ORIGINATING REGISTERS, OUTPULSING CONTROLLERS, AND "TOUCH-TONE" CALLING SIGNAL CONVERTERS OPERATION TESTS USING AUTOMATIC TEST CIRCUIT SD-32365-01 STEP-BY-STEP COMMON CONTROL OFFICES

1. GENERAL

1.01 This section describes a method of testing TOUCH-TONE and rotary dial features of originating register, outpulsing controller, and TOUCH-TONE converter circuits using automatic test circuit SD-32365-01. ***The procedure for applying tests is covered in 1.03.***

1.02 The tests covered are:

A. ***Test Calls — TOUCH-TONE Calling Only:*** This test checks originating register features by use of test calls of working codes.

B. ***Test Calls — Controlled Outpulsing With or Without TOUCH-TONE Calling:*** This test checks originating register outpulsing controller features by use of test calls of working codes.

C. ***Alternate Routing:*** This test checks alternate routing features of the register by use of test calls.

D. ***Reversed Trunk:*** This test checks the ability of the register to recognize a reversed trunk condition.

E. ***Stop-Go:*** This test checks the ability of the register to recognize a false or second stop-go signal as a trouble condition and time out.

F. ***Party Class:*** This test checks the ability of the register to recognize coin class, 2-party message rate, 2-party flat rate service connections, and to recognize cancel party test indication.

G. ***Party Failure:*** This test checks that the register will detect an incorrect party indication on second party test and block and give reorder tone.

H. ***Minimum and Maximum Loop:*** This test checks the ability of the register L1 relay to follow dial pulses at extreme loop operating limits.

I. ***Maximum Leak:*** This test checks the ability of the register L1 relay to follow dial pulses with maximum leak conditions inserted in tip and ring circuit.

J. ***Partial Dial or Partial Keying:*** This test checks that the register will detect a partial registration and, after approximately 20 seconds, send no-such-number tone.

K. ***Translator or Translator-Decoder Release:*** This test checks the ability of the originating register to trouble release from a translator or translator-decoder.

L. ***Abandon Call:*** This test checks that the register will recognize an abandoned call and release. The following abandoned call conditions are tested:

(a) Register release before dial tone.

(b) Register release only after a translator-decoder release indication.

(c) Register release only after fifth digit has been registered.

M. Register Release from Rotary Dial Call: This test checks that the register will recognize a rotary dial call and release after repeating the first digit for TOUCH-TONE only operation and certain "A" digits when controlled outpulsing is provided.

N. Open Trunk: This test checks the ability of registers equipped for a loop detection test to recognize an open trunk.

O. Permanent Signal: This test checks the ability of the originating register to recognize a permanent signal and dispose of the call.

P. Tone Check: This test checks that the register will return dial tone, recorder tone, and no-such-number tone.

Q. Frequency Deviation: This test checks the ability of the TOUCH-TONE calling signal converter to operate with signal frequency deviations of 1.4 to 1.6 percent above or below nominal values.

R. Input Signal Level: This test checks that the TOUCH-TONE calling signal converter will function over a range of −19 minimum, −7 nominal, +3 dbm maximum signal levels.

S. Single and Third Frequency: This test checks the ability of the TOUCH-TONE calling signal converter to reject a single frequency or a third frequency signal.

T. High Speed Keying: This test checks the ability of the TOUCH-TONE calling signal converter to register digits keyed at high speed.

U. Break TOUCH-TONE: This test checks the ability of originating registers equipped with TOUCH-TONE calling signal converters to recognize a momentary open in the tip and ring circuit during TOUCH-TONE keying.

1.03 The tests in this section may be applied according to local common control office arrangement as follows:

(a) Offices arranged for TOUCH-TONE calling only — Tests A, F through U (Test Chart A).

(b) Offices arranged for controlled outpulsing with or without TOUCH-TONE calling — Tests B through U (Test Chart B).

1.04 A particular originating register may be manually selected for testing as follows:

(a) Determine register location from local records.

(b) Operate PC key.

(c) Momentarily operate S-PCS key sufficient times to select the desired pair of select magnets ORC and ORC′, 0 to 9.

(d) Momentarily operate H-PCS key sufficient times to select the desired pair of hold magnets ORC and ORC′, 0 to 9.

(e) Momentarily operate XC-PCS key sufficient times to advance the crosspoint steering to the desired register location.

Rapid selection of select and hold magnets may be accomplished in (c) and (d) above by holding operated S-PCR and H-PCR keys, respectively, until the desired locations are reached. Lamps associated with each select and hold magnet are provided at the test panel to facilitate the register selection.

1.05 One digit at a time may be pulsed into the originating register and results observed. Operate the SS, CAT, and REP keys and the test circuit will advance to the point where the originating register is waiting for pulsing to start. For each digit, momentarily operate the SA key. If remote observation of equipment is desired, a 32A test set may be connected to the RC jack and used in place of the SA key.

1.06 A test cycle may be stopped at any point by two methods. If the ST key is returned to normal, the test in progress on the seized register will be completed and the test circuit stops. Reoperation of the ST key advances the test circuit to the next register and continues the test cycle. If the RN key is operated, the test in progress on

the seized register will be completed. The test circuit is stopped and recycled. A minor alarm and RN lamp are activated as a reminder to restore the RN key.

1.07 When a trouble condition is encountered, the test circuit will block and sound an alarm if the trouble ticketer is made busy or is not provided. If the trouble ticketer is provided and is not made busy, a trouble ticket will be printed and the test circuit advances to the next register on a progressive basis.

1.08 Test charts for all tests are provided for listing specific test call numbers. These test charts should be filled in from local records in accordance with the instructions provided in Part 5, Preparation of Test Charts.

1.09 Many of the trouble detection tests contained in this section may be combined and run concurrently. An example of possible test combinations for TOUCH-TONE calling signal converters is shown in Fig. 1.

1.10 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Parts 3 or 4 of this section, indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

All Tests

2.01 Automatic test circuit, SD-32365-01.

SIGNAL LOSS	FREQUENCY DEVIATION	PULSING SPEED	NUMERICAL DIGITS GENERATED
−19DB-LL Key	MN Key	11 pps	5910
−19DB-LL Key	MAX Key	11 pps	5910
+3DB-HL Key	MN Key	11 pps	5910
−7DB Nominal	Nominal	7 pps	5910
+3DB-HL Key	MAX Key	11 pps	5910
−19DB-LL Key	Nominal	7 pps	5910
−19DB-LL Key	MN Key	7 pps	5910
−19DB-LL Key	MAX Key	7 pps	5910
−19DB-LL Key	Nominal	11 pps	5910
−19DB-LL Key	MN Key	11 pps	5910
−19DB-LL Key	MAX Key	11 pps	5910
−7DB Nominal	Nominal	7 pps	2, 3, 4, 6, 7, 8*
+3DB-HL Key	MN Key	7 pps	5910
−7DB Nominal	Nominal	7 pps	SFL, 770 CPS SFH, 1336 CPS, 5910 Plus 2000 CPS

* Test all other digits on subsequent tests.

Fig. 1 — Combination Test Table

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
1	At automatic test circuit — Restore all keys and switches to normal.	
2a	If selection of a particular originating register is required — Select desired originating register manually as directed in 1.04.	
3b	If automatic repetition of test on a particular register is required — Operate REP key.	
4c	If it is desired to stop automatic progression test cycle at any point — Restore ST key or operate RN key in accordance with 1.06.	
5	Operate CLU switch to position corresponding to desired class of service, where required.	

4. METHOD

STEP	ACTION	VERIFICATION
	All Tests Except O and P	
6	At automatic test circuit — Operate digit register switches for test number as indicated in Test Chart A or B.	
7	Operate arbitrary digit switches and class keys for the expected routing in accordance with Test Chart A or B.	
8	Operate ST key.	Test circuit advances automatically after seized register is tested and repeats test on remaining registers in turn.
9	After all registers are tested — Restore ST key.	
10	Operate RN key.	Test circuit restores to normal.
11	Restore RN key.	
12d	If no further tests are to be made — Restore all keys and switches to normal.	

STEP	ACTION	VERIFICATION
	O. Permanent Signal	
Tests 24, 25		
6	At automatic test circuit — Operate all digit register switches to normal position.	
7	Operate arbitrary digit switches and class keys for expected routing in accordance with Test Chart A or B.	
8	Operate PS key.	
9	Operate ST key.	After approximately 20 seconds — PS lamp lights. M lamp lights for each digit outpulsed. Test circuit advances automatically after seized register tested and repeats test on remaining registers in turn.
10	After all registers are tested — Restore ST key.	
11	Operate RN key.	Test circuit restores to normal.
12	Restore RN key.	
13d	If no further tests are to be made — Restore all keys and switches to normal.	
	P. Tone Check	
Test 26		
6	At automatic test circuit — Operate keys and switches in accordance with Test Chart A or B for test to be performed.	
7	Operate TCK key.	
8	Operate ST key.	Dial tone heard.
9	Restore TCK key.	CT lamp lights. Test circuit advances to next register.
10	After CT lamp lights — Operate TCK key.	Dial tone heard. CT lamp extinguishes.
11	Repeat Steps 9 and 10 for remaining registers to be tested.	
12	Restore keys and switches operated in Steps 6 through 11.	

STEP	ACTION	VERIFICATION
Test 27		
13	Operate keys and switches in accordance with Test Chart A or B for test to be performed.	
14	Operate ST key.	ROD lamp lights.
15	After ROD lamp lights — Operate TCK key.	Reorder tone heard. ROD lamp extinguishes.
16	Restore TCK key.	Test circuit advances to next register.
17	Repeat Steps 15 and 16 for remaining registers to be tested.	
18	Restore keys and switches operated in Steps 13 through 17.	
Test 28		
19	Operate keys and switches in accordance with Test Chart A or B for test to be performed.	
20	Operate ST key.	ROD lamp lights.
21	After ROD lamp lights — Operate TCK key.	No-such-number tone heard. ROD lamp extinguishes.
22	Restore TCK key.	Test circuit advances to next register.
23	Repeat Steps 21 and 22 for remaining registers to be tested.	
24d	If no further tests are to be made — Restore all keys and switches to normal.	

5. PREPARATION OF TEST CHARTS

5.01 The test charts at the end of this section are intended for use as particular number charts. These charts show test circuit keys and switches to be operated for each test. Information obtained from local office records should be used to fill in the test charts.

5.02 Consult Parts 3 and 4 of this section for the sequence of operation of test keys and switches shown in the test charts.

5.03 The columns for digit register switches, arbitrary digit switches, and code class keys of Test Charts A and B should be filled out in accordance with the explanation of the type test call as listed in Tables A and B, respectively.

5.04 Some types of test calls are indicated in the tables in the abbreviated method as follows:

N — any lettered digit (2 to 9)
0/1 — any nonlettered digit (0 or 1)
X — any digit (0 to 9)

TABLE A

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
A	1	TT		Zero operator call	
	2	RD		Zero operator call	
	3	TT		3-digit service call (11X or X11)	
	4	TT		4-digit reverting call (11XX)	
	5	TT		5-digit reverting call (11XXX)	
	6	TT		Local information call (411)	
	7	TT	1	Home area information call (1 + 411)	
	8	TT	1	Foreign area information call (1 + NXX + 411)	
	9	TT		7-digit local call	
	10	TT	0/1	7-digit home area call	
	11	TT	0/1	7-digit home area call, interchangeable code	
	12	TT	0/1	10-digit foreign area call	
	13	TT	0/1	10-digit foreign area call, interchangeable code	
	14	TT		Vacant code call	
F	1	TT		7-digit local call	Coin class
	2	TT		7-digit local call	2-party message rate
	3	TT		7-digit local call	2-party flat rate
	4	TT		7-digit local call	Cancel party test
G	5	TT		7-digit local call	Tip party failure
	6	TT		7-digit local call	Ring party failure
H	7	RD		7-digit local call	Minimum loop
	8	RD		7-digit local call	Maximum loop
I	9	RD		7-digit local call	Maximum leak
J	11	TT		7-digit local call	Partial key
K	12	TT		7-digit local call	Translator-decoder release, 1 time-out
	13	TT		7-digit local call	Translator-decoder release, 2 time-outs
L	14	TT		7-digit local call	Timing 2.6, release before dial tone
	15	TT		7-digit local call	Timing 3.5, release before dial tone
	16	TT		7-digit local call	Release after loop closure and party test
	17	TT		7-digit local call	Release only after translator-decoder release
M	18	RD		7-digit local call	Release after first digit outpulsed

TABLE A (Cont)

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
N	22	TT		7-digit local call	Open trunk – condition A (HT– key at jack, key, and lamp circuit operated)
	23	TT		7-digit local call	Open trunk – condition B (HT– key normal)
O	24	TT		No digits, permanent signal	1-, 2-, or 3-digit route
P	26	RD		7-digit local call	Dial tone check
	27	TT		7-digit local call	Reorder tone check
	28	TT		7-digit local call	No-such-number tone check
Q	29	TT		Local office code + 5910	Minimum deviation
	30	TT		Local office code + 5910	Maximum deviation
R	31	TT		Local office code + 5910	Nominal frequency
	32	TT		Local office code + 5910	Low-level frequency
	33	TT		Local office code + 5910	High-level frequency
S	34	TT		Local office code + 5910	Third frequency
T	35	TT		Local office code + 5910	Nominal pulsing
	36	TT		Local office code + 5910	High speed pulsing
U	37	TT		7-digit local call	Break TOUCH-TONE

Note: **TT — TOUCH-TONE call**
RD — Rotary dial call

TABLE B

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
				Calls Not Requiring Controlled Outpulsing	
B	1	X		Zero operator call	Zero
	2	X		3-digit service call (11X or X11)	Service call digits
	3	X		4-digit reverting call (11XX)	Reverting call digits
	4	X		5-digit reverting call (11XXX)	Reverting call digits
	5	X		Local information call (411)	Information call digits
	6	X	1	Home area information call (1 + 411)	Home area information call digits
	7	RD	1	Foreign area information call (1 + NXX + 411)	Foreign area information call digits
	8	TT	1	Foreign area information call (1 + NXX + 411)	Foreign area information call digits
	9	RD		7-digit local call	Local call digits
	10	TT		7-digit local call	Local call digits
	11	RD	0/1	7-digit home area call	Home area call digits
	12	TT	0/1	7-digit home area call	Home area call digits
	13	RD	0/1	10-digit foreign area call	Foreign area call digits
	14	TT	0/1	10-digit foreign area call	Foreign area call digits
	15	RD	0/1	7-digit call, interchangeable code	Interchangeable code call digits
	16	TT	0/1	7-digit call, interchangeable code	Interchangeable code call digits
	17	RD	0/1	10-digit call, interchangeable code	Interchangeable code call digits
	18	TT	0/1	10-digit call, interchangeable code	Interchangeable code call digits
				Calls Requiring Controlled Outpulsing	
	19	RD		Zero operator call	1-, 2-, or 3-digit operator route digits
	20	TT		Zero operator call	1-, 2-, or 3-digit operator route digits
	21	RD		3-digit service call (11X or X11)	Service code route digits
	22	TT		3-digit service call (11X or X11)	Service code route digits
	23	RD		4-digit reverting call (11XX)	Reverting code route digits
	24	TT		4-digit reverting call (11XX)	Reverting code route digits
	25	RD		5-digit reverting call (11XXX)	Reverting code route digits
	26	TT		5-digit reverting call (11XXX)	Reverting code route digits
	27	RD		Local information call (411)	Information route digits
	28	TT		Local information call (411)	Information route digits
	29	RD	1	Home area information call (1 + 411)	Home area information route digits
	30	TT	1	Home area information call (1 + 411)	Home area information route digits
	31	RD	1	Foreign area information call (1 + NXX + 411) – DP (no stop-go)	Foreign area information route digits

TABLE B (Cont)

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
				Calls Requiring Controlled Outpulsing (Cont)	
	32	TT	1	Foreign area information call (1 + NXX + 411) – DP (no stop-go)	Foreign area information route digits
	33	RD	1	Foreign area information call (1 + NXX + 411) – DP (stop-go)	Foreign area information route digits
	34	TT	1	Foreign area information call (1 + NXX + 411) – DP (stop-go)	Foreign area information route digits
	35	RD	1	Foreign area information call (1 + NXX + 411) – MF (stop-go)	Foreign area information route digits
	36	TT	1	Foreign area information call (1 + NXX + 411) – MF (stop-go)	Foreign area information route digits
	37	RD	0/1	7-digit home area call – DP outpulsing (no stop-go)	Initial route digits
	38	TT	0/1	7-digit home area call – DP outpulsing (no stop-go)	Initial route digits
	39	RD	0/1	7-digit home area call – DP outpulsing (stop-go)	Initial route digits
	40	TT	0/1	7-digit home area call – DP outpulsing (stop-go)	Initial route digits
	41	RD	0/1	7-digit home area call – MF outpulsing (stop-go)	Initial route digits
	42	TT	0/1	7-digit home area call – MF outpulsing (stop-go)	Initial route digits
	43	RD	0/1	10-digit foreign area call – DP outpulsing (no stop-go)	Initial route digits
	44	TT	0/1	10-digit foreign area call – DP outpulsing (no stop-go)	Initial route digits
	45	RD	0/1	10-digit foreign area call – DP outpulsing (stop-go)	Initial route digits
	46	TT	0/1	10-digit foreign area call – DP outpulsing (stop-go)	Initial route digits
	47	RD	0/1	10-digit foreign area call – MF outpulsing (stop-go)	Initial route digits
	48	TT	0/1	10-digit foreign area call – MF outpulsing (stop-go)	Initial route digits
	49	RD	0/1	10-digit foreign area translator (FAT) call – DP outpulsing (no stop-go)	Initial route digits
	50	TT	0/1	10-digit foreign area translator (FAT) call – DP outpulsing (no stop-go)	Initial route digits
	51	RD	0/1	10-digit foreign area translator (FAT) call – DP outpulsing (stop-go)	Initial route digits
	52	TT	0/1	10-digit foreign area translator (FAT) call – DP outpulsing (stop-go)	Initial route digits
	53	RD	0/1	10-digit foreign area translator (FAT) call – MF outpulsing (stop-go)	Initial route digits
	54	TT	0/1	10-digit foreign area translator (FAT) call – MF outpulsing (stop-go)	Initial route digits
	55	X	0/1	Interchangeable code – 7-digit call, same route	Initial route digits, 7-digit route

Table B (Cont)

TABLE B (Cont)

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
	Calls Requiring Controlled Outpulsing (Cont)				
	56	X	0/1	Interchangeable code – 10-digit call, same route	Initial route digits, 7-digit route
	57	X	0/1	Interchangeable code – 7-digit call, different route	Initial route digits, 7-digit route
	58	X	0/1	Interchangeable code – 10-digit call, different route	Initial route digits, 10-digit route
	59	X		Vacant code call	Intercept route digits (operator or announcement)
C	60	X	0/1	7-digit call, no controlled outpulsing required – alternate route available, busy indication on decoder seizure	Alternate route digits
	61	X	0/1	7-digit call, no controlled outpulsing required – no alternate route available, busy indication on decoder seizure	Overflow route digits or release when decoder releases
	62	X	0/1	7-digit call, controlled outpulsing required – alternate route available, busy indication on decoder seizure	Initial route digits
	63	X	0/1	7-digit call, controlled outpulsing required – alternate route available, busy indication after decoder release	Alternate route digits
	64	X	0/1	7-digit call, controlled outpulsing required – alternate route available, busy indication after decoder reseizure and release	Exit digit(s) and release
	65	X	0/1	7-digit call, interchangeable code, controlled outpulsing required – alternate route available, busy indication after decoder release	Alternate route digits
	66	X	0/1	10-digit call, interchangeable code, controlled outpulsing required – alternate route available, busy indication after decoder release	Alternate route digits
	67	X	0/1	7-digit call, interchangeable code, controlled outpulsing required – alternate route available, busy indication after decoder reseizure and release	Exit digit(s) and release
	68	X	0/1	10-digit call, interchangeable code, controlled outpulsing required – alternate route available, busy indication after decoder reseizure and release	Exit digit(s) and release
D	69	X	0/1	7-digit call, controlled outpulsing required	Reversed trunk – condition A (HT– key at jack, key, and lamp circuit operated)
	70	X	0/1	7-digit call, controlled outpulsing required	Reversed trunk – condition B (HT– key normal)
E	71	X	0/1	7-digit call, controlled outpulsing required with stop-go signaling	Second stop-go – condition A (HT– key at jack, key, and lamp circuit operated)
	72	X	0/1	7-digit call, controlled outpulsing required with stop-go signaling	Second stop-go – condition B (HT– key normal)

Table B (Cont)

TABLE B (Cont)

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
F	1	X		7-digit call, no controlled outpulsing required	Coin class
	2	X		7-digit call, no controlled outpulsing required	2-party message rate
	3	X		7-digit call, no controlled outpulsing required	2-party flat rate
	4	X		7-digit call, no controlled outpulsing required	Cancel party test
G	5	X	0/1	7-digit call, controlled outpulsing required	Tip party failure
	6	X	0/1	7-digit call, controlled outpulsing required	Ring party failure
H	7	X	0/1	7-digit call, controlled outpulsing required	Minimum loop
	8	X	0/1	7-digit call, controlled outpulsing required	Maximum loop
I	9	RD		7-digit call, no controlled outpulsing required	Maximum leak
J	10	RD	0/1	7-digit call, controlled outpulsing required	Partial dial
	11	TT	0/1	7-digit call, controlled outpulsing required	Partial key
K	12	X		7-digit call	Translator-decoder release, 1 time-out
	13	X		7-digit call	Translator-decoder release, 2 time-outs
L	14	X		7-digit call, no controlled outpulsing required	Timing 2.6, release before dial tone
	15	X		7-digit call, no controlled outpulsing required	Timing 3.5, release before dial tone
	16	X		7-digit call, no controlled outpulsing required	Release only after a translator-decoder release indication
	17	X	0/1	7-digit call, controlled outpulsing required	Release only after fifth digit has been registered
M	19	RD		7-digit call, no controlled outpulsing required "A" digit cross-connected to PFB punching. (See Section 227-704-010 for cross-connection information.)	Release after first digit outpulsed
N	20	X	0/1	7-digit call, controlled outpulsing required	Open trunk – condition A (HT– key at jack, key, and lamp circuit operated)
	21	X	0/1	7-digit call, controlled outpulsing required	Open trunk – condition B (HT– key normal)
O	25	X		No digits, permanent signal	Permanent signal route digits
P	26	RD		7-digit call, no controlled outpulsing required	Dial tone check
	27	X		7-digit call, no controlled outpulsing required	Reorder tone check
	28	X		7-digit call, no controlled outpulsing required	No-such-number tone check
Q	29	TT		Local office code + 5910	Minimum deviation
	30	TT		Local office code + 5910	Maximum deviation

Table B (Cont)

TABLE B (Cont)

BSP TEST	TEST NO.	TYPE CALL (NOTE)	PREFIX DIGIT	TYPE CALL DIGIT REGISTER SWITCHES	TEST INFORMATION ROUTING — ARBITRARY DIGITS — CLASS KEYS
R	31	TT		Local office code + 5910	Nominal frequency
	32	TT		Local office code + 5910	Low-level frequency
	33	TT		Local office code + 5910	High-level frequency
S	34	TT		Local office code + 5910	Third frequency
T	35	TT		Local office code + 5910	Nominal pulsing
	36	TT		Local office code + 5910	High speed pulsing
U	37	TT		7-digit call, no controlled outpulsing required	Break TOUCH-TONE

Note: TT—TOUCH-TONE call
RD—Rotary dial call
X —Optional (rotary dial or TOUCH-TONE call)

TEST CHART A

"TOUCH-TONE" CALLING ONLY

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES											CLASS OF SERVICE	DECODER SELECTION	ARBITRARY DIGIT SWITCHES					
		A	B	C	D	E	F	G	H	J	K	L	CLU SWITCH	PDT SWITCH	AR	BR	CR	DR	ER	FR
A	1	0																		
	2	0																		
	3																			
	4																			
	5																			
	6	4	1	1																
	7	1	4	1	1															
	8	1				4	1	1												
	9																			
	10																			
	11																			
	12																			
	13																			
	14																			
F	1																			
	2																			
	3																			
	4																			
G	5																			
	6																			
H	7																			
	8																			
I	9																			
J	10																			
	11																			
K	12																			
	13																			

BSP TEST	TEST NO.	CLASS CODE KEYS																						
		DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
A	1								√															
	2								√															
	3								√															
	4									√													√	
	5										√												√	
	6								√															
	7									√														
	8											√												
	9											√												
	10											√												
	11											√							√					
	12												√											
	13												√											
	14						√					√												
F	1											√												
	2											√												
	3											√												
	4											√												
G	5											√												
	6											√												
H	7											√												
	8											√												
I	9											√												
J	10											√												
	11											√												
K	12											√												
	13											√												

BSP TEST	TEST NO.	TEST CLASS KEYS																													
		2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA
A	1		√		√						√																				
	2				√																										
	3	√	√								√																				
	4		√						√		√																				
	5		√		√						√																				
	6	√	√								√																				
	7		√						√		√																				
	8		√		√						√																				
	9	√	√								√																				
	10		√						√		√																				
	11		√		√						√																				
	12	√	√								√																				
	13		√						√		√																				
	14		√		√						√																				
F	1		√								√	√																			
	2		√						√		√																				
	3	√	√								√																				
	4		√		√						√																				
G	5	√	√	√							√																				
	6	√	√								√																				
H	7				√										√																
	8				√										√																
I	9				√															√											
J	10				√																										
	11		√		√						√																				
K	12		√		√						√							√													
	13		√		√						√													√							

TEST CLASS KEYS (CONT.)																									MISC KEYS	TEST NO.	BSP TEST
SPCR	HPCR	TPF	PC	RN	SPCS	HPCS	XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	PD	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST			
																								√		1	A
																								√		2	
																								√		3	
																								√		4	
																								√		5	
																								√		6	
																								√		7	
																								√		8	
																								√		9	
																								√		10	
																								√		11	
																								√		12	
																								√		13	
																								√		14	
																								√		1	F
																								√		2	
																								√		3	
																								√		4	
		√																						√		5	G
								√																√		6	
																√								√		7	H
																								√		8	
																								√		9	I
															√									√		10	J
															√									√		11	
																								√		12	K
																								√		13	

√ — Operate.

TEST CHART A (Cont)

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES											CLASS OF SERVICE	DECODER SELECTION	ARBITRARY DIGIT SWITCHES					
		A	B	C	D	E	F	G	H	J	K	L	CLU SWITCH	PDT SWITCH	AR	BR	CR	DR	ER	FR
L	14																			
	15																			
	16																			
	17																			
M	18																			
N	22																			
	23																			
O	24																			
P	26																			
	27																			
	28																			
Q	29				5	9	1	0												
	30				5	9	1	0												
R	31				5	9	1	0												
	32				5	9	1	0												
	33				5	9	1	0												
S	34				5	9	1	0												
T	35				5	9	1	0												
	36				5	9	1	0												
U	37																			

TEST NO.	CLASS CODE KEYS																						
	DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
14											√												
15											√												
16											√												
17											√												
18											√												
22											√												
23											√												
24								√															
26											√												
27											√												
28											√												
29											√												
30											√												
31											√												
32											√												
33											√												
34											√												
35											√												
36											√												
37											√												

TEST NO.	TEST CLASS KEYS																													
	2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA
14		√		√						√																				
15		√		√						√																		√		
16		√		√						√																				
17		√		√						√																				
18				√																										
22		√		√						√																				
23		√		√						√																				
24		√		√						√																				
26				√																				√						
27		√		√						√													√	√						
28		√		√						√														√						
29		√		√						√																				
30		√		√						√										√										
31		√		√						√																				
32		√		√						√											√									
33		√		√						√						√														
34		√		√						√												√								
35		√		√						√																				
36		√		√																										
37		√		√						√																				

SPCR	HPCR	TPF	PC	RN	SPCS	HPCS	XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	PD	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST	MISC KEYS	TEST NO.	BSP TEST
												√												√		14	L
												√												√		15	
																		√						√		16	
													√											√		17	
																								√		18	M
																				√				√		22	N
																				√				√		23	
																						√		√		24	O
																								√		26	P
																								√		27	
																								√		28	
																	√							√		29	Q
																								√		30	
																								√		31	R
																								√		32	
																								√		33	
																								√		34	S
																								√		35	T
																								√		36	
																					√			√		37	U

√ — Operate.

TEST CHART B

CONTROLLED OUTPULSING WITH OR WITHOUT "TOUCH-TONE" CALLING

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES											CLASS OF SERVICE	DECODER SELECTION	ARBITRARY DIGIT SWITCHES					
		A	B	C	D	E	F	G	H	J	K	L	CLU SWITCH	PDT SWITCH	AR	BR (NOTE)	CR (NOTE)	DR (NOTE)	ER	FR
B	1	0											√							
	2												√							
	3												√							
	4												√							
	5	4	1	1									√							
	6	1	4	1	1								√							
	7	1				4	1	1					√							
	8	1				4	1	1					√							
	9												√							
	10												√							
	11												√							
	12												√							
	13												√							
	14												√							
	15												√							
	16												√							
	17												√							
	18												√							
	19	0											√							
	20	0											√							
	21												√							
	22												√							
	23												√							
	24												√							
	25												√							
	26												√							

TEST NO.	CLASS CODE KEYS																						
	DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
1								√															
2								√															
3									√													√	
4										√												√	
5								√															
6									√														
7											√												
8											√												
9											√												
10											√												
11											√												
12											√												
13												√											
14												√											
15											√							√					
16											√							√					
17												√						√					
18												√						√					
19					√			√													√		
20					√			√													√		
21								√													√		
22								√													√		
23					√				√												√	√	
24					√				√												√	√	
25					√					√											√	√	
26					√					√											√	√	

TEST NO.	TEST CLASS KEYS																																		
	2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA	SPCR	HPCR	TPF	PC	RN
1		X		√						X																									
2	√	X								X																									
3		X						√		X																									
4		X		√						X																									
5	√	X								X																									
6		X						√		X																									
7				√																															
8	√	√								√																									
9								√																											
10		√		√						√																									
11	√																																		
12		√						√		√																									
13				√																															
14	√	√								√																									
15								√																											
16		√		√						√																									
17	√																																		
18		√						√		√																									
19				√																															
20	√	√								√																									
21								√																											
22		√		√						√																									
23	√																																		
24		√						√		√																									
25				√																															
26	√	√								√																									

TEST CLASS KEYS (cont.)																				MISC KEYS	TEST NO.	BSP TEST
HPCS	SPCS	XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	PD	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST			
																			√		1	B
																			√		2	
																			√		3	
																			√		4	
																			√		5	
																			√		6	
																			√		7	
																			√		8	
																			√		9	
																			√		10	
																			√		11	
																			√		12	
																			√		13	
																			√		14	
																			√		15	
																			√		16	
																			√		17	
																			√		18	
																			√		19	
																			√		20	
																			√		21	
																			√		22	
																			√		23	
																			√		24	
																			√		25	
																			√		26	

√ — Operate.
X — Operate if call is TOUCH-TONE call.
(TTC key normal indicates rotary dial call.)
O — Operate as required for stop-go signaling.
* — Located at jack, key, and lamp circuit.

Note: MF Outpulsing — For KP signal, operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position 2.

Controlled Dial Pulsing — Operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position corresponding to expected route digits.

TEST CHART B (Cont)

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES A	B	C	D	E	F	G	H	J	K	L	CLASS OF SERVICE CLU SWITCH	DECODER SELECTION PDT SWITCH	ARBITRARY DIGIT SWITCHES AR	BR (NOTE)	CR (NOTE)	DR (NOTE)	ER	FR
B (Cont)	27	4	1	1									√							
	28	4	1	1									√							
	29	1	4	1	1								√							
	30	1	4	1	1								√							
	31	1				4	1	1					√							
	32	1				4	1	1					√							
	33	1				4	1	1					√							
	34	1				4	1	1					√							
	35	1				4	1	1					√							
	36	1				4	1	1					√							
	37												√							
	38												√							
	39												√							
	40												√							
	41												√							
	42												√							
	43												√							
	44												√							
	45												√							
	46												√							
	47												√							
	48												√							
	49												√							
	50												√							
	51												√							
	52												√							
	53												√							
	54												√							

TEST NO.	CLASS CODE KEYS DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
27								√													√		
28								√													√		
29									√												√		
30									√												√		
31											√										√		
32											√										√		
33											√		O	O	O	√	√				√		
34											√		O	O	O	√	√				√		
35											√		O	O	O	√					√		
36											√		O	O	O	√					√		
37											√										√		
38											√										√		
39											√		O	O	O	√	√				√		
40											√		O	O	O	√	√				√		
41											√		O	O	O	√					√		
42											√		O	O	O	√					√		
43												√									√		
44												√									√		
45												√	O	O	O	√	√				√		
46												√	O	O	O	√	√				√		
47												√	O	O	O	√					√		
48												√	O	O	O	√					√		
49												√							√		√		
50												√							√		√		
51												√	O	O	O	√	√		√		√		
52												√	O	O	O	√	√		√		√		
53												√	O	O	O	√			√		√		
54												√	O	O	O	√			√		√		

TEST NO.	TEST CLASS KEYS 2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA	SPCR	HPCR	TPF	PC	RN	SPCS	HPCS	XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	PD	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST	MISC KEYS	TEST NO.	BSP TEST
27								√																																															√		27	B (Cont)
28		√		√						√																																													√		28	
29	√																																																						√		29	
30		√						√		√																																													√		30	
31				√																																																			√		31	
32	√	√								√																																													√		32	
33								√																																															√		33	
34		√		√						√																																													√		34	
35	√																																																						√		35	
36		√						√		√																																													√		36	
37				√																																																			√		37	
38	√	√								√																																													√		38	
39								√																																															√		39	
40		√		√						√																																													√		40	
41	√																																																						√		41	
42		√						√		√																																													√		42	
43				√																																																			√		43	
44	√	√								√																																													√		44	
45								√																																															√		45	
46		√		√						√																																													√		46	
47	√																																																						√		47	
48		√						√		√																																													√		48	
49				√																																																			√		49	
50	√	√								√																																													√		50	
51								√																																															√		51	
52		√		√						√																																													√		52	
53	√																																																						√		53	
54		√						√		√																																													√		54	

√ — Operate.
X — Operate if call is TOUCH-TONE call.
(TTC key normal indicates rotary dial call.)
O — Operate as required for stop-go signaling.
* — Located at jack, key, and lamp circuit.

Note: MF Outpulsing — For KP signal, operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position 2.

Controlled Dial Pulsing — Operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position corresponding to expected route digits.

TEST CHART B (Cont)

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES											CLASS OF SERVICE	DECODER SELECTION	ARBITRARY DIGIT SWITCHES					
		A	B	C	D	E	F	G	H	J	K	L	CLU SWITCH	PDT SWITCH	AR	BR (NOTE)	CR (NOTE)	DR (NOTE)	ER	FR
	55												√							
	56												√							
	57												√							
	58												√							
	59												√							
C	60												√							
	61												√							
	62												√							
	63												√							
	64												√							
	65												√							
	66												√							
	67												√							
	68												√							
D	69												√							
	70												√							
E	71												√							
	72												√							
F	1												√							
	2												√							
	3												√							
	4												√							
G	5												√							
	6												√							
H	7												√							
	8												√							
I	9												√							

BSP TEST	TEST NO.	CLASS CODE KEYS																						
		DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
	55											√							√			√		
	56							√					√						√			√		
	57											√							√			√		
	58												√						√			√		
	59						√															√		
C	60											√												√
	61											√												
	62											√										√		√
	63											√										√		√
	64											√										√		√
	65											√							√			√		√
	66												√						√			√		√
	67											√							√			√		√
	68												√						√			√		√
D	69											√										√		
	70											√										√		
E	71											√		O	O	O	√					√		
	72											√		O	O	O	√					√		
F	1											√												
	2											√												
	3											√												
	4											√												
G	5											√										√		
	6											√										√		
H	7											√										√		
	8											√										√		
I	9											√												

BSP TEST	TEST NO.	TEST CLASS KEYS																												
		2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA
	55		X		√						X																				
	56		X		√						X																				
	57		X		√						X																				
	58		X		√						X																			√	
	59		X		√						X																				
C	60		X		√		√				X																				
	61		X		√		√				X																				
	62		X		√		√				X																				
	63		X		√						X		√																	√	
	64		X		√			√			X																			√	
	65		X		√						X		√																	√	
	66		X		√						X		√			√														√	
	67		X		√			√			X																			√	
	68		X		√			√			X					√														√	
D	69		X		√						X																				
	70		X		√						X																				
E	71		X		√					√	X																				
	72		X		√					√	X																				
F	1		X		√						X	√																			
	2		X						√		X																				
	3	√	X								X																				
	4		X		√						X																				
G	5	√	X	√							X																				
	6	√	X								X																				
H	7		X		√						X				√																
	8		X		√						X				√																
I	9				√															√											

BSP TEST	TEST NO.	TEST CLASS KEYS (Cont)																							MISC KEYS	TEST NO.	BSP TEST
		SPCR	HPCR	TPF	PC	RN	SPCS	HPCS	XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	ɑd	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST			
	55																									√		55	
	56																									√		56	
	57																									√		57	
	58																									√		58	
	59																									√		59	
C	60																									√		60	C
	61																									√		61	
	62																									√		62	
	63																									√		63	
	64																									√		64	
	65																									√		65	
	66																									√		66	
	67																									√		67	
	68																									√		68	
D	69															√										√	HT–*	69	D
	70															√										√		70	
E	71																									√	HT–*	71	E
	72																									√		72	
F	1																									√		1	F
	2																									√		2	
	3																									√		3	
	4																									√		4	
G	5			√																						√		5	G
	6									√																√		6	
H	7																	√								√		7	H
	8																									√		8	
I	9																									√		9	I

√ — Operate.
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(TTC key normal indicates rotary dial call.)
O — Operate as required for stop-go signaling.
* — Located at jack, key, and lamp circuit.

Note: MF Outpulsing — For KP signal, operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position 2.

Controlled Dial Pulsing — Operate BR10, CR10, or DR10 key and operate associated BR, CR, or DR switch to position corresponding to expected route digits.

TEST CHART B (Cont)

BSP TEST	TEST NO.	DIGIT REGISTER SWITCHES											CLASS OF SERVICE	DECODER SELECTION	ARBITRARY DIGIT SWITCHES					
		A	B	C	D	E	F	G	H	J	K	L	CLU SWITCH	PDT SWITCH	AR	BR (NOTE)	CR (NOTE)	DR (NOTE)	ER	FR
J	10												√							
	11												√							
K	12												√							
	13												√							
L	14												√							
	15												√							
	16												√							
	17												√							
M	19												√							
N	20												√							
	21												√							
O	25												√							
P	26												√							
	27												√							
	28												√							
Q	29				5	9	1	0					√							
	30				5	9	1	0					√							
R	31				5	9	1	0					√							
	32				5	9	1	0					√							
	33				5	9	1	0					√							
S	34				5	9	1	0					√							
T	35				5	9	1	0					√							
	36				5	9	1	0					√							
U	37												√							

TEST NO.	CLASS CODE KEYS																						
	DL1	DL2	DL3	DL6	DAD	VC	NRC	3DG	4DG	5DG	7DG	10DG	BR10	CR10	DR10	STGO	DPC	CCT	CA6	CN1	SDO	RC	ARA
10											√										√		
11											√										√		
12											√												
13											√												
14											√												
15											√												
16											√												
17											√										√		
19											√												
20											√										√		
21											√										√		
25								√													√		
26											√												
27											√												
28											√												
29											√												
30											√												
31											√												
32											√												
33											√												
34											√												
35											√												
36											√												
37											√												

TEST NO.	TEST CLASS KEYS																	
	2FR	TTC	TP	CPT	RCA	BT1	BT3	2MR	2SG	7PPS	CN	BT2	SS	LP	CCT1	HL	DRR	CAT
10				√														
11		√		√						√								
12		X		√						X							√	
13		X		√						X								
14		X		√						X								
15		X		√						X								
16		X		√						X								
17		X		√						X								
19				√														
20		X		√						X								
21		X		√						X								
25		X		√						X								
26				√														
27		X		√						X								
28		X		√						X								
29		√		√						√								
30		√		√						√								
31		√		√						√								
32		√		√						√								
33		√		√						√						√		
34		√		√						√								
35		√		√						√								
36		√		√														
37		√		√						√								

TEST NO.	TEST CLASS KEYS (Cont)																		
	LK	MAX	LL	TF	DTR	TCK	CLX	RCT	PB	SWT	PDK	SA	SPCR	HPCR	TPF	PC	RN	SPCS	HPCS
10																			
11																			
12																			
13					√														
14																			
15										√									
16																			
17																			
19																			
20																			
21																			
25																			
26						√													
27					√	√													
28						√													
29																			
30		√																	
31																			
32			√																
33																			
34				√															
35																			
36																			
37																			

TEST CLASS KEYS (Cont)																		MISC KEYS	TEST NO.	BSP TEST
XCPCS	RPF	CA	ACO	REP	EWO1	EWO3	RVT	PD	LP1	MN	EWO2	OTK	OTK1	BTT	PS	ARB	ST			
								√									√		10	J
								√									√		11	
																	√		12	K
																	√		13	
					√												√		14	L
					√												√		15	
											√						√		16	
						√											√		17	
																	√		19	M
												√					√	HT-*	20	N
												√					√		21	
															√		√		25	O
																	√		26	P
																	√		27	
								√									√		28	
										√							√		29	Q
																	√		30	
																	√		31	R
																	√		32	
																	√		33	
																	√		34	S
																	√		35	T
																	√		36	
													√				√		37	U

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