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SPECIFICATION

FOR

LEAD FREE MULTI CORE CABLE

[P/N: UL20276 (SPV1523) nx22AWG(7/0.26TA) LF]

(n ~ number of core)

Prepared	Checked	Approved
H.T.Đệ 25-2-2019 HCV/DE	M.SUZUKI 25-2-2019 HCV/GM	M.SUZUKI 25-2-2019 HCV/GM

Revision record

No.	Date	Rev.	Contents	Prepared by	Reviewed by	Approved by
1	Feb. 22nd, 2019	Initial Issue	Initial Issue	Ha Thi De	N.M. Citing	M.SUZUKI

1. Scope

This specification covers UL recognized multi core cable.
USE: Internal wiring and external interconnection of electronic equipment in class 2 circuits only.
Rating temperature: 80°C
Rating voltage: 30V

2. Applicable standard

UL 758 [Latest version]
UL AWM Style 20276

3. Construction and Material

Description			Specification
Conductor	Material	-	Tinned annealed copper wire (TA) stranded
	Size	AWG	22
	Stranding	No./mm	7/0.26
	Diameter (Nom.)	mm	0.78
Insulation	Material	-	Semi-rigid, Lead free PVC
	Thickness (Nom.)	mm	0.25
	Diameter (Nom.)	mm	1.28
	Color & Identification	-	See table 2
Cabling	Binder tape	-	Paper tape
	Diameter (Nom.)	mm	See table 1
Jacket	Material	-	Heat resistance, Lead free PVC
	Thickness (Nom.)	mm	0.6
	Diameter	mm	See table 1
	Color (color code)	-	Black (BK)

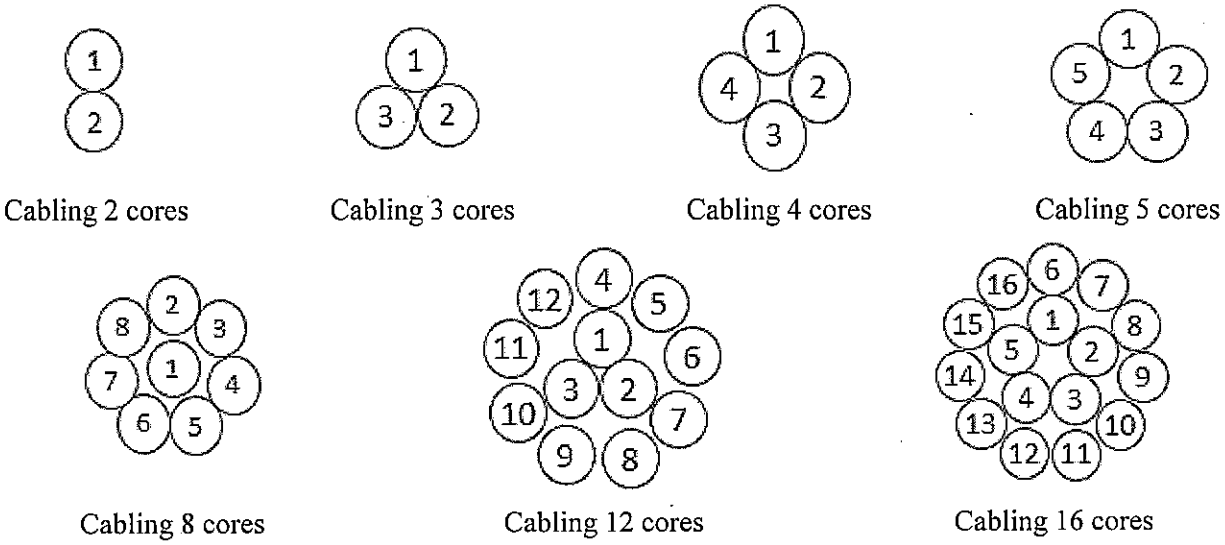
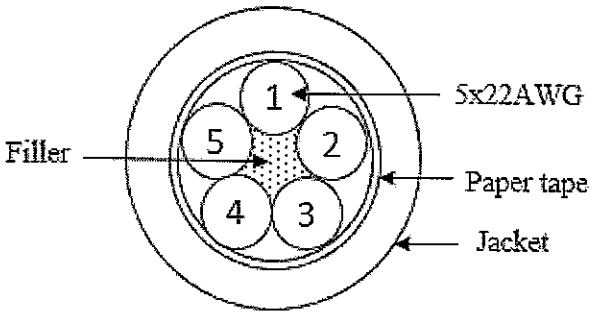


Fig. 1 Lay out of cabling

Example item 5x22AWG



(*) Suitable fillers may be applied to make a circular cross section.

Fig. 2 Cross-section of cable

4. Marking

The completed cable shall be printed following marking format on the surface throughout entire length by regular interval.

Example:

AWM E41447-HCV STYLE 20276 80C VW-1 HITACHI LF

Note: Making format subject to change without notice according with safety revision

5. Properties

No.	Test Item	Test Detail	Standard	Test		
				Routine	Type	Approval
1	Dielectric strength	A.C.500V/1min; No breakdown	Specification	Yes	X	Yes
2	Jacket tensile strength (unaged)	Min 10.3 MPa	UL	X	Yes	Yes
3	Jacket tensile strength (aged)(*)	Min 70% (aged at 113±2°C, 168 hours)	UL	X	Yes	Yes
4	Jacket elongation (unaged)	Min 100 %	UL	X	Yes	Yes
5	Jacket elongation (aged)(*)	Min 45% (aged at 113±2°C, 168 hours)	UL	X	Yes	Yes
6	Heat shock	No crack (at 121±1°C, 1 hour)	UL	X	Yes	Yes
7	Cold bend	No crack (at -10±2°C, 4 hours)	UL	X	Yes	Yes
8	Deformation	Max. 50% (**) (2.45N at 121±1°C)	UL	X	Yes	Yes
9	Insulation resistance	Min 10 MΩ-km (20°C)	Specification	X	Yes	Yes
10	Conductor resistance	Max. 54.4 Ω/km (20°C)	Specification	X	Yes	Yes
11	Flame test	VW-1	UL	X	Yes	Yes

(*) % of the unaged specimen

(**) % of decrease in thickness

6. Packing

6.1 Packing

Each product shall be packed in coil for transportation, and unit length: see table 1.

6.2 Marking on the Package

Each package shall be tagged to show the following information

(1) UL Style No.
(2) Conductor size
(3) No of conductor
(4) Color
(5) Lot No.
(6) Length
(7) Use
(8) File No.
(9) Rating temperature
(10) Rating voltage
(11) Date of manufacturing
(12) Insulation thickness and material
(13) Jacket thickness and material
(14) Name of manufacturer

7. Order form

Example for 5x22AWG:

UL20276	(SPV1523)	5	x	22AWG(7/0.26TA)	LF	BK	C200
1	2	3		4	5	6	7

1	UL20276	Description (UL Style No.)
2	SPV1523	Specification No. SPV-02-1523
3	5	No. of core
4	22AWG(7/0.26TA)	Conductor size & stranding
5	LF	Lead Free
6	BK	Jacket Color (Black)
7	C200	Packing style and unit length, "C" for coil in m

8. Control of Chemical Substances

Control of Chemical Substances in this product shall be controlled as below.

10 substances of RoHS Directive

(1) Applicable standard and statute

(a) Directive 2011/65/EU of the European Parliament and of the Council on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment)

(b) 2005/618/EC COMMISSION DECISION of 18 August 2005 (amending Directive 2011/65/EU of the European Parliament and of the Council for the purpose of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment)

(c) JIS C 0950:2008(The marking for presence of the specific chemical substances for electrical and electronic equipment)

(2) The maximum concentration values for certain hazardous substances.

	Chemical Substances	Concentration value	
		Resin, a paint, and ink	Others
1	Cadmium and Cadmium Compounds	Less than 5ppm	Less than 75ppm
2	Hexavalent Chromium Compounds	Less than 1000ppm	
3	Lead and Lead Compounds	Less than 100ppm	Less than 1000ppm
4	Mercury and Mercury Compounds	Less than 1000ppm	
5	Polybrominated Biphenyls(PBBs)	Less than 1000ppm	
6	Polybrominated Diphenyl ethers(PBDEs)	Less than 1000ppm	
7	Bis (2-ethylhexyl) phthalate (DEHP)*1 (CAS No.117-81-7)	Less than 1000ppm	
8	Benzyl butyl phthalate (BBP)*1 (CAS No. 85-68-7)	Less than 1000ppm	
9	Dibutyl phthalate (DBP)(CAS No. 84-74-2)*1	Less than 1000ppm	
10	Diisobutyl phthalate (DIBP) *1 (CAS No. 84-69-5)	Less than 1000ppm	

**1 : COMMISSION DELEGATED DIRECTIVE (EU) 2015/863*

Table 1: Dimension of cable

No. of core	Cabling diameter Nom. (mm)	Jacket diameter (mm)	Unit length (m)	Current rating Max. (A)
2	2.7	3.9 ± 0.5	200	7.5
3	2.9	4.1 ± 0.5	200	6.3
4	3.2	4.4 ± 0.5	200	5.6
5	3.6	4.8 ± 0.5	200	5.3
8	4.3	5.5 ± 0.5	200	4.4
12	5.4	6.6 ± 0.5	100	3.9
16	6.1	7.3 ± 0.5	100	3.6

Table 2: Color and Identification for Core

Core No.	Color	Dot mark	Dot mark color
1	Brown	■ (1 short dot)	Black
2	Brown		Red
3	Yellow		Black
4	Yellow		Red
5	Light Green		Black
6	Light Green		Red
7	Gray		Black
8	Gray		Red
9	White		Black
10	White		Red
11	Brown	■ ■ (2 short dots)	Black
12	Brown		Red
13	Yellow		Black
14	Yellow		Red
15	Light Green		Black
16	Light Green		Red