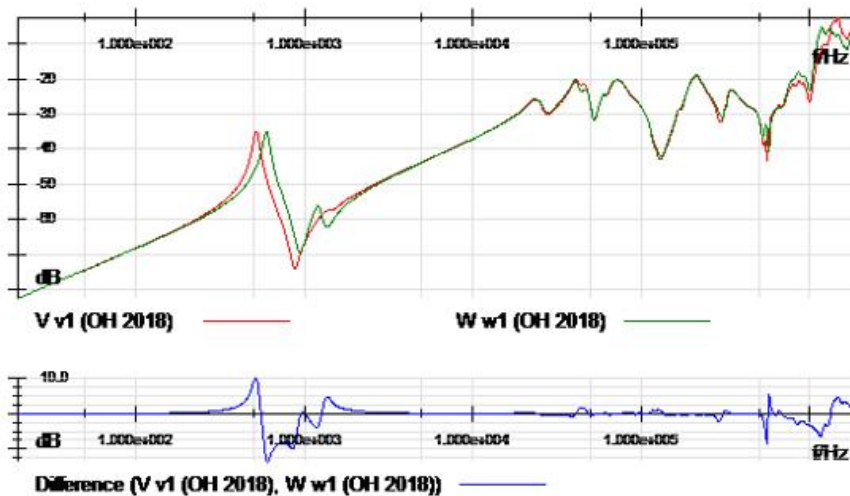
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.39	1.4	1.38	-	Normal Winding	Assessment not possible

8) V v1 - W w1

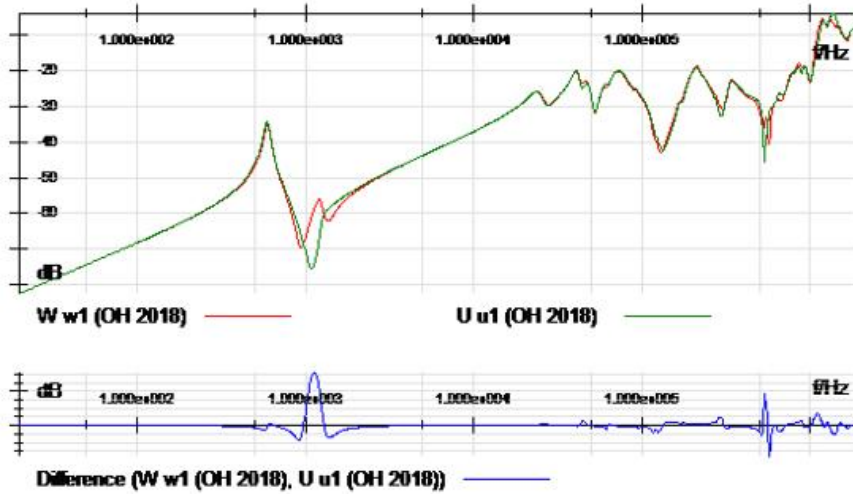
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.75	1.38	1.59	-	Normal Winding	Assessment not possible

9) W w1 - U u1

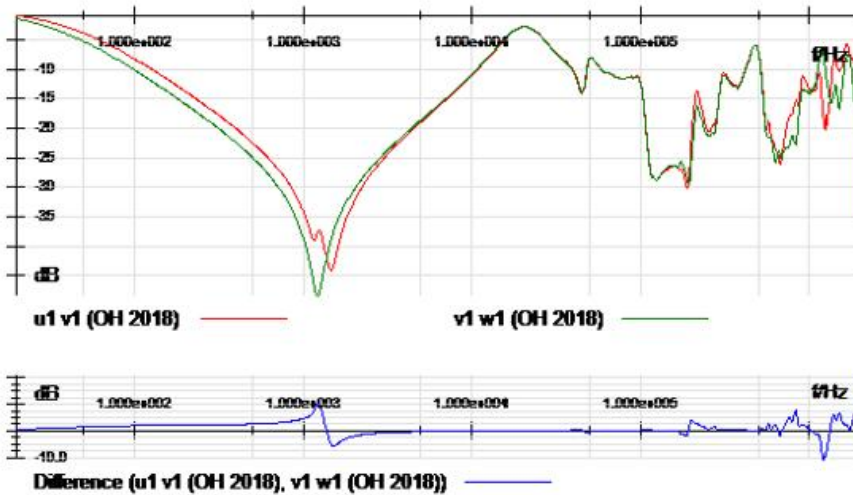
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.73	1.03	1.81	-	Normal Winding	Assessment not possible

10) u1 v1 - v1 w1

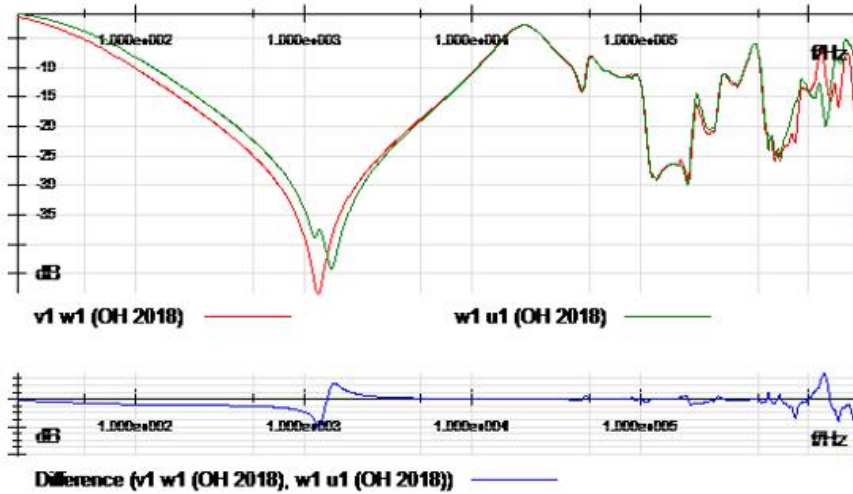
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.23	2.05	1.03	0.99	Normal Winding	Normal Winding

11) v1 w1 - w1 u1

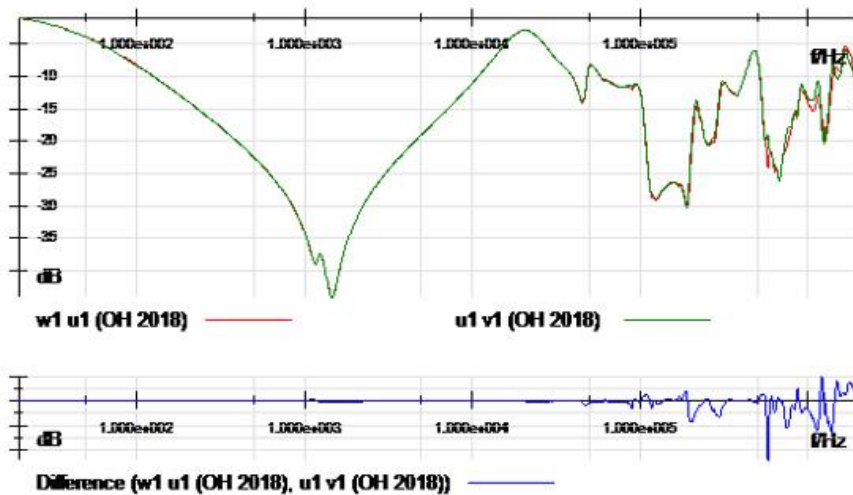
Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
2.17	2.21	1.13	0.77	Normal Winding	Normal Winding

12) w1 u1 - u1 v1

Transformer Winding Deformation



RLF	RMF	RHF	E	DL/T911-2004	NCEPRI
3.58	2.07	1.92	0.88	Normal Winding	Normal Winding



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DIELECTRIC RESPONSE ANALYSIS	Halaman : 18

Unit : MAIN TRAF0 2	Merk : LUNENGCHENMING
Voltage HV / LV : 150 / 20 KV	Type / Tahun : SFPZ10-370000/150/2008
Rated power : 370.000 KVA	Location : PLTU UBJOM PACITAN
Vektor Group : YNd1	Serial No : 200903016

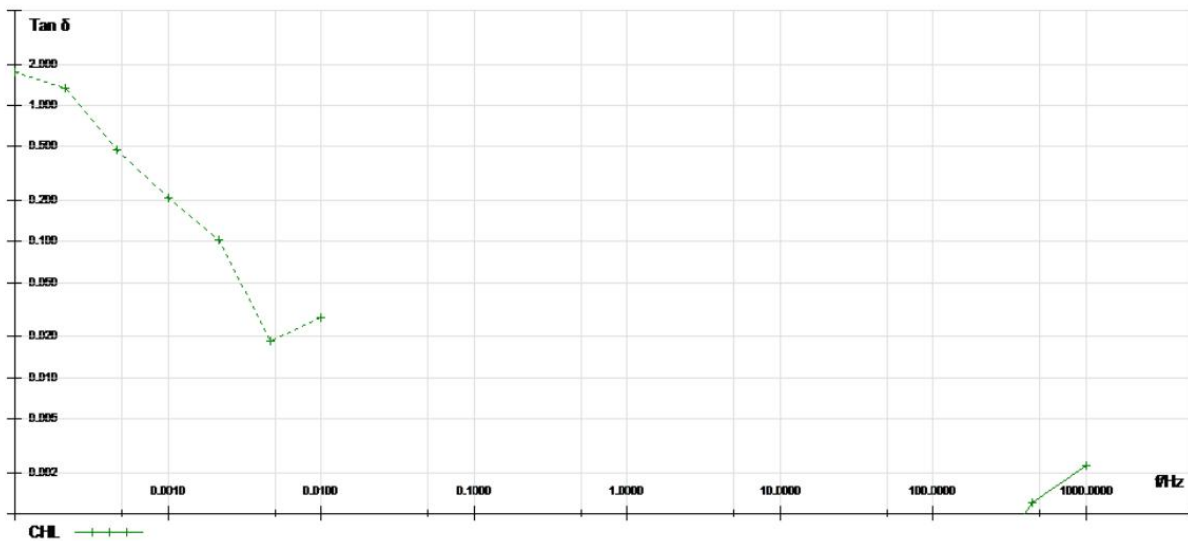
INTERPRETASI HASIL :

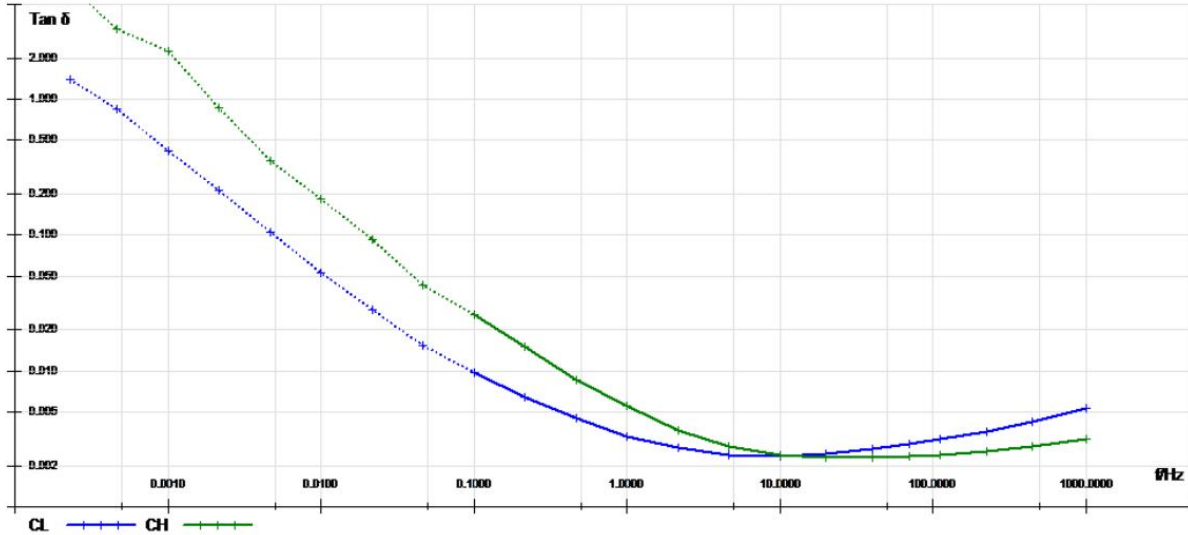
Dari hasil pengujian Dirana kondisi Isolasi MAIN TRAF0 #2 PLTU PACITAN dalam konfigurasi :

- CHL : Dry
- CH : Moderately Wet
- CL : Dry
- Oil Category : Very Good

OMICRON  Dirana2

02-27-2018





CHL

2/26/2018 11:15:50 AM

Test Object:	200903016		
Tester:	ENGINEERING UPHT		
Mode:	UST	Switch Frequency:	100 mHz
FDS Voltage:	100 V	PDC Voltage:	200 V
Comment:	Weather Conditions: Berawan Air Temperature: 29 C Air Humidity: 58 % Tap Changer Position: 9 Test Object Manufacturing Year: 2009		
Calculated Moisture:	1.8 %	Moisture Category:	dry
Moisture Saturation:	4.1 %	Bubbling Inception Temp.:	160 °C / 320 °F
Oil Temperature:	30 °C / 86 °F		
Oil Conductivity:	35 aS/m	Oil Category:	very good
Capacitance @ 50Hz:	11.8484 nF	Tanδ @ 50Hz:	-0.279 %
Capacitance @ 60Hz:	11.8496 nF	Tanδ @ 60Hz:	-0.235 %
Barriers:	25 %	Spacers:	14 %
Polarization Index:	1.218	DAR:	



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Halaman : 20

CL

2/27/2018 9:51:36 AM

Test Object: 200903016
Tester: ENGINEERING UPHT
Mode: GSTg Switch Frequency: 100 mHz
FDS Voltage: 100 V PDC Voltage: 200 V
Comment: Weather Conditions: Berawan
Air Temperature: 29 C
Air Humidity: 58 %
Tap Changer Position: 9
Test Object Manufacturing Year: 2009

Calculated Moisture: 0.9 % Moisture Category: dry
Moisture Saturation: 1.6 % Bubbling Inception Temp.: 177 °C / 350 °F
Oil Temperature: 38 °C / 100 °F
Oil Conductivity: 74 fS/m Oil Category: very good
Capacitance @ 50Hz: 21.1906 nF Tanδ @ 50Hz: 0.274 %
Capacitance @ 60Hz: 21.1835 nF Tanδ @ 60Hz: 0.282 %
Barriers: 35 % Spacers: 24 %
Polarization Index: 1.221 DAR:

CH

2/27/2018 9:51:42 AM

Test Object: 200903016
Tester: ENGINEERING UPHT
Mode: GSTg Switch Frequency: 100 mHz
FDS Voltage: 100 V PDC Voltage: 200 V
Comment: Weather Conditions: Berawan
Air Temperature: 29 C
Air Humidity: 58 %
Tap Changer Position: 9
Test Object Manufacturing Year: 2009

Calculated Moisture: 2.4 % Moisture Category: moderately wet
Moisture Saturation: 10.4 % Bubbling Inception Temp.: 149 °C / 301 °F
Oil Temperature: 38 °C / 100 °F
Oil Conductivity: 220 fS/m Oil Category: very good
Capacitance @ 50Hz: 8.3314 nF Tanδ @ 50Hz: 0.230 %
Capacitance @ 60Hz: 8.3293 nF Tanδ @ 60Hz: 0.232 %
Barriers: 15 % Spacers: 5 %
Polarization Index: 1.032 DAR:




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Halaman : **21**

Moisture Categories:

dry: <2.2 %
moderately wet: ≥ 2.2 % and <3.7 %
wet: ≥ 3.7 % and <4.8 %
extremely wet: ≥ 4.8 %

	TESTED BY			CHECKED BY	WITNESSED BY	
	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
DATE	26 FEBRUARI 2018			28 FEBRUARI 2018		
SIGNATURE						

	PT PEMBANGKITAN JAWA-BALI	No. Dokumen : FMH-17.2.4.007
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	ASESMENT TRANSFORMATOR	Tanggal Terbit : 19 Agustus 2015
	TURN TO TURN RATIO TEST	Halaman : 22

Unit	: MAIN TRAF0 2	Merk	: LUNENGCHENMING
Voltage HV / LV	: 150 / 20 KV	Type / Tahun	: SFPZ10-370000/150/2008
Rated power	: 370.000 KVA	Location	: PLTU UBJOM PACITAN
Vektor Group	: YNd1	Serial No	: 200903016

RATIO NAME PLATE / REFERENSI

TAP	HV SIDE	LV SIDE	RATIO
9	150.000 V	20.000 V	4,3301

HASIL PENGUJIAN

PHASE	HV SIDE	LV SIDE	RATIO	ERROR	KETERANGAN
	(Volt)	(Volt)		%	
U	999,76	230,74	4,3329	0,06	
V	999,79	230,83	4,3314	0,03	
W	999,79	230,74	4,3329	0,06	


INTERPRETASI HASIL :

- DARI HASIL PENGUJIAN TTR KONDISI BELITAN BAGUS

STANDART :

- IEEE C57.152 – 2013 < 0.5 %

	TESTED BY			CHECKED BY	WITNESSED BY	
	JERRY SIRAIT	A. S. TAUFIK	SEPTIAN KEVIN A.	ROHMADI		
DATE	26 FEBRUARI 2018			28 FEBRUARI 2018		
SIGNATURE						

	PT PEMBANGKITAN JAWA-BALI	No. Dokumen : FMH-17.2.4.007
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	TURN TO TURN RATIO TEST	Halaman : 23

LAMPIRAN

\\PLTU PACITAN 2018\MAIN TRAF0 #2\TR_RATIO TRAF0 TTR.xml:

Test Device: CPC
Serial Number: RK530Y (V1)
Date/Time: 02/26/2018 11:21:45
Overall assessment: OK

Test Cards Overview:

Test Card	Type	Date/Time	Results	Assessment	Overload
TR Data	Comment	08/05/2017 13:02:22	no	n/a	no
Version	Comment	08/05/2017 13:02:22	no	n/a	no
TRRatio U	TRRatio	02/26/2018 11:18:06	yes	OK	no
TRRatio V	TRRatio	02/26/2018 11:19:43	yes	OK	no
TRRatio W	TRRatio	02/26/2018 11:21:07	yes	OK	no

Test Cards:

TR Data:

Date/Time: 08/05/2017 13:02:22

TRANSFORMER RATIO MEASUREMENT

```

-----
Tester   : ENGINEER UPHT
Subst.   : MAIN TRAF0 2
Loc.     : PLTU UBJOM PACITAN
Manuf.   : LUNENGCHENMING CHINA
Type     : SFFZ10-370000/150 TH
M.Year   : 2009
SerNo.   : 200903016
Power    : 370.000 kVA
Vec. G   : YNd1
U HV     : 150 KV
I HV     : 1424,1 A
U LV1    : 20 kV
I LV1    : 10681 A
U TV     :
I TV     :
-----
Taps     : 9
  
```

Version:

Date/Time: 08/05/2017 13:02:22

Template: TR Ratio
Version: 1.42

TRRatio U:

Card Type: TRRatio
Date/Time: 02/26/2018 11:18:06
Overload: no



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TURN TO TURN RATIO TEST	Halaman : 24

Assessment: OK
Range: AC 2kV
Vector group: YNd1
Nominal values:
Frequency: 50.00 Hz
V test: 1000.0 V
Switchbox: n/a

Results:

Tap	V prim. nom.	V sec. nom.	Ratio nom.	V prim.		V sec.		Ratio		I prim.	
001	150000 V	20000.0 V	4.3301 :1	999.76 V	0.00 °	230.74 V	0.03 °	4.3329 :1	0.06 %	102.44 mA	65.37 °

TRRatio V:

Card Type: TRRatio
Date/Time: 02/26/2018 11:19:43
Overload: no
Assessment: OK

Range: AC 2kV
Vector group: YNd1
Nominal values:
Frequency: 50.00 Hz
V test: 1000.0 V
Switchbox: n/a

Results:

Tap	V prim. nom.	V sec. nom.	Ratio nom.	V prim.		V sec.		Ratio		I prim.	
001	150000 V	20000.0 V	4.3301 :1	999.79 V	0.00 °	230.83 V	0.04 °	4.3314 :1	0.03 %	77.733 mA	64.99 °

TRRatio W:

Card Type: TRRatio
Date/Time: 02/26/2018 11:21:07
Overload: no
Assessment: OK

Range: AC 2kV
Vector group: YNd1
Nominal values:
Frequency: 50.00 Hz
V test: 1000.0 V
Switchbox: n/a

Results:

Tap	V prim. nom.	V sec. nom.	Ratio nom.	V prim.		V sec.		Ratio		I prim.	
001	150000 V	20000.0 V	4.3301 :1	999.79 V	0.00 °	230.74 V	0.04 °	4.3329 :1	0.06 %	99.399 mA	64.97 °