

**HEAD OFFICE**

12nd FLOOR, 75, YULGOK-RO, JONGNO-GU,
SEOUL, KOREA
TEL: (02)746-7650 ~ 2

ULSAN OFFICE

700, BANGEOJINSUNHWAN-DORO,
DONG-GU, ULSAN, KOREA
TEL: (052)202-6771 FAX: (052)202-6780

INSPECTION & TEST REPORT

PJT Name	아트라스콥코 / 삼성 전자 기흥		
Project No.	20212771RMH666	Serial No.	20212771RMH666001
Type	HLE6 314-46F	Quantity	1 Unit
Specification	3Phase,315kW,4P,6600V,60Hz		

TEST ITEMS*** 최종검사**

1. 외관, 구조 및 치수 검사
2. 권선저항 측정
3. 구속 시험
4. 무부하 시험
5. 소음 측정
6. 진동 측정
7. 특성 산정
8. 온도상승 시험
9. 절연저항 측정
10. 내전압 측정
11. 기타(RTD & Space heater)

TEST RESULT:**Accept**

Approved By: _____



Reviewed and

Witnessed By: _____

Checked By: _____



Tested By: _____



Test Report of 3 Phase Induction Machine

PJT Name	아트라스코프 / 삼성전자 기흥	Project no.	20212771RMH666
model no.	HLE6 314-46F	Serial no.	20212771RMH666001
Item no.	***	shaft no.	1RMH666

general rating

Output kW	315	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1782.0	current [A]	34.5
Service factor	1.15	insulation	F	max. amb. [°C]	40
time rating	S1	enclose	TEFC - IP55	weight [Kg]	2190
DE. bearing:	6320C3	NDE. bearing:	6317C3	efficiency [pu]	0.9500

winding resistance in [Ω] at ambient temperature 5.5 [°C]

phase	Ru-v:	Rv-w:	Rw-u:	averaged:	max. deviation [%]
stator	1.1003	1.0993	1.1006	1.1001	0.07
rotor	***	***	***	***	***

no load and short circuit(locked rotor)

current unbalance

item	[V]	[A]	[kW]	[Hz]	Iu [A]	Iv [A]	Iw [A]	deviation [%]
no load	6600.0	9.28	6.6	60.00	9.23	9.31	9.3	0.54
locked rotor	1746.83	34.55	15.565	60.00	***	***	***	***
rotor voltage	***	[V]	Direction of Rotation	C.C.W with U.W.V Connection	(Viewed from D.E)			

vibration measurement

position	horizontal	vertical	axial	remark
DE	0.5	0.5	0.4	meas. Unit
NDE	0.5	0.3	0.5	mm/s(rms)

temperature rise in [K]

stator (R/E)	60.2 / 61.9	[V]	6600
rotor (R)	***	[Hz]	60
de. bearing	28.1	[A]	33.5
nde bearing	17.7	[kW]	***
slip ring	***	[Nm]	***
***	***	[rpm]	***

noise level in dB(A) at 1 [m] distance from major frame

averaged sound level (@)	remark
79.7	Background noise : 71

@ averaged value from 4 measured result (measured at front, rear, right, left side of machine)

This noise value is corrected by background noise

insulation resistance in [MΩ]

item	before test	after test	test voltage [V]
stator	17500	17400	2500
Rotor	***	***	***
E.T.D.	1000	1000	500
heater	1000	1000	500

high voltage test

item	test voltage [V]	duration [s]
stator	AC 14200	60
Rotor	***	***
E.T.D.	AC	***
heater	AC 1500	60

over load and over speed

item	test value	duration [s]	Remark
over load	*** [%] of rated load(current)	***	***
over speed	*** [%] of rated speed	***	***

accessories and other data

space heater	1 phase	150 [W]	230 [V]	352.2 [Ω]
name of item	accessory type	Q'ty	check result	Remark
winding temperature	PT100	6	Good	***
bearing temperature	PT100	2	Good	***
air temperature	***	***	***	***
additional	***	***	***	***

***	Tested By
	

We hereby confirm that the specified test were carried out in accordance with applicable standard(s) and that the satisfactory test result were obtained.

01
04
07
10

11.5°C
14.7°C
19.7°C
19.5°C

02
05
08
11

11.9°C
39.6°C
72.4°C
72.5°C

03
06
09
12

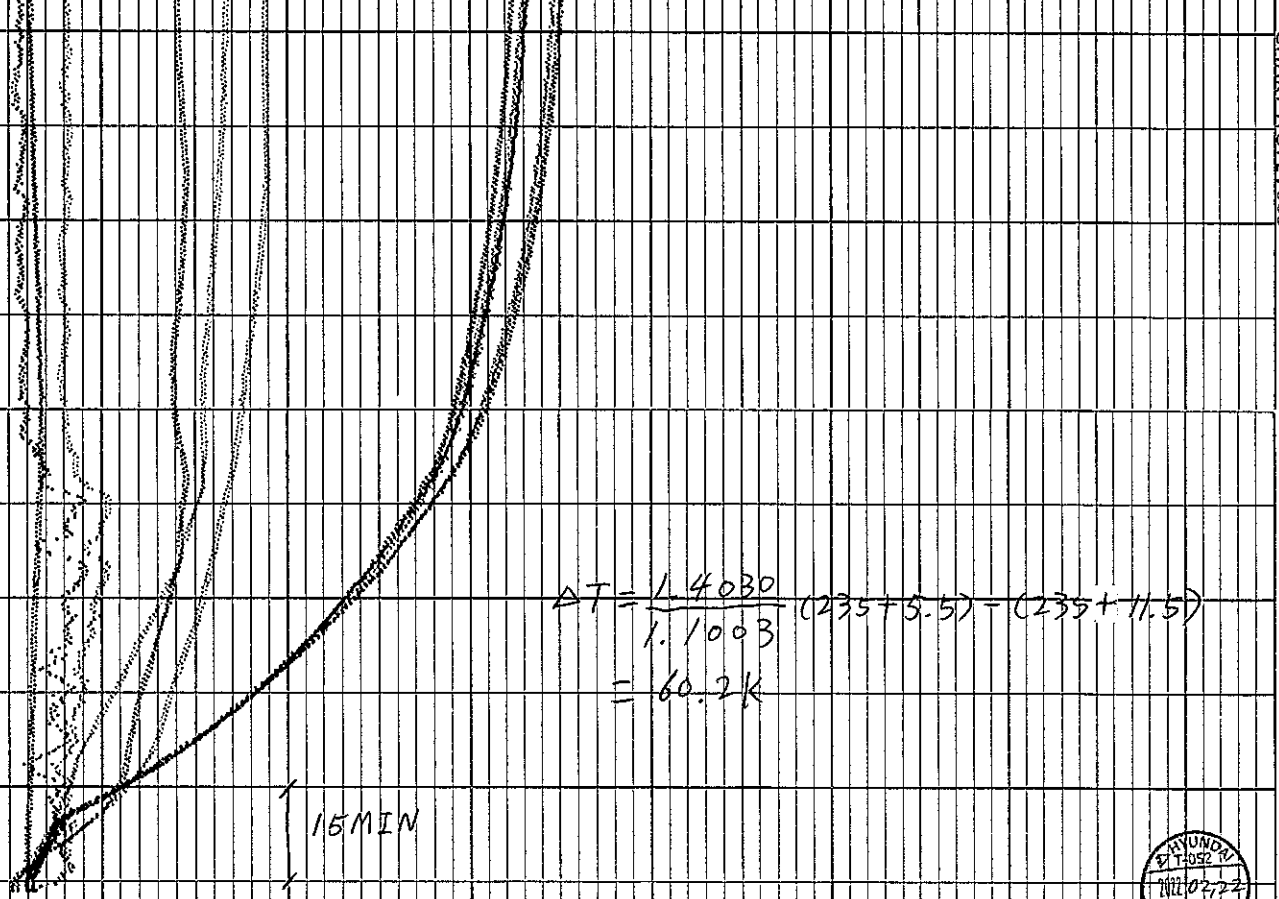
17.2°C
29.2°C
58.0°C
57.5°C

1/2 3 6 4 5 7~12

아트라스콤코/삼성전자 기동
315KW, 4P, 6600V, 60 HZ
SER.No: 20212771 RMH666001

1. Ambient Temp.
2. Air Inlet
3. Air outlet
4. Frame
5. DE Bearing
6. NDE Bearing
- 7~12. Windings

0 20 40 60 80 100 120 140 150



$$\Delta T = \frac{1.4030}{1.1003} (235 + 5.5) - (235 + 11.5) = 60.2K$$



PJT Name	아트라스코프 / 삼성전자 기흥	Project no.	20212771RMH666
model no.	HLE6 314-46F	Serial no.	20212771RMH666001

basic rating

Output kW	315	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1782.0	current [A]	34.5
Service factor	1.15	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

measured value at	5.5	[°C]	u-v:	1.1003	v-w:	1.0993	w-u:	1.1006
averaged phase resistance (refer to Y connection) [Ω]			0.754724		at specified temperature		95.00	[°C]

no load and short circuit(locked rotor) + actual load point for correction

item	[V]	[A]	[kW]	[Hz]	[°C]	line-line [Ω]	[rpm]
no load	6600.0	9.28	6.600	60.00	12.10	***	***
locked rotor	486.56	34.53	6.546	15.00	6.20	***	***
	926.47	34.55	9.843	30.00	7.90	***	***
	1746.83	34.55	15.565	60.00	8.90	***	***
	2934.08	69.20	63.199	60.00	10.30	***	***
	***	***	***	***	***	***	***
actual load	***	***	***	***	***	***	***

summary of constants

temperature constant	stator:	235.0	Rotor:	235.0
constant loss	Wh =	2.393 [kW]	Wf =	4.061 [kW]
stray load loss	Wll =	1.658 [kW]	at primary current I1 =	34.50 [A]
reactance ratio	X1/X2 =	0.6700		

f2	[Hz]	3.000	15.00	30.00	60.00	60.00	***
stator current	[A]	***	34.53	34.55	34.55	69.20	***
V1	[V]	3810.5	3810.5	3810.5	3810.5	3810.5	***
r1	[ohms]	0.754724	0.754724	0.754724	0.754724	0.754724	***
r2	[ohms]	1.010428	1.922881	3.259178	5.566408	5.53249	***
rfe	[ohms]	17041.24	17063.59	17108.51	17166.88	17340.22	***
X1	[ohms]	1.3349E+01	1.3087E+01	1.2563E+01	1.1883E+01	9.8705E+00	***
X2	[ohms]	1.9923E+01	1.9533E+01	1.8751E+01	1.7736E+01	1.4732E+01	***
bm	[mhos]	2.5117E-03	2.5102E-03	2.5069E-03	2.5027E-03	2.4902E-03	***
gfe	[mhos]	5.8681E-05	5.8604E-05	5.8450E-05	5.8252E-05	5.7669E-05	***
corrected constant from actual load point reading				Xm =	***	r2 =	***

summary of load characteristics

load	[pu]	0.25	0.50	0.75	1.00	1.25	2.54
current	[A]	12.3	18.3	25.5	33.5	42.5	119.3
efficiency	[pu]	0.9166	0.9499	0.9583	0.9596	0.9573	0.8591
power factor	[pu]	0.6111	0.7931	0.8462	0.8571	0.8469	0.6840
slip	[pu]	0.00208	0.00413	0.00632	0.00877	0.01164	0.08198
torque	[kg.m]	42.7	85.6	128.7	172	215.7	472.6

locked rotor and break down characteristics

locked rotor current [A]	205	break down torque [pu]	2.747
locked rotor torque [pu]	1.534	***	***



PJT Name	아트라스콥코 / 삼성전자 기흥	Project no.	20212771RMH666
model no.	HLE6 314-46F	Serial no.	20212771RMH666001

basic rating

Output kW	315	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1782.0	current [A]	34.5
Service factor	1.15	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

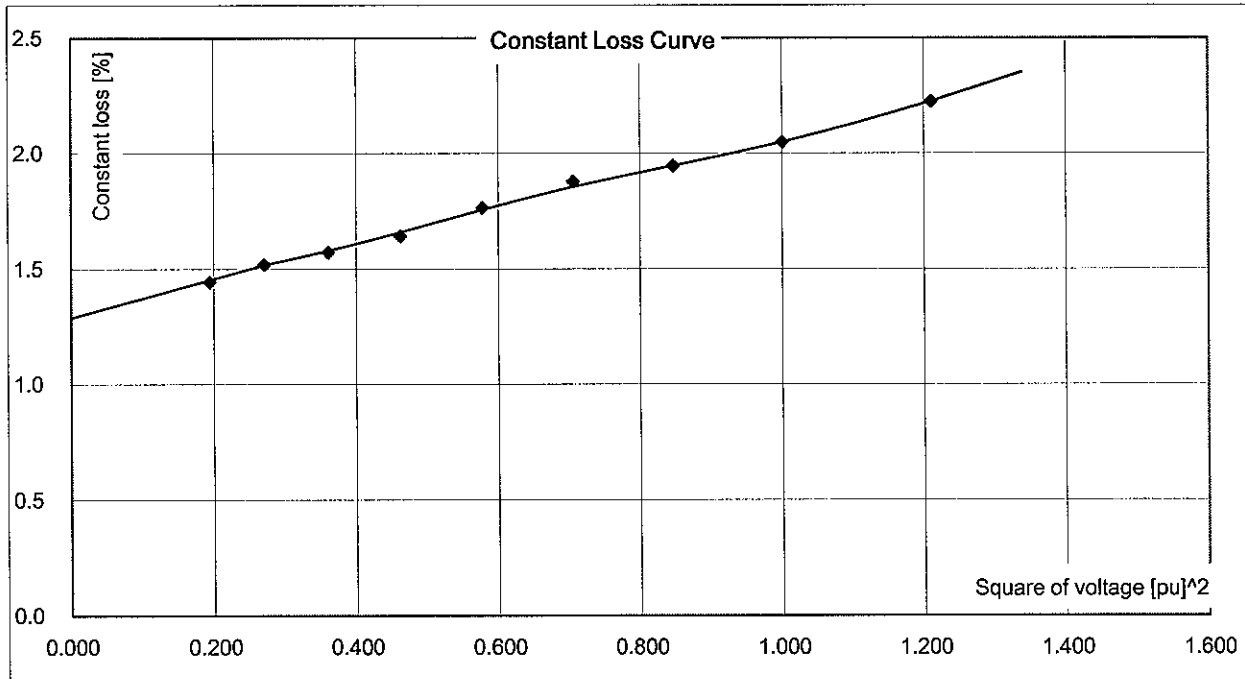
measured value at	5.50	[°C]	u-v:	1.1003	v-w:	1.0993	w-u:	1.1006
averaged phase resistance (refer to Y connection)				0.550033	[Ω]			

no load reading

[V]	[A]	[kW]	[Hz]	[rpm]	[°C]	line-line [Ω]
7260.40	11.34	7.230	60.00	***	12.10	***
6600.00	9.28	6.600	60.00	***	12.10	***
6072.30	8.13	6.240	60.00	***	12.10	***
5544.50	7.21	6.000	60.00	***	12.10	***
5016.60	6.38	5.630	60.00	***	12.10	***
4488.60	5.63	5.230	60.00	***	12.10	***
3960.50	4.94	4.990	60.00	***	12.10	***
3432.60	4.31	4.820	60.00	***	12.10	***
2904.40	3.72	4.570	60.00	***	12.10	***
***	***	***	***	***	***	***

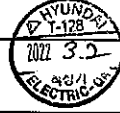
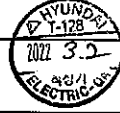
calculation and measured result

no load core loss	[kW]	2.393
friction and windage loss	[kW]	4.061
no load current	[A]	9.30

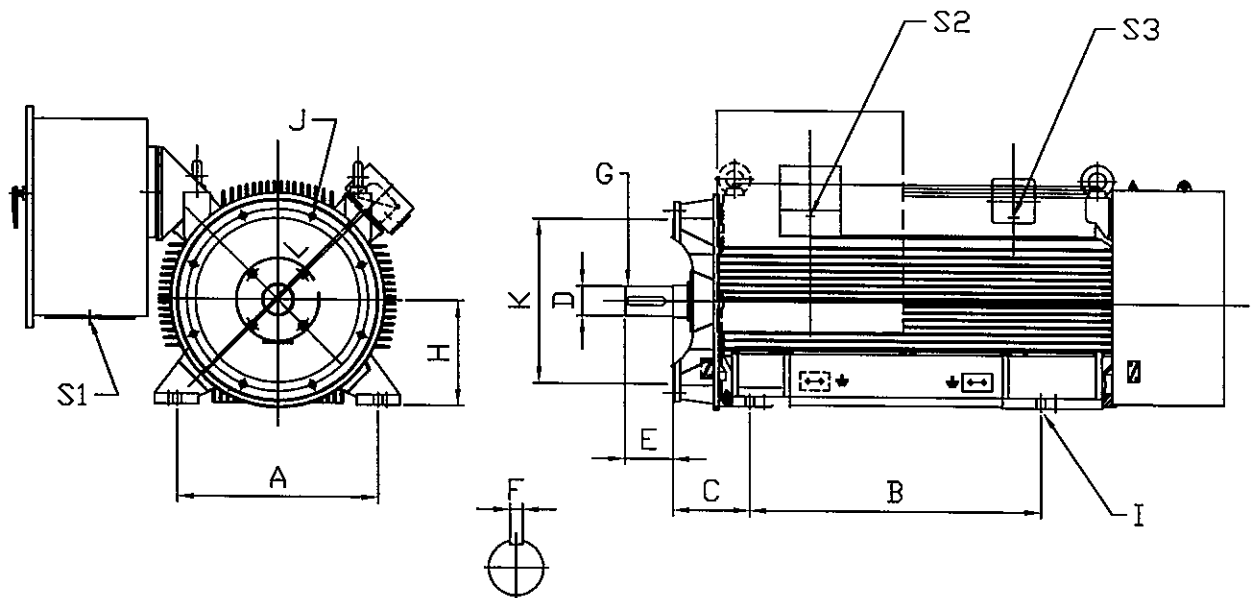


Measuring Equipment List of Motor Test(M6)

NO.	Name	Serial NO.	Calibration Date	Recalibration Date	Remarks
1	Mega ohm tester (1V~5000V)	829065	2021.09.03	2022.09.03	MEGGER
2	Temperature recorder	S5N606019	2021.06.11	2022.06.11	YOKOGAWA
3	Resistance ohm meter	MY42003423	2021.11.05	2022.11.05	AGILENT
4	Sound level meter	00821018	2021.05.28	2022.05.28	RION
5	Vibration meter	34347908	2021.04.09	2022.04.09	RION
6	Digital Power Meter	76AE0701	2021.09.23	2022.09.23	YOKOGAWA
7	High voltage tester	96068	2021.03.09	2022.03.09	SEOK WOO
8	Digital multi-meter	24070055	2021.05.28	2022.05.28	FLUKE
9	AC Voltage Meter	81AE0683	2021.11.09	2022.11.09	YOKOGAWA
10	AC Ampere Meter	80AE0004	2021.04.15	2022.04.15	YOKOGAWA
11	Mega ohm tester (500V/1000MΩ)	84NA1008	2021.11.11	2022.11.11	YOKOGAWA
12	TACHO METER(RPM)	N560326	2021.08.20	2022.08.20	LUTRON

	INSPECTION REPORT 검사 성적서			CHECKED BY : 검 토 자		
	PROJ. NO. 수주번호	20212771RMH666	SPEC 용량, 형식	315kW, 4P, 6600V	INSP. DATE 검 사 일	
PROJ. NAME 수 주 명	아브라스골고/삼성전자 기흥	DWG. NO. 도면번호	HM-101082/Rev.1	INSPECTOR 검 사 자		
		Q'TY 수 량	1SET	SERIAL NO. 일련번호	20211277RMH666001	

FINAL CHECK SHEET(D)



*.CHECK POINT "G" SHAFT RUN-OUT

CHECK DEVICE : V-CALIPERS, MICROMETER, DEPTH GAUGE

PART \ MK	A	B	C	D	E	F	G	H	I	J
SPEC	± 1.5 610	± 2.0 800	± 1.0 238	± 0.035 ± 0.013 Ø85	± 0.5 170	-0.022 -0.014 22	max 0.070	-1.0 315	4-Ø30	8-Ø24
CHECK	+0.1	+0.1	±0	+0.024	+0.1	-0.060	0.010	-0.3	4-Ø30	8-Ø24

PART \ MK	K	L	S1	S2	S3					
SPEC	± 0.044 Ø550	± 0.8 Ø600	1-PF3"	2-PF3/4"	1-PF3/4"					
CHECK	-0.030	+0.2	1-PF3"	2-PF3/4"	1-PF3/4"					

NOTE(특기)

VISUAL INSPECTION : AC

AC : ACCEPT RJ : REJECT
(양호) (불량)

NA : NOT APPLICATION
(해당없음)

FINAL INSPECTION
최 종 판 정

ACCEPT

A4(210mm x 297mm)

		INSPECTION REPORT 검사 성적서		CHECKED BY : 검토자 : 	
PROJ.NO 수주번호	20212771RMH666	SPEC 용량, 형식	315kW, 4P, 6600V, 60Hz	INSP.DATE 검사일	
PROJ.NAME 수주명	아트라스콥코 / 삼성 전자 기흥	DWG.NO 도면번호	P-20212771 Rev. 1	INSPECTOR 검사자	
		Q'TY 수량	1 SET	SERIAL.NO 일련번호	20212771RMH66600 1

FINAL PAINT CHECK SHEET

페인트 검사

(UNIT : μ m)

PART 구분	INSPECTION ITEM 검 사 항 목	SPEC 기 준 값	CHECK (검사)			REMARK
			NO. 1	NO.	NO.	
Prime Coat.	PAINT MT'L(재질)	EP1160(H)	EP1160(H)	*	*	
	COLOR(색상)	GRAY	GRAY	*	*	
	THICKNESS(두께)	60 μ m	68 μ m	μ m	μ m	
	T,Hu,D/P,:5~40℃ , 85%이하↓		AIR TEMP 18 ℃ HUMIDITY 60 % DEW POINT 10.1			
Intermedia te Coat.	PAINT MT'L(재질)	EH6270	EH6270	*	*	
	COLOR(색상)	N7.0	N7.0	*	*	
	THICKNESS(두께)	60 μ m	129 μ m	μ m	μ m	
	T,Hu,D/P,:5~40℃ , 85%이하↓		AIR TEMP 20 ℃ HUMIDITY 37 % DEW POINT 4.9			
Finish Coat.	PAINT MT'L(재질)	UT6780(S)	UT6780(S)	*	*	
	COLOR(색상)	7.5 BG 6/1	7.5 BG 6/1	*	*	
	THICKNESS(두께)	40 μ m	169~350 μ m	μ m	μ m	
	T,Hu,D/P,:5~40℃ , 85%이하↓		AIR TEMP 19 ℃ HUMIDITY 38 % DEW POINT 4.4			
Total Dry film thickness		Min 160 μ m	169~350 μ m	μ m	μ m	

* VISUAL (외관): AC

* NOTE (노트):

AC : ACCEPT

RJ : REJECT

NA : NOT APPLICABLE

FINAL DECISION

합 격
ACCEPT

양 호

불 량

해 당 없 음

최 종 판 정

Measuring Equipment List of Motor Test

NO.	Name	Size	Serial NO.	Calibration Date	Recalibration Date	Remarks
1	버니어캘리퍼스(Vernier Calipers)	0 - 300 mm	7077047	2021-09-02	2022-09-02	MITUTOYO
2	버니어캘리퍼스(Vernier Calipers)	0 - 1 000 mm	515068	2021-09-02	2022-09-02	ULIRA
3	높이게이지(Vernier Height gauge)	0 - 600 mm	12007915	2021-09-02	2022-09-02	MITUTOYO
4	다이얼게이지(Dial gauge)	0 - 10 mm	ZAK956	2021-08-19	2022-08-19	MITUTOYO
5	내측 마이크로미터(Caliper Micrometer)	5 - 30 mm	602216	2021-09-03	2022-09-03	MITUTOYO
6	외측 마이크로미터(Outside Micrometer)	75 - 100 mm	546974	2021-09-04	2022-09-04	MITUTOYO
7	Digital Coating Thickness Tester	0 - 1.5 mm	645063	2021-09-07	2022-09-07	MITUTOYO
8	줄자(Tape Measure)	5.0M	RM-0002	2021-05-28	2023-05-28	KOMELON
9			Blank			
10			Blank			
11			Blank			
12			Blank			
13			Blank			
14			Blank			
15			Blank			