MULTIFREQUENCY RECEIVERS AND TRANSMITTERS FOR USE IN ELECTRONIC CENTRAL OFFICES EQUIPMENT DESIGN REQUIREMENTS COMMON SYSTEMS

1. GENERAL

SCOPE

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, assembly, equipment, and circuits to be used in the engineering, manufacture, and installation of the multifrequency (MF) receivers and transmitters used in electronic central offices.

1.02 Whenever this section is reissued, the reason for reissue will be specified in this paragraph.

DESCRIPTION

1.03 MF signaling represents a particular implementation of a signaling system used between switching centers to direct the establishment of a desired interoffice connection. The information received and transmitted consists primarily of the called office code and telephone number, as well as auxiliary control information and calling number in CAMA applications. MF signaling is implemented by the voice-frequency transmission and reception of selected pairs of audio-frequency tones in a 2-out-of-6 coding scheme.

No. 4 ESS MF Signaling Frame (J99353A)

1.04 The No. 4 ESS multifrequency signaling (MFS) frame has a capacity of 32 receivers and 32 transmitters, the maximum number that can be associated with a signal processor (SP). Each MFS frame is located in the same physical area as the SP and associated voiceband interface frames (VIFs). This arrangement minimizes the length of the connectorized cables from the MFS frame to the SP and the voiceband interface units (VIUs).

1.05 The MFS frame is a 7-foot, single bay, electronic switching-type frame, that accommodates 25-inch mounting plates. In addition to the transmitters and receivers, the frame consists of two power supplies, a common tone supply, a fuse and alarm panel, and connectorized shelves providing access to the SP and voiceband interface complex. These shelves are used for circuits external to the frame requiring universal scan/distribute points or VIU points associated with circuits requiring universal scan/distribute points. The frame also provides connectorized access to the VIF for circuits external to the frame not associated with universal scan/distribute points. The frame arrangement is shown in Fig. 1.

1.06 The common tone supply consists of two separate sets of tone generators used to supply a total of 32 transmitter outputs. Each set of tone generators drives 16 outputs. If a tone supply goes out of limits or loses power, the 16 outputs connected to this tone supply are automatically switched to the other tone supply.

1.07 The frame requires two power supplies, each consisting of a 73E unit and a 74E unit. The 73E unit is used to convert 48 volts to alternating current, while the 74E unit provides rectification, filtering, and regulation of the outputs.

1.08 The fuse and alarm panel contains all the fuses, alarm lights, and indications necessary to inform the SP and office alarm when the frame is in a trouble condition.

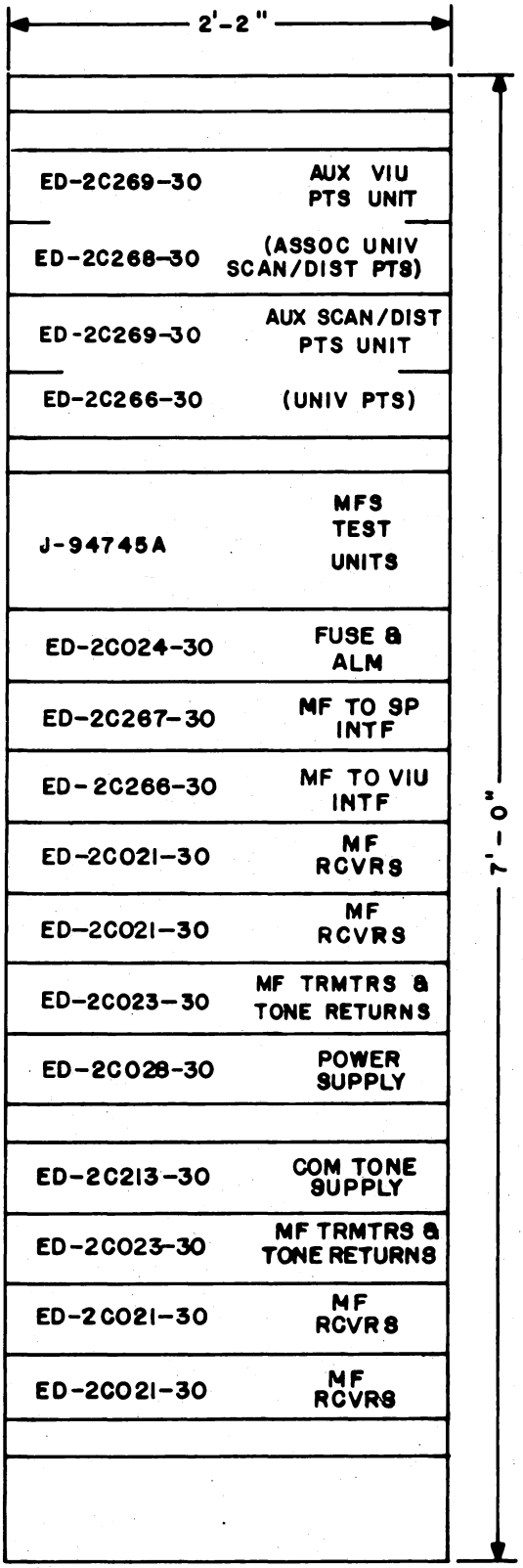

Fig. 1—No. 4 ESS Multifrequency Signaling Frame

1.09 Four tone return circuit packs containing eight circuits per pack are used to supply a tone return signal, indicating an MF receiver is ready to receive pulses, to an international operator.

FLOOR PLAN ARRANGEMENT

1.10 The MFS frame is normally located in a fixed floor plan with the SP (1) and VIFs for terminations of analog trunks in No. 4 ESS. This area occupies the space of three lineups 19 feet 6 inches wide. There are 35 VIUs associated with each SP. One VIU in this grouping is assigned and cabled to the MFS frame. In this way, the assignment task is simplified and uniform throughout the system, thus allowing for ease of correspondence and simplification of installation and maintenance. The MFS frame may also be associated with the supplementary matrix frame of the SP (SP2) used with the digroup terminal for termination of digital trunks in No. 4 ESS.

2. SUPPLEMENTARY INFORMATION

801-000-000—Numerical Index—Common Systems
800-600-000—Checking List—General Equipment Requirements
J4A003—820-741-152—Signal Processor
J68935—804-050-150—Voiceband Interface
J94745—801-224-152—Multifrequency Signaling Test Unit
Floor Plan Data—Section 18.9, Sheet 1

3. DRAWINGS

For additional drawings forming a part of this specification, see listings under Subdivisions of Equipment and Detailed Index.

SD-4A001-01—No. 4 ESS Electronic Switching System
ED-2C304-10—No. 4 ESS Multifrequency Signaling Frame—Method of Cabling

4. EQUIPMENT

ED-2C021-30—AT&TCo Std—Receiver Shelf for Use on No. 4 ESS Multifreqency Signaling Frame

Group 1—Shelf assembly, connectors, and wiring for eight MF receivers per SD-1C490-01, eight App Fig. 1 and 2 with options Z and W. (See Note A.)

Note

A. No provision is made by this group for circuit packs for this shelf. They must be ordered per J99353A, L4.

ED-2C023-30—AT&TCo Std—Transmitter and Tone Return Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Shelf assembly, connectors, and wiring for 16 MF transmitters per SD-1C488-01, 16 App Fig. 1, with options V, X, and Y, 2 tone returns per SD-1C498-01, and 2 App Fig. 3. (See Note A.)

Note

A. No provision is made by this group for circuit packs for this shelf. They must be ordered per J99353A, L3 and L7.

ED-2C024-30—AT&TCo Std—Fuse and Alarm Panel for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Assembly, equipment, and wiring for one fuse and alarm panel per SD-1C498-01, App Fig. 1.

ED-2C028-30—AT&TCo Std—Power Supply Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Shelf assembly, connectors, wiring, and common equipment for one power supply unit per SD-1C498-01, App Fig. 2. (See Note A.)

Note

A. The two 73E and two 74E power units are not provided by this group and must be ordered per J99353A, L6.

ED-2C213-30—AT&TCo Std—Common Tone Supply Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Shelf assembly, connectors, wiring, and equipment for one common tone supply shelf per SD-1C489-01, App Fig. 2. (See Note A.)

Note

A. No provision is made by this group for circuit packs for this shelf. They must be ordered separately per J99353A, L2.

ED-2C266-30—AT&TCo Std—MF Signaling to VIU Interface Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Assembly and equipment for one MF signaling to VIU interface shelf with wiring as provided per SD-1C498-01. (See Note A.)

Note

A. This shelf provides for auxiliary VIU points not requiring universal scan/distribute points for circuits external to the MF frame. It also provides the terminations for international tone returns.

ED-2C267-30—AT&TCo Std—MF Signaling to SP Interface Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Assembly and connectors for one MF signaling to SP interface shelf.

ED-2C268-30—AT&TCo Std—Auxiliary Scan/Distribute Points or VIU Points Shelf for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Assembly and connectors for one auxiliary scan/distribute or VIU shelf. (See Notes A and B.)

Notes

A. This shelf is frame-wired, per SD-1C498-01, to ED-2C269-30.

B. This shelf is used for universal scan/distribute points and VIU points requiring universal scan/distribute points.

ED-2C269-30—A T&TCo Std—Auxiliary Scan/Distribute Points or VIU Points Terminal Strip for Use on No. 4 ESS Multifrequency Signaling Frame

Group 1—Assembly and terminal strips for one auxiliary scan/distribute or VIU unit. (See Notes A and B.)

Notes

A. This unit is frame-wired, per SD-1C498-01, to ED-2C268-30.

B. This unit is used for universal scan/distribute points and VIU points requiring universal scan/distribute points.

J99353A—AT&TCo Std—No. 4 ESS Multifrequency Signaling Frame

List 1—Framework, assembly, wiring, and common equipment for one MFS frame arranged but not equipped for 32 MF receivers and 32 MF transmitters.

	WIRE	EQUIP	NOTES
MF Trmtr Ckt, SD-1C488-01:			
Fig. 1	32	0	
MF Com Tone Sup. Ckt, SD-1C489-01:			
Fig. 1 and 2	1	0	
MF Rcvr Ckt, SD-1C490-01:			
Fig. 1 and 2	32	0	
No. 4 ESS MF Sig Fr Ckt, SD-1C498-01:			
Fuse and Alm, Fig. 1	1	0	
Power Sup., Fig. 2	1	0	
Tone Return, Fig. 3	4	0	
ED-2C021-( ), GR1, Rcvr Shelf	0	4	
ED-2C023-( ), GR1, Trmtr and Tone Return Shelf	0	2	
ED-2C024-( ), GR1, Fuse and Alm Panel	0	1	
ED-2C028-( ), GR1, Pwr Sup. Shelf	0	1	
ED-2C213-( ), GR1, Com Tone Sup. Shelf	0	1	
ED-2C266-( ), GR1, MF Sig to VIU Infac Shelf	0	1	
ED-2C267-( ), GR1, MF Sig to SP Infac Shelf	0	1	

List 2—Equipment required in addition to list 1 to provide a common tone supply for MF transmitters in accordance with SD-1C489-01, App Fig. 1. (See Note A.)

List 3—Equipment required in addition to list 1 for one MF transmitter in accordance with SD-1C488-01, App Fig. 1 (maximum 32 lists 3). (See Notes B and C.)

List 4—Equipment required in addition to list 1 for one MF receiver in accordance with SD-1C490-01, App Fig. 1 and 2 (maximum 32 lists 4). (See Notes B and D.)

List 5—Equipment required in addition to list 1 to provide a connectorized termination shelf to provide access to the SP for a maximum of 120 universal scan points and 120 universal distribute points or 120 VIU points (circuits requiring universal scan/distribute points)

for circuits external to the MFS frame with wiring as provided by SD-1C498-01. (See Note E.)

List 6—Equipment required in addition to list 1 to provide power supplies for up to a maximum of 32 MF transmitters and receivers in accordance with SD-1C498-01, App Fig. 2. (See Note B.)

List 7—Equipment required in addition to list 4 to provide tone return for eight MF receivers when used for international service in accordance with SD-1C498-01, App Fig. 3.

List 8—Equipment required in addition to list 1 to provide one MF testing unit per SD-1C155-01. (See Note G.)

Notes

A. Two each of circuit packs JD1 through JD5 are required to provide a common tone supply.

B. A minimum of four transmitters and four receivers must be provided per power supply.

C. One circuit pack JD7 is required to provide one MF transmitter.

D. One each of circuit packs JD8 through JD11 are required to provide one MF receiver.

E. A maximum of two lists 5 may be provided on the MF frame. One is dedicated to universal scan/distribute points, while the other is dedicated to VIU points associated with circuits requiring universal scan/distribute points. List 5 consists of ED-2C2668-( ), GR1 and ED-2C269-( ), GR1.

F. Four circuit packs JD12 are required to provide tone return for eight MF receivers for international service.

G. No more than one list 8 may be provided per MF frame.

Miscellaneous Equipment

J94745A—MF Signaling Test Unit

5. GENERAL NOTES AND INDEXES

SUBDIVISIONS OF EQUIPMENT AND DETAILED INDEX

WE J drawings should be ordered by referring to the prefix and base number and requesting the current dash (—) number.

EQUIPMENT CODE	AT&T RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING	CKTs PER UNIT	2- BY 25-INCH MTG PLTS PER UNIT	HEIGHT
ED-2C021-30	Std	Receiver Shelf for Use on No. 4 ESS Multifrequency Signaling Frame	ED-2C021-30	SD-1C490-01	8	2	4 in.
ED-2C023-30	Std	Transmitter and Tone Return Shelf for Use on No. 4 ESS Multi-frequency Signaling Frame	ED-2C023-30	SD-1C488-01 SD-1C498-01	16, 2	2	4 in.
ED-2C024-30	Std	Fuse and Alarm Panel for Use on No. 4 ESS Multi-frequency Signaling Frame	ED-2C024-30	SD-1C498-01	1	2	4 in.
ED-2C028-30	Std	Power Supply Shelf for Use on No. 4 ESS Multi-frequency Signaling Frame	ED-2C028-30	SD-1C498-01	2	2	4 in.
ED-2C213-30	Std	Common Tone Supply Shelf for Use on No. 4 ESS Multi-frequency Signaling Frame	ED-2C213-30	SD-1C489-01	1	2	4 in.
ED-2C266-30	Std	MF Signaling to VIU Interface Shelf for Use on No. 4 ESS Multi-frequency Signaling Frame	ED-2C266-30				
ED-2C267-30	Std	MF Signaling to SP Interface Shelf for Use on No. 4 ESS Multifrequency Signaling Frame	ED-2C267-30	SD-1C498-01	1	2	4 in.

EQUIPMENT CODE	AT&T RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING	CKTs PER UNIT	2- BY 25-INCH MTG PLTS PER UNIT	HEIGHT
ED-2C268-30	Std	Auxiliary Scan/ Distribute Points or VIU Points Shelf for Use on No. 4 ESS Multi-frequency Signal-ing Frame	ED-2C268-30	SD-1C498-01	1	2	4 in.
ED-2C269-30	Std	Auxiliary Scan/ Distribute Points or VIU Points Terminal Strip for Use on No. 4 ESS Multifrequency Signaling Frame	ED-2C269-30	SD-1C498-01	1	2	4 in.
J99353A	Std	No. 4 ESS Multifrequency Signaling Frame	J99353A-( )	SD-1C155-01 SD-1C488-01 SD-1C489-01 SD-1C490-01 SD-1C498-01			7 ft.

Circuit Schematic Index

CIRCUIT DRAWING	J99353 EQPT CODE
SD-1C155-01	A
SD-1C488-01	ED-2C023-30, A
SD-1C489-01	ED-2C213-30, A
SD-1C490-01	ED-2C021-30, A
SD-1C498-01	ED-2C023-30, ED-2C024-30, ED-2C028-30, ED-2C266-30, ED-2C267-30, ED-2C268-30, ED-2C269-30, A

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