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SPH-3-RF1.37

SPECIFICATION for RF-1.37 S+T FEP+FEP Coaxial Cable, Normal Pitch

Prepared	Checked	Approved
Isabella Sept. 19, 2020	Michael Sept. 19, 2020	Michael Sept. 19, 2020

1. Scope:

This specification covers FEP insulated High-Frequency coaxial cable for internal wiring of electronic equipment.

USE: Internal wiring of Class 2 Circuits of Electronic Equipment.

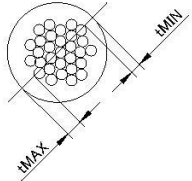
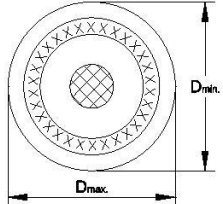
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2. Construction:

Item	Unit	Spec. Value
Inner Conductor	Material	---
	Construction	No./mm
	Dia.(approx)	mm
Insulation	Material	---
	Nom. Thickness	mm
	Dia.(approx)	mm
	Color	---
Outer Conductor	Type	---
	Material	---
	Construction	No./ No./mm
	Coverage	%
	Dia.(approx)	mm
Jacket	Material	---
	Nom. Thickness	mm
	Color	---
	Dia.(approx)	mm

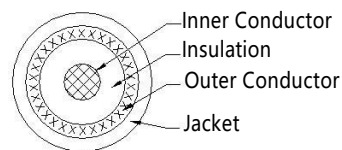
3. Physical requirement:

Test Item	Specified Value	Note
Appearance	Faultless in visible	-
Concentricity of inner conductor	The ratio of t_{min}/t_{max} should be not less than 85%. 	t_{min} and t_{max} stands for the insulation thickness at the same cross section.
Bond strength (between the insulation & conductor)	The force should not less than 350 gf on 50mm length insulation pull at the speed of 50mm/min.	-
Flattening over jacket	$D_{max} - D_{min} \leq 0.06$ mm 	D_{min} and D_{max} stands for the overall diameter at the same cross section.
Heat shrinkage test on insulation	After 10 mm insulated core is immersed into the tinning bath for 2 seconds at the temperature $255 \pm 5^\circ\text{C}$, the shrinkage or the expansion of the insulation shall be not more than 0.50 mm	--

4. Electric Characteristics:

Test Item	Specified Value	Note
Inner conductor resistance(at 20°C)	Max. 320 Ω /km	-
Insulation resistance 1> (at 20°C)	Min.1,500 MΩ -km	-
Dielectric strength	Dielectric core: No breakdown at AC 1,500 V/ 0.15sec.	Spark test
	Jacket: No breakdown at AC 1,500 V /0.15sec.	Spark test
	Between Inner and outer conductor: No breakdown at AC 1,500V/1min	Finished cable
Flame retardant	VW-1	UL 1581
Capacitance (Nom.)	98 pF/m	At 1KHz
Characteristic impedance (at 1.0 ns)	50±2 Ω	TDR method
VSWR	Max. 1.20	0 ~ 3G
	Max. 1.35	3 ~ 6G
Attenuation (Nom.**, dB/m)	1.6	0.9GHz
	2.3	1.9GHz
	2.7	2.45GHz
	2.9	3.0GHz
	4.2	5.0GHz
	4.3	6.0GHz

** Max. value=Nom. Value x 1.15



Cross-section of cable

5. Packing :

Standard unit length of finished cable shall be 500 m/reel, there are max. two joints per reel. The min. Length between joints is 50 m. The finished cable shall be packed not to be damaged during transportation.

6. Jointer:

There shall be no any braiding conductor jointer in finished cable.

The operation instruction on how to remove the jointer on braiding conductor is as below:

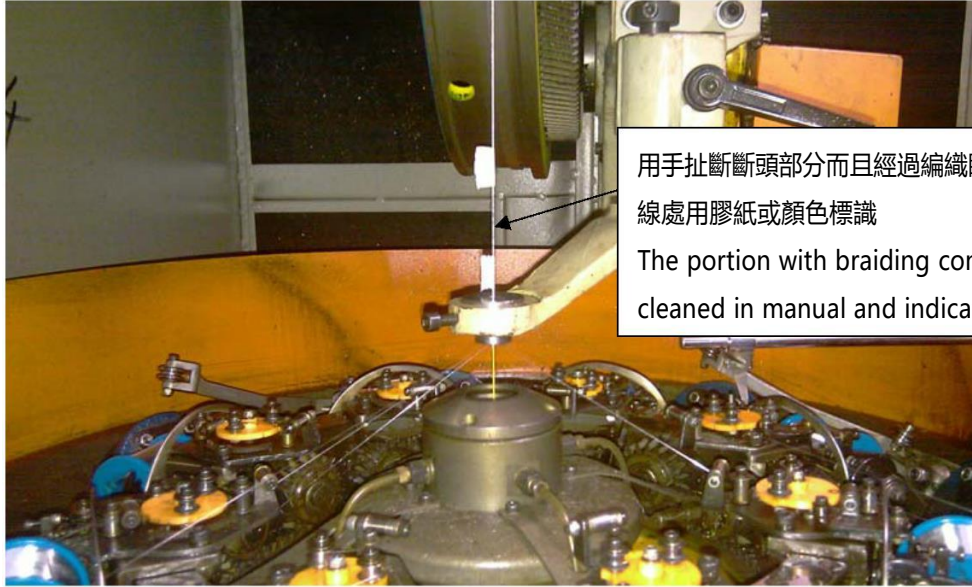
6.1 編織銅斷線後，手拉斷線部分引入並手動運行：

The braiding conductor are guided in manual after the braiding conductor broken



6.2 斷線部分標識:

The indication with the jointer of braiding conductor



6.3 斷線部分處理:

Handling on the braiding conductor jointer.

有斷線部分到收線軸附近時，停機並鬆開編織後剪斷芯線。確認外觀無異常而且可以通過外被押出模具後繼續運行。為方便提醒後續工序，可放置紙片作為標識。

Before that portion reaches the take-up bobbin, stop the machine and the inside insulated ore are cut off. After confirming the appearance is acceptable for jacket extruding, continue to run the machine. If necessary, one piece of paper is put in the take-up bobbin as the indication for jacket extrusion.

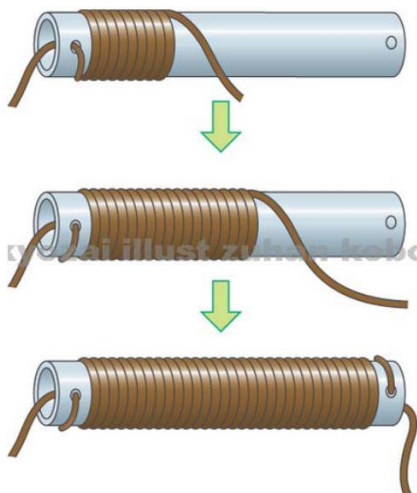
7. Inner conductor convex:

Before and after the test method as below, there shall be any inner conductor convex happened checked by 10x scope.

Three specimens each in 1000 mm length are selected form finished cable;

The specimen is wound onto one rod with having diameter 90 mm in turns and then the specimen is released to the straight status. This counts for one cycle.

The inspection is conducted as 7.2 in five cycles for each specimen. After that, the cable side is visually checked in 10x scope, there shall be no inner conductor convex happened at both ends of the specimen.



8. Outgoing inspection method:

During the outgoing inspection, at least the following items are inspected.

Item		Frequency	Method Description
Conductor	Construction	6PCs/Lot	Visually check the number of the strands and measure the individual strand diameter by micrometer.
	Stranding Direction & Pitch	6PCs/Lot	Visually check the stranding direction, measure the Pitch by scale
Insulated core	Appearance	6PCs/Lot	Visual
	Color	6PCs/Lot	Visual
	Diameter	6PCs/Lot	Thickness gauge or caliper
	Bond strength between the conductor and insulation	6PCs/Lot	Using the copper plate in suitable hole size
	Insulation heat shrinkage	6PCs/Lot	As specified in specification, immersed 10mm insulated core into the tin bath at temperature 255+/-5C for 2 seconds, inspect the shrinkage or expansion of the insulation
	Conductor Concentricity	6PCs/Lot	Measure the min. and max. insulation thickness at the same cross section, calculated the ratio in percentage
Braiding	Construction	6PCs/Lot	Check visual and caliper
	Pitch	6PCs/Lot	Check visual and caliper
Finished cable	Appearance	6PCs/Lot	Visual
	Color	6PCs/Lot	Visual
	Diameter	6PCs/Lot	Thickness gauge or caliper
	Flatness over jacket	6PCs/Lot	Thickness gauge or caliper
	Conductor convex	3PCs/Lot	As specified in specification.
Electric performance	Conductor resistance	1PC/Lot	Wheastone bridge
	Insulation resistance	All	By workshop before packing, by insulation resistance between the conductor and braiding
	Dielectric withstanding	All	By workshop before packing, by Hi-pot tester between the conductor and braiding at AC1,500 for 2 seconds
	Impedance	1PC/Lot	TDR, at1.0 ns
	Attenuation	2PCs/4500m	Crimped the I-PEX terminal on to both ends of 1 meter cable sample, measure the attenuation and VSWR at specified frequency or range by NA. insulated core is extruded in 4500m as one sub-Lot.. More specimens should be selected if unstable or non-compliant result are found.
	VSWR	2PCs/4500m	

Remarking:

Lot: All quantity that passed from workshop to QA before delivery. For example, 40km was passed to QA for outgoing inspection before delivery, then that 40km was inspected as one lot, and the samples are randomly selected.

4500m: Usually the insulated core are take-up every 4500m or less as one sub-lot, depended on the conductor quality or the machine operation status. Two samples will be selected at the beginning and end of every sub-lot for attenuation and VSWR measuring.