KSC OPERATIONS **APOLLO/SATURN TEST CATALOG**	PAGE 1 OF 2
1. TEST TITLE S-IC Telemetry RF Subsystems Checkout	2. KSC TEST NO. V-28013-SIC2 3. STAGE, VEHICLE OR GSE Stage

4. TEST OBJECTIVES

The purpose of this test is to verify the proper performance and readiness of the RF Subsystems to support vehicle checkout and launch.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following S-IC stage components will be activated in support of this test:

P1 PCM/DDAS Assembly and PCM/RF Assembly
F1 PAM/FM/FM Assembly and RF Assembly
F2 PAM/FM/FM Assembly and RF Assembly
F3 PAM/FM/FM Assembly and RF Assembly
S1 SS/FM Assembly and RF Assembly
S2 SS/FM Assembly and RF Assembly
RF Multicouplers, VSWR Monitors, and Coaxial Switches

Each RF Subsystem is tested individually to determine its performance characteristics. The output power of each RF Assembly is measured. The VSWR for each RF Subsystem is computed by using the measured incident and reflected power. RF carrier center frequency measurements are made. The modulation characteristics for the PCM/DDAS RF Subsystem are examined. Deviation of TM/ link P1 is determined by the algebraic difference of the upper and lower bandedge frequencies. Finally, the entire S-IC Telemetry System is activated and monitored for indications of RF interference.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
G. A. Remaley 5/23/66		
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing S-IC T/M 5-8554		AS- 502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

TEST TITLE	2. KSC TEST NO.
S-IC Telemetry RF Subsystems Checkout	V-28013-SIC2
	11. VEHICLE EFFECTIVITY: AS- 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB or PAD 39	N/A	4 hours

15. TEST CONFIGURATION

Stage vertical, umbilicals connected, and power ON.

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[XX] GROUND POWER	[XX] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[XX] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[XX] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[XX] LCC TM RECORDING
[ ] SM POWER	[XX] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[XX] TIMING	[XX] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[XX] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[ ] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

RF Clearance
Access to Stage Unit 120

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS **APOLLO/SATURN TEST CATALOG**	PAGE 1 OF 2

1. TEST TITLE

S-IC Telemetry PCM/DDAS Subsystem Checkout

2. KSC TEST NO.

V-28014-SIC2

3. STAGE, VEHICLE OR GSE

Stage

4. TEST OBJECTIVES

The purpose of this test is to verify the proper performance and readiness of the PCM/DDAS Subsystem to support vehicle checkout and launch.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following S-IC Stage components will be activated in support of this test:

P1 Model 270 Multiplexer, Remote Digital Submultiplexer, and Model 301 PCM/DDAS Assy.
F1 PAM/FM/FM Assembly
F2 PAM/FM/FM Assembly
F3 PAM/FM/FM Assembly
A/B Telemetry Calibrator and DC Power Isolator

The 600 kHz DDAS output of the Model 301 PCM/DDAS Assembly is monitored and tested to ensure the satisfactory operation of the PCM/DDAS Subsystem. Frame and master frame synchronization is verified. The DDAS clock rate is checked. The PCM/DDAS system encoding accuracy is verified. The 600 kHz VCO is examined for proper frequency deviation and power output. The scanning mode and digital input formatting are verified. The multiplexed DDAS wavetrain is examined for proper calibration logic and sequencing.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. E. Mellick 5/23/66	R. C. McMath	
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing S-IC T/M 5-8554		AS-502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2
1. TEST TITLE S-IC Telemetry PCM/DDAS Subsystem Checkout	2. KSC TEST NO. V-28014-SIC2 11. VEHICLE EFFECTIVITY AS - 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB or PAD 39	NA	4 hours

15. TEST CONFIGURATION

Stage vertical, umbilicals connected, and power ON.

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[XX] GROUND POWER	[XX] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[XX] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[XX] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[XX] LCC TM RECORDING
[ ] SM POWER	[XX] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[XX] TIMING	[XX] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[XX] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[ ] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

Access to Stage Unit 115

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

S-IC Telemetry SS/FM Subsystems Checkout

2. KSC TEST NO.

V-28015-SIC2

3. STAGE, VEHICLE OR GSE

Stage

4. TEST OBJECTIVES

The purpose of this test is to verify the proper performance and readiness of the SS/FM Subsystems to support vehicle checkout and launch.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following S-IC stage components will be activated in support of this test:

S1 Model 245 Multiplexer, SS/FM Telemeter and Top Deck Assembly, and RF Assembly

S2 Model 245 Multiplexer, SS/FM Telemeter and Top Deck Assembly, and RF Assembly

Telemetering Calibrator and DC Power Isolator

This test will verify that the SS/FM Subsystem components are performing satisfactorily and that the subsystem parameters are within acceptable limits. The pilot tone frequency for each SS/FM Assembly is measured. The 960 Hz VCO output from each 245 Multiplexer is examined for proper amplitude, frequency deviation, and timing. The fifteen information channels of each SS/FM Subsystem are tested for amplitude and frequency response during preflight sweep frequency calibration. The inflight calibration signal from the A/B telemetering calibrator is tested for proper amplitude and frequency. The modulation characteristics for each RF Assembly are examined for center frequency and deviation.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
G. A. Remaley 5/23/66	D C McMath	
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing S-IC Telemetry 5-8554		AS- 502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE
S-IC Telemetry SS/FM Subsystems Checkout

2. KSC TEST NO.
V-28015-SIC2

11. VEHICLE EFFECTIVITY
AS-502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB or Pad 39	NA	4 hours

15. TEST CONFIGURATION
Stage vertical, umbilicals connected, and power ON.

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[XX] GROUND POWER	[XX] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[XX] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[XX] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[XX] LCC TM RECORDING
[ ] SM POWER	[XX] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[XX] TIMING	[XX] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[XX] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[ ] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:
RF Clearance
Access to Stage Unit 115

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS **APOLLO/SATURN TEST CATALOG**	PAGE 1 OF 2

1. TEST TITLE	2. KSC TEST NO.
S-IC Telemetry System Configuration Check	V-28016-SIC2
	3. STAGE, VEHICLE OR GSE Stage

4. TEST OBJECTIVES

The purpose of this test is to verify the configuration of the airborne telemetry harnessing, packages, connectors, and antennas.

5. TEST DESCRIPTION/EQUIPMENT STATUS

This check will verify the proper configuration of all airborne telemetry equipment. The proper installation of all the telemetry assemblies in the thrust structure and forward skirt is verified and the part number and serial number of each assembly is recorded. The installation of each assembly is checked to insure that all bonding straps and safety wiring are firmly in place. Verification is made that all cabling and wire bundles are installed in the correct configuration. A check is made to insure that all connectors are free from damage and firmly in place. A visual inspection is made of the coaxial transmission line connectors to verify that they are in the proper configuration. Finally, the RF antennas are examined to insure that they are properly installed, electrically mated, and free from physical damage.

This check will be performed in its entirety during initial receiving inspection and in part prior to each major vehicle test.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. E. Mellick 5/23/66		
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing S-IC T/M 5-8554		AS-502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
S-IC Telemetry System Configuration Check	V-28016-SIC2
	11. VEHICLE EFFECTIVITY: AS - 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB	NA	16 hours

15. TEST CONFIGURATION

Stage horizontal or vertical

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[ ] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

Access to Stage Units 115 and 120.

105

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE ACTIVATION TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM - MOBILE LAUNCHER

2. KSC TEST NO.

V-28017-ML

3. STAGE, VEHICLE OR GSE

DRSCS/GSE/TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the DRSCS-GSE located in Room 7A of the Mobile Launcher.

5. TEST DESCRIPTION/EQUIPMENT STATUS

This test will verify proper operation and compatibility of the following:

a. Coder
b. Coder Decoder
c. Audio Switch and Audio Amplifier
d. ESE Interface
e. Signal Generator
f. Power Divider and Coaxial Switch
g. Function Monitor and Control

This is a detailed test beginning with adjustments, calibrations and checks on individual component and panel equipment. An integrated test is then accomplished on all ML DRSCS GSE.

This test will be normally performed prior to first vehicle checkout with the Mobile Launcher.

NOTE: This test is applicable for Flow I, II, and III for ML 1, 2, and 3.

TEST EQUIPMENT
See the applicable section of the test procedure.

906

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. C. Fuchs	D. C. McMath	
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing - RF Systems	LVO-13	AS- 502 & 503.

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE
GSE ACTIVATION TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM - MOBILE LAUNCHER

2. KSC TEST NO.
V-28017-ML

11. VEHICLE EFFECTIVITY
AS - 502 & 503

12. WHERE TEST PERFORMED
Complex 39 - ML

13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)

14. EST. TEST TIME

15. TEST CONFIGURATION
ML in Parking Area/VAB High Bay Areas

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] Range Clearance Closed Loop	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

407

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE ACTIVIATION TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM - LCC

2. KSC TEST NO.

V-28018-GSE LCC

3. STAGE, VEHICLE OR GSE

DRSCS-GSE-Test

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation and compatibility of the LCC-DRSCS with Firing Room #2 ESE and ML No. 2 DRSCS GSE.

5. TEST DESCRIPTION/EQUIPMENT STATUS

This test will check Firing Room #2 ML-Remote Control and Indicator panels as follows:

a. The first part of the test will make isolation and continuity checks of the panels at the DRSCS interface connector.

b. The second part of the test will verify proper operation and compatibility of the panels with Firing Room #2 ESE and the ML-DRSCS-GSE.

TEST EQUIPMENT

See applicable portion of test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
E. L. Wegerif	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE

GSE ACTIVATION TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM-LCC

2. KSC TEST NO.

V-28018-GSE LCC

11. VEHICLE EFFECTIVITY

AS- 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, LCC, VAB		

15. TEST CONFIGURATION

ML in High Bay for Part B. of Test Outline

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[X] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[X] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[X] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[X] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

109

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE FUNCTIONAL TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM (DRSCS) LCC

2. KSC TEST NO.

V-28019-GSE LCC

3. STAGE, VEHICLE OR GSE

DRSCS - GSE Test

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of LCC DRSCS-GSE.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following DRSCS-GSE will be checked for proper operation:

a. Test Coder
b. Decoder
c. Signal Generator
d. Receiver
e. Monitor and Control Panels
f. Range Compatibility
g. ESE Interface
h. TCE Data Interface

The test coder will first be checked and its output adjusted to a level compatible with the decoder and the signal generator. The decoder will then be tested using the coder. The signal generator will then be checked and used to test the receiver. The test coder, signal generator, receiver, and decoder will be connected together for an overall compatibility check. The Range SafetySite (ETR) will transmit to the LCC roof antenna to verify compatibility of the LCC equipment with the Range.

The LCC-ML GSE interface will be checked by remotely initiating GSE Commands from the LCC and monitoring proper ML functions and LCC indication circuits.

This test will normally be performed just prior to vehicle functional tests. ML activation or functional GSE test completion is required for the latter section of this test.

TEST EQUIPMENT
See applicable section of the test procedure.

G 10

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
E. Wegerif	D. C. McMath	
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Boeing - RF Systems	LVO-13	AS-502 & on

KSC FORM 23-191 (2/69)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE

GSE FUNCTIONAL TEST - DIGITAL RANGE SAFETY COMMAND SYSTEM (DRSCS) LCC.

2. KSC TEST NO. V-28019-GSE LCC

11. VEHICLE EFFECTIVITY AS- 502 & on

12. WHERE TEST PERFORMED Complex 39 - LCC

13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE) N/A

14. EST. TEST TIME

15. TEST CONFIGURATION

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[X] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[X] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[X] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[X] LCC TM RECORDING
[ ] SM POWER	[X] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[X] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[X] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[X] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[X] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] Range Clearance Closed	[ ]	[ ] FOOD SERVICE
[ ] Loop, Open Loop	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

All

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE - FUNCTIONAL TEST - ODOP - RF CHECKOUT STATION

2. KSC TEST NO.

V-28020-GSE VAB

3. STAGE, VEHICLE OR GSE

RF GSE-TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the ODOP GSE located in VAB 26E7.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be verified:

a. Signal Generator RF Power Output
b. Signal Generator Output Frequencies
c. Frequency Spectrums
d. Receiver Bandwidth
e. Receiver Sensitivity
f. Receiver Phase-Lock Characteristics
g. Panel and Circulator Attenuation

The Resdel Crystal Controlled ODOP Signal Generator Model 91086-1 will be checked for correct output frequencies of 49.4-53.3-890 and 960 MHZ utilizing the frequency ounter and the appropriate counter plug in units. The output power of the Signal Generator will be checked at all frequencies using the rack mounted variable attenuators and the RF Power Meter. A spectrum analysis will be made of all critical frequencies using the spectrum analyzer mounted in the Frequency Measuring Rack Unit 5. A check of the bandwidth and sensitivity of the Resdel ODOP Ground Receiver Model 90191 will be accomplished utilizing an external reference generator and the GSE Rack Mounted Variable Attenuators, Directional Couplers and Frequency Counter.

A spare transponder equivalent to the stage transponder will be used to functional check the closed loop phase lock characteristics and the doppler shift capabilities of the GSE.

An end to end check of the panel and room cabling, including the circulator, will be performed.

TEST EQUIPMENT
See applicable section of test procedure

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
Ruffner	D. C. McMath	
RGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- GSE-502-510

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
GSE FUNCTIONAL TEST - ODOP - RF CHECKOUT STATION	V-28020-GSE VAB
	11. VEHICLE EFFECTIVITY
	AS - 502 - 510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB 26E7 - Complex 39		

15. TEST CONFIGURATION
Ground Facility Power - VAB A/C

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[XX] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH [illegible]	[ ] MCC-H
[X] RF Clearance-Closed Loop	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

915

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE FUNCTIONAL TEST
TV/ODOP GSE ANTENNA ALIGNMENT CHECKS

2. KSC TEST NO.

V-28021-GSE VAB

3. STAGE, VEHICLE OR GSE

RF GSE-TEST

4. TEST OBJECTIVES

The purpose of this test is to check and align the following GSE antennas, using the vehicle RF Systems.

ODOP Antenna - VAB Roof
TV Antenna - VAB Roof

5. TEST DESCRIPTION/EQUIPMENT STATUS

Antenna alignment will be adaptable to all launch pads in LC-39 and will consist of the following:

a. Azimuth alignment
b. Elevation alignment
c. Polarization alignment

This test will be accomplished after transfer of vehicle to the pad.

The A/B TV and ODOP system will be used to align the VAB antennas in azimuth, elevation and polarization to produce the greatest signal strength at all required locations.

NOTE: TV antenna adjustment applicable on AS-502 and AS-503 only.

SPECIAL TEST EQUIPMENT
See applicable section of test procedure.

914

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. Ruffner	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing, RF Systems	LVO-13	AS- 502 - 510

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE

GSE FUNCTIONAL TEST
TV/ODOP GSE ANTENNA ALIGNMENT CHECKS

2. KSC TEST NO.

V-28021-GSE VAB

11. VEHICLE EFFECTIVITY

AS- 502 and on

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, VAB Pad		

15. TEST CONFIGURATION

Vehicle at Pad, MSS Removed, RF Clearance

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[X] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] RF Clearance	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

9/15

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE FUNCTIONAL TEST - TV RF CHECKOUT

2. KSC TEST NO.

V-28022-GSE VAB

3. STAGE, VEHICLE OR GSE

RF GSE-Test

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the TV-GSE located in 26E7, VAB RF Checkout Station.

5. TEST DESCRIPTION/EQUIPMENT STATUS

This test is performed prior to Vehicle Checkout operations. Visual checks are made for equipment damage. The equipment racks are checked for proper A.C. power application, blower operation and indication meter status. Utilizing the rack mounted Power Meter and Frequency Counter, the UHF unit Oscillator and Variable Attenuator are checked for frequency, power and attenuation accuracy.

The UHF unit Oscillator and the Power Meter are used to determine cabling insertion losses within the rack assemblies. The RF Amplifier Control output and indicator is checked. FM Receiver tests determine tuning accuracy and 10 db quieting sensitivity of the UHF Receiver. With the G.F.E. TV Decommutator Test Set suppling a composite video signal, the operation of the Decommutator and Distributor are verified.

Amplifier output levels, gating and control functions are checked. The Sync Generator is also verified for proper switching, locking and video level requirements.

Gain and bandpass checks are performed on the RF Amplifier. An end to end check of the antenna RF Amplifier and transmission line is also accomplished

SPECIAL TEST EQUIPMENT
See applicable section of test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY L. Ruffner	8. NASA-KSC APPROVAL B. C. McMath	10. APPROVAL DATE
7. ORGANIZATION Boeing - RF Systems	9. ORGANIZATION LVO-13	11. VEHICLE EFFECTIVITY AS- 502 & 503

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
GSE Functional Test - TV RF Checkout	V-28022-GSE VAB
	11. VEHICLE EFFECTIVITY
	AS- 502 & 503

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, VAB		

15. TEST CONFIGURATION

Closed Loop RF Clearance

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[x] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[x] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[x] RF Clearance	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

9(2)

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

GSE End-To-End RF and Audio Transmission Line Checks (ODOP, TV, DRSCS).

2. KSC TEST NO.

V-28023-GSE 39

3. STAGE, VEHICLE OR GSE

RF-GSE-TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of ODOP/TV/DRSCS-RF and Audio coaxial transmission lines and intercom at the VAB, LCC, and Mobile Launcher.

5. TEST DESCRIPTION/EQUIPMENT STATUS

Test signals of a normal working frequency spectrum will be introduced into the RF GSE transmission lines. These input signals shall be used to check the attenuation and Voltage Standing Wave Ratio (VSWR) of the respective transmission links.

The DRSCS audio transmission lines are to be checked for attenuation at the audio tone frequency used by the DRSCS system.

This procedure will be accomplished during activation, after required refurbishing, and as a periodic functional test.

TEST EQUIPMENT
(See applicable section of test procedure.)

G. T

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. C. Fuchs	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502 & on

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
GSE End-To-End RF and Audio Transmission Line Checks	V-28023-GSE 39
	11. VEHICLE EFFECTIVITY: AS-502 & On

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
Complex 39, VAB, LCC, PAD	N/A	

15. TEST CONFIGURATION
N/A

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[x] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[x] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[x] Range Clearance	[ ]	[ ] FOOD SERVICE
[ ] Closed Loop	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

DRSCS-RANGE AUDIO LINK FUNCTIONAL TEST

2. KSC TEST NO.

V-28024-GSE39

3. STAGE, VEHICLE OR GSE

DRSCS-GSE-TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper transmission characteristics of the audio transmission link from Range Safety ETR to Complex 39 pad.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters of the audio link will be checked.

a. Gain
b. Frequency Response
c. Distortion
d. Noise

Signals of known amplitude, frequency and duration will be introduced into the audio link by Range Safety ETR. The audio link output will be analyzed while connected to proper GSE loading effects. The gain, frequency response, and distortion level of the audio line will be determined. A no signal noise check will determine the amount of low frequency and random noise introduced by the audio link.

This test will be performed with the ML at pad prior to vehicle checkout.

Test Equipment
See applicable portion of the test procedure.

420

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
J. C. Fuchs	D. C. McMath	
ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 501 & on

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
DRSCS- RANGE AUDIO LINK FUNCTIONAL TEST	V-28024-GSE39
	11. VEHICLE EFFECTIVITY: AS- 501 & on

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39		

15. TEST CONFIGURATION
N/A

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[X] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[X] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] ETR Range Safety	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

TV SYSTEM SPARES FUNCTIONAL TEST

2. KSC TEST NO.

V-28025-SIC 2

3. STAGE, VEHICLE OR GSE

S-IC-TEST

4. TEST OBJECTIVES

The purpose of this test is to assure proper operation of the stage TV System spares utilizing the TV GSE located in the RF Checkout Station, VAB 26E7.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be checked using TV GSE:

1. Modulated RF Power Out
2. Unmodulated RF Power Out
3. Transmitter Carrier Frequency
4. System Bandwidth
5. System Resolution
6. Signal to Noise Ratio
7. Video Quality

The TV GSE will be utilized to verify proper operation of stage components. Monitoring will be performed in a closed loop mode. Picture Quality, resolution, and camera-optics alignment are to be verified using the video monitors. Composite video levels and proper camera scan interlace will be verified using the waveform monitor. RF bandwidth and frequency measurements are made with the transmitter modulated and unmodulated.

122

SPECIAL TEST EQUIPMENT

(see applicable section of procedure)

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
L. W. Ruffner	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing-RF Systems	LVO-13	AS-502 & 503

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
TV SYSTEM SPARES FUNCTIONAL TEST	V-28025-SIC-2
	11. VEHICLE EFFECTIVITY AS 502 & 503

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, VAB Room 26E7, High Bay	N/A	

15. TEST CONFIGURATION

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

☐ GROUND POWER	☐ LCC MEASURING (LVO)	☐ ETR/KSC RADAR
☐ S-IB OR S-IC STAGE PWR	☐ LCC MEASURING (INS)	☐ ETR COMMAND XMITTER
☐ S-II STAGE POWER	☐ GSE MEASURING (LVO)	☐ LOCAL COMMAND (C.L.)
☐ S-IVB STAGE POWER	☐ GSE MEASURING (INS)	☐ ALDS
☐ IU POWER	☐ LCC DATA DISPLAY	☐ LCC TM STA. (MONITOR)
☐ LEM POWER	☐ CIF DATA DISPLAY	☐ LCC TM RECORDING
☐ SM POWER	☐ DDAS	☐ CIF TM STA. (MONITOR)
☐ CM POWER	☐ DDAS TAPE RECORDING	☐ CIF TM RECORDING
☐ BACK-UP BATTERIES	☐ SERVICE STRUCTURE MEAS.	☐ CIF COMPUTER
☐ TIMING	☐ RCA-110A COMPUTERS	☐ CIF DATA
☐ COUNTDOWN CLOCK	☐ ACE	☐ TM RECORDS
☐ ETR SEQUENCER	☐ L/V W-G ECS	☐ REAL-TIME CIF COMPUT.
☐ ETR COUNTDOWN CLOCK	☐ CM W-G ECS	☐ POST-TEST CIF COMPUT.
☐ ETR S.R.O.	☐ FACILITY ECS (GAS)	☐ KSC TRACKING
☐ ETR R.S.O.	☐ H.P. GAS	☐ RFI MONITORING
☐ ETR PAD SAFETY	☐ CCF	☐ RF READOUTS (ETR)
☐ KSC PAD SAFETY	☐ FACILITY TV (OTV)	☐ RF READOUTS (KSC)
☐ SECURITY POLICE	☐ FACILITY COMM. (OIS)	☐ WEATHER FORECAST
☐ FIRE FIGHTING	☐ FILM CAMERAS	☐ MCC-C
☐ MEDICAL	☐ SEARCH LIGHTS	☐ MCC-H
☒ RF Clearance	☐	☐ FOOD SERVICE
☐ Closed Loop	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

ODOP STAGE SPARES FUNCTIONAL TEST

2. KSC TEST NO.

V-28026-SIC 2

3. STAGE, VEHICLE OR GSE

S-IC-TEST

4. TEST OBJECTIVES

The purpose of this test is to assure proper operation of the stage ODOP spares utilizing the ODOP GSE located in the RF Checkout Station, VAB 26E7

5. TEST DESCRIPTION/EQUIPMENT STATUS

A functional test will be performed on spare ODOP transponders using ODOP GSE. The following parameters will be checked:

a. Phase Lock

b. Static Phase Error

c. AGC-Sensitivity

d. RF Power Output

e. Pull-In Bandwidth

f. Rest Frequency Check

The 890 MHz AGC-Sensitivity will be checked from -40 to -132 dbm and the Static Phase Error will be checked for an interrogation frequency range of 890.080 to 889.920 MHz. A comparison of the functional test data and the test data furnished with the transponder will be made. During all parameter checks the phase lock indication will be monitored. The Pull-In Bandwidth and Rest Frequency of the transponder will be accomplished.

SPECIAL TEST EQUIPMENT:

(see applicable section of procedure)

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
L. W. Ruffner	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing-RF Systems	LVO-13	AS- 501-510

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
ODOP STAGE SPARES FUNCTIONAL TEST	V-28026-SIC-2
	11. VEHICLE EFFECTIVITY: AS-501 - 510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC39, VAB 26E7 High Bay	N/A	

15. TEST CONFIGURATION

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

☐ GROUND POWER	☐ LCC MEASURING (LVO)	☐ ETR/KSC RADAR
☐ S-IB OR S-IC STAGE PWR	☐ LCC MEASURING (INS)	☐ ETR COMMAND XMITTER
☐ S-II STAGE POWER	☐ GSE MEASURING (LVO)	☐ LOCAL COMMAND (C.L.)
☐ S-IVB STAGE POWER	☐ GSE MEASURING (INS)	☐ ALDS
☐ IU POWER	☐ LCC DATA DISPLAY	☐ LCC TM STA. (MONITOR)
☐ LEM POWER	☐ CIF DATA DISPLAY	☐ LCC TM RECORDING
☐ SM POWER	☐ DDAS	☐ CIF TM STA. (MONITOR)
☐ CM POWER	☐ DDAS TAPE RECORDING	☐ CIF TM RECORDING
☐ BACK-UP BATTERIES	☐ SERVICE STRUCTURE MEAS.	☐ CIF COMPUTER
☐ TIMING	☐ RCA-110A COMPUTERS	☐ CIF DATA
☐ COUNTDOWN CLOCK	☐ ACE	☐ TM RECORDS
☐ ETR SEQUENCER	☐ L/V W-G ECS	☐ REAL-TIME CIF COMPUT.
☐ ETR COUNTDOWN CLOCK	☐ CM W-G ECS	☐ POST-TEST CIF COMPUT.
☐ ETR S.R.O.	☐ FACILITY ECS (GAS)	☐ KSC TRACKING
☐ ETR R.S.O.	☐ H.P. GAS	☐ RFI MONITORING
☐ ETR PAD SAFETY	☐ CCF	☐ RF READOUTS (ETR)
☐ KSC PAD SAFETY	☐ FACILITY TV (OTV)	☐ RF READOUTS (KSC)
☐ SECURITY POLICE	☐ FACILITY COMM. (OIS)	☐ WEATHER FORECAST
☐ FIRE FIGHTING	☐ FILM CAMERAS	☐ MCC-C
☐ MEDICAL	☐ SEARCH LIGHTS	☐ MCC-H
☒ Range Clearance Closed Loop	☐	☐ FOOD SERVICE
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

DRSCS-STAGE SPARES FUNCTIONAL TEST

2. KSC TEST NO.
V-28027-SIC:2

3. STAGE, VEHICLE OR GSE
S-1C-TEST

4. TEST OBJECTIVES

The purpose of this test is to provide for the maintenance and flight readiness of the Digital Range Safety Command System (DRSCS) stage spare components.

5. TEST DESCRIPTION/EQUIPMENT STATUS

Periodic functional tests will be performed on spare DRSCS receivers, decoders, hybrid rings and directional couplers. The following receiver parameters will be checked:

a. Input power

b. 60 db Bandwidth

c. 3 db Bandwidth

d. Center Frequency

e. Quieting

f. Audio Output and Deviation Sensitivity

g. Image Rejection

h. Hi and Low level telemetry calibration

The following decoder parameters will be checked:

a. Input power

b. Audio Input Sensitivity

c. Interval Timer Duration

d. Enable M. V. Duration

e. Error flip flop

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
E. L. Wegerif	D. C. McMath	
RGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing-RF Systems	LVO-13	AS- 501 & ON

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 3

1. TEST TITLE	2. KSC TEST NO.
DRSCS-STAGE SPARES FUNCTIONAL TEST	V-28027-SIC-2
	11. VEHICLE EFFECTIVITY AS- 501 & ON

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
2P10-LCC	N/A	

15. TEST CONFIGURATION

GSE-DRSCS-LCC only

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

☐ GROUND POWER	☐ LCC MEASURING (LVO)	☐ ETR/KSC RADAR
☐ S-IB OR S-IC STAGE PWR	☐ LCC MEASURING (INS)	☐ ETR COMMAND XMITTER
☐ S-II STAGE POWER	☐ GSE MEASURING (LVO)	☐ LOCAL COMMAND (C.L.)
☐ S-IVB STAGE POWER	☐ GSE MEASURING (INS)	☐ ALDS
☐ IU POWER	☐ LCC DATA DISPLAY	☐ LCC TM STA. (MONITOR)
☐ LEM POWER	☐ CIF DATA DISPLAY	☐ LCC TM RECORDING
☐ SM POWER	☐ DDAS	☐ CIF TM STA. (MONITOR)
☐ CM POWER	☐ DDAS TAPE RECORDING	☐ CIF TM RECORDING
☐ BACK-UP BATTERIES	☐ SERVICE STRUCTURE MEAS.	☐ CIF COMPUTER
☐ TIMING	☐ RCA-110A COMPUTERS	☐ CIF DATA
☐ COUNTDOWN CLOCK	☐ ACE	☐ TM RECORDS
☐ ETR SEQUENCER	☐ L/V W-G ECS	☐ REAL-TIME CIF COMPUT.
☐ ETR COUNTDOWN CLOCK	☐ CM W-G ECS	☐ POST-TEST CIF COMPUT.
☐ ETR S.R.O.	☐ FACILITY ECS (GAS)	☐ KSC TRACKING
☐ ETR R.S.O.	☐ H.P. GAS	☐ RFI MONITORING
☐ ETR PAD SAFETY	☐ CCF	☐ RF READOUTS (ETR)
☐ KSC PAD SAFETY	☐ FACILITY TV (OTV)	☐ RF READOUTS (KSC)
☐ SECURITY POLICE	☐ FACILITY COMM. (OIS)	☐ WEATHER FORECAST
☐ FIRE FIGHTING	☐ FILM CAMERAS	☐ MCC-C
☐ MEDICAL	☐ SEARCH LIGHTS	☐ MCC-H
☒ RF Clearance, Closed Loop	☐	☐ FOOD SERVICE
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

1. TEST TITLE

DRSCS-STAGE SPARES FUNCTIONAL TEST

2. KSC TEST NO.
V-28027-SIC-2

11. VEHICLE EFFECTIVITY
AS- S-1C-TEST

NTINUED

f. Command Output Relays

The Hybrid ring will be checked for insertion loss. The Directional Coupler will be checked for insertion loss, directivity and coupling.

TEST EQUIPMENT

(See applicable section of procedure)

KSC OPERATIONS **APOLLO/SATURN TEST CATALOG**	PAGE 1 OF 2
1. TEST TITLE ODOP - FUNCTIONAL TEST - VAB	2. KSC TEST NO. V-28028-SIC2 3. STAGE, VEHICLE OR GSE S-1C-Test

4. TEST OBJECTIVES

The purpose of this test is to assure proper operation of the stage ODOP System utilizing the ODOP GSE located in the RF Checkout Station, VAB 26E7.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be checked in response to closed loop interrogation with the GSE.

Phaselock
Static Phase Error
AGC-Sensitivity
RF Power Output
Pull In Bandwidth
Rest Frequency Check

The ODOP test antenna hats are installed and the cabling from the stage to the ODOP RF Checkout Station VAB 26E7 is secured. Utilizing the ODOP GSE Equipment and the known vehicle and GSE cabling attenuation, the RF power output of the transponder will be checked in the 960MHZ region. The 890 MHZ AGC-Sensitivity will be checked from -40 to -132 dbm and the Static Phase Error will be checked for an interrogation frequency of 890.080 to 889.920 MHZ. A comparison of the recorded data from VMGSE and the acceptance data furnished with the stage transponder will be made. During all parameter checks, the phaselock indication will be recorded.

The pull in bandwidth and rest frequency of the transponder will be accomplished utilizing the RF GSE as a monitor and VMGSE as a recording facility for transponder-T/M Data outputs.

TEST EQUIPMENT
See applicable section of test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
L. Ruffner	D. C. McMath	
7. ORGANIZATION Boeing - RF Systems	9. ORGANIZATION LVO-13	11. VEHICLE EFFECTIVITY AS- S-1C-502-510

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF

1. TEST TITLE	2. KSC TEST NO.
ODOP - FUNCTIONAL TEST - VAB	V-28028-S1C-2
	11. VEHICLE EFFECTIVITY
	AS- S-1C 502-510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
Complex 39, VAB - High Bay		

15. TEST CONFIGURATION

ODOP Test Hats Installed - Transponder Power on, Stage Vertical

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[X] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[X] DDAS	[X] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[X] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] RF Clearance-Closed Loop	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

GKD

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE
DIGITAL RANGE SAFETY COMMAND SYSTEM
STAGE FUNCTIONAL TEST-VAB

2. KSC TEST NO.
V-28029-SIC 2

3. STAGE, VEHICLE OR GSE
DRSCS-S-1C-TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the S-1C DRSCS.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be checked utilizing ML GSE.

a. Receiver
   1. Three db Bandwidths and Center Frequency
   2. Quieting and Audio
   3. Image Rejection
   4. Limiter Test Voltage

b. Decoder
   1. Timer Output
   2. Proper Code Response

c. System
   1. RF Threshold/Bandwidth
   2. Deviation Sensitivity

This test will be performed prior to OAT's.

TEST EQUIPMENT

See applicable section of test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
E. Wegerif	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing-RF Systems	LVO-13	AS- 502-510

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE

DIGITAL RANGE SAFETY COMMAND SYSTEM STAGE FUNCTIONAL TEST-VAB

2. KSC TEST NO.

V-28029-SIC 2

11. VEHICLE EFFECTIVITY

AS - 502-510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
Complex 39-VAB	N/A	

15. TEST CONFIGURATION

Vehicle Erected in VAB, Closed Loop RF Clearance

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[XX] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[X] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[X] LCC TM RECORDING
[ ] SM POWER	[X] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[X] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[X] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[X] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] Range Clearance	[ ]	[ ] FOOD SERVICE
[ ] Closed Loop	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

- STAGE FUNCTIONAL TEST - VAB

2. KSC TEST NO.

V-28030-SIC2

3. STAGE, VEHICLE OR GSE

S-IC TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the S-1C Stage TV System.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following system parameters will be checked using VAB GSE located in Room 26E7.

1. RF Power Output
2. RF Spectrum Content
3. Picture Quality
4. Overall System Performance
5. Lens Wiper Motor Operation
6. TV Environmental Housing Nitrogen Purge System Operation

The TV GSE will be utilized to verify proper performance of stage components. Monitoring will be performed in a closed loop mode using a TV antenna test cover to couple the energy from the antenna to the GSE cables. TV flood light assemblies will be used to light the S-1C thrust structure area during system testing to assure adequate stage lighting and illumination level references.

The lens wiper motors will only be operated long enough to assure they are operating satisfactorily. Picture quality resolution and camera and optics alignment are to be verified using the video monitors. Composite video levels and proper interlace will be verified using the wave form monitor. Bandwidth and frequency measurements are made with a modulated transmitter output. The transmitter is measured at the TV A/B antenna using the antenna test cover and a PCTE power meter. The TV environmental housing assembly nitrogen purge system will also be verified.

TEST EQUIPMENT
See applicable section of test procedure

4 R 3

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
D. Ruffner	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502 & 503

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
TV- STAGE FUNCTIONAL TEST - VAB	V-28030-SIC-2
	11. VEHICLE EFFECTIVITY AS- 502 & 503

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, VAB Room 26E7, High Bay		

15. TEST CONFIGURATION

TV Antenna Test Covers Installed, Stage Vertical, TV System Power On.

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[X] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[X] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ] RF Clearance Closed Loop	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

424

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

RSCS-CLOSED LOOP STAGE FUNCTIONAL TEST - PAD

2. KSC TEST NO.
V-28031-SIC2

3. STAGE, VEHICLE OR GSE
DRSCS-S-IC-Test

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the S-IC DRSCS.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following DRSCS parameters will be checked using Mobile Launcher GSE:

a. Receiver

1. Limiter Voltages
2. Audio Output Voltage

b. Decoder

1. Timer Duration
2. Proper Code Response

After the above parameters have been checked, the DRSCS Receivers and Decoders are interrogated closed loop by RANGE SAFETY ETR to verify compatibility. The Range audio is monitored at the LCC using the DRSCS GSE/Decoder. The LCC TCE will furnish support for data recording purposes.

TEST EQUIPMENT

See applicable section of the test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
C. Wegerif	D.C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502 & on

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
DRSCS - STAGE FUNCTIONAL TEST - PAD	V-28031-SIC2
	11. VEHICLE EFFECTIVITY: AS- 502 & on

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC-39, PAD	N/A	

15. TEST CONFIGURATION

Vehicle at Pad, Closed Loop RF Clearance

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[xx] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[xx] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[xx] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[xx] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[xx] LCC TM RECORDING
[ ] SM POWER	[xx] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[xx] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[xx] TIMING	[xx] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[xx] TM RECORDS
[ ] ETR SEQUENCER	[xx] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[xx] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[x] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[xx] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[x] Range Clearance	[ ]	[ ] FOOD SERVICE
[ ] Closed Loop	[ ]	[ ]
[x] ETR Range Safety	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS APOLLO/SATURN TEST CATALOG	PAGE 1 OF 2
1. TEST TITLE DRSCS OPEN LOOP RANGE FUNCTIONAL TEST-PAD	2. KSC TEST NO. V28032-SIC2 3. STAGE, VEHICLE OR GSE DRSCS-S-1C-Test

4. TEST OBJECTIVES

The purpose of this test is to assure proper operation of the Digital Range Safety Command System during open-loop interrogation by the Range Command Transmitter.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be checked in response to open loop DRSCS commands:

a. Received Signal Strength
b. Proper Transmitted Code Response

In addition to the above checks, range transmission will be monitored by the LCC DRSCS GSE Receiver/Decoder with support from the LCC TCE for recording purposes.

This test will be conducted after DRSCS Stage Functional Test - Pad. The

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(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
E. Wegerif	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502 & ON

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
DRSCS OPEN LOOP RANGE FUNCTIONAL TEST - PAD	V-28032-SIC 2
	11. VEHICLE EFFECTIVITY: AS-502-510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
LC 39, Pad		

15. TEST CONFIGURATION
Vehicle at Pad, MSS Removed

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[x] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[x] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[x] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[x] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[x] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[x] LCC TM RECORDING
[ ] SM POWER	[x] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[x] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[x] TIMING	[x] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[x] TM RECORDS
[ ] ETR SEQUENCER	[x] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[x] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[x] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[x] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[x] Range Clearance Open Loop	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[x] ETR Range Safety	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

ODOP - OPEN LOOP FUNCTIONAL TEST - PAD

2. KSC TEST NO.

V-28033-SIC2

3. STAGE, VEHICLE OR GSE

S-1C-TEST

4. TEST OBJECTIVES

The purpose of this test is to assure proper operation of the Stage ODOP System while operating open loop from the pad.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following parameters will be checked in response to open loop interrogations:

Phase Lock
Static Phase Error
AGC Sensitivity
Pull in Bandwidth Check
Rest Frequency Check
Range/Complex System Evaluation

The VAB-26E7 R.F checkout station ODOP GSE will perform the initial stage system interrogation. The CIF ODOP tracking station will be utilized for range interrogation evaluation.

Using the GSE ODOP R. F. Checkout station and the VAB roof antenna to interrogate the transponder, the AGC Sensitivity will be checked. The Static Phase Error will be checked for an interrogation frequency band of 890.080 to 889.920 MHZ. A comparison of the recorded data from VMGSE, the Acceptance Data furnished with the Stage Transponder, and VAB Test Data will be made. During all parameter checks, the Phase Lock indication will be recorded. A check of the Pull In Bandwidth and the Rest Frequency of the Transponder will be accomplished utilizing the RF GSE as a monitor and VMGSE as a recording facility for the Transponder-T/M Data outputs.

The CIF ODOP transmitting station will interrogate the stage ODOP system. The ODOP recording and receiving stations will receive the reply and will verify proper operation of range and vehicle equipment as ready for flight.

TEST EQUIPMENT
See applicable section of test procedure.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
L. Ruffner	D.C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing - RF Systems	LVO-13	AS- 502 - 510

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2
1. TEST TITLE ODOP OPEN LOOP FUNCTIONAL TEST - PAD	2. KSC TEST NO. V-28033-SIC-2 11. VEHICLE EFFECTIVITY AS - 502-510

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
Complex 39 - Pad		

15. TEST CONFIGURATION
Vehicle at Pad, MSS Removed

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[X] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[X] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[X] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[X] RCA-110A COMPUTERS	[X] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[X] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[X] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[X] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[X] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] RF Clearance	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS APOLLO/SATURN TEST CATALOG	PAGE 1 OF 2
1. TEST TITLE TV-STAGE FUNCTIONAL TEST-PAD	2. KSC TEST NO. V-28034-SIC2 3. STAGE, VEHICLE OR GSE S-IC-TEST

4. TEST OBJECTIVES

The purpose of this test is to verify proper operation of the S-IC Stage TV System.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The following system parameters will be checked:

a. LC-39

1. Lens Wiper Motor Operation
2. TV Environmental Housing Nitrogen Purge Operation

b. CIF

1. RF Spectrum Content
2. Picture Quality
3. Overall System Performance
4. Range Compatibility

The CIF monitoring of the TV RF signal will be in an open-loop mode. TV flood lights will be used in S-IC thrust structure area to assure proper lighting when necessary. Lens wiper motors and GN_2 purge control will be enabled to verify proper operation. Picture quality alignment, and resolution will be verified, using the GSE video monitors. The waveform monitors will be used to verify composite video levels and proper interlace. Bandwidth and frequency measurements are made on the modulated transmitted output.

SPECIAL TEST EQUIPMENT

See applicable section of test procedure

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(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
L. Ruffner	D. C. McMath	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Boeing-RF Systems	LVO-13	AS- 502 & 503

KSC FORM 23-191 (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)

1. TEST TITLE

TV-STAGE FUNCTIONAL TEST-PAD

2. KSC TEST NO.

V-28034-SIC-2

11. VEHICLE EFFECTIVITY

AS-502 & 503

12. WHERE TEST PERFORMED

LC-39, VAB Room 26E7 & CIF

13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)

14. EST. TEST TIME

15. TEST CONFIGURATION

Vehicle at Pad, Mas Removed

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[X] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[X] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[ ] DDAS	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[X] RCA-110A COMPUTERS	[X] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[X] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[X] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[X] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[X] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[X] RF Open-Loop Clearance	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

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(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS
APOLLO/SATURN TEST CATALOG

1. TEST TITLE

LOW BAY PCM/DDAS GROUND RECEIVING STATION, SETUP AND CHECKOUT PROCEDURE

2. KSC TEST NO.

V-28035-GSE VAB

3. STAGE, VEHICLE OR GSE

ESE

4. TEST OBJECTIVES

To verify that the Low Bay DDAS Digital Receiving Station (DRS) can receive discriminate, and decommutate the SIVB stage 600 KHZ PCM/FM DDAS signal and, in addition, process the decommutated data into a useable form for real time display on meters, lights, recorders, etc.

5. TEST DESCRIPTION/EQUIPMENT STATUS

1. Verify that the Line Driver can receive and discriminate the 600 khz FM carrier and provide the discriminated video signal of proper amplitude to the Synchronizer in the DRS.

2. The DRS will be set up to receive and decommutate the 72 KHZ PCM format.

3. Verify the ability of the DRS to lock-on to the PCM signal and maintain lock-on (sync).

4. The output of each digital-to-analog converter (DAC) will be checked for tolerances using digital words corresponding to 0, 20, 40, 80 and 100% of the analog reference voltage.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
F.O. Doolan for G. A. Ogle	B. J. Thomas	6-30-6
7. ORGANIZATION	**9. ORGANIZATION**	**11. VEHICLE EFFECTIVITY**
Douglas	LVO-223	AS-502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE

LOW BAY PCM/DDAS GROUND RECEIVING STATION, SETUP AND CHECKOUT PROCEDURE

2. KSC TEST NO.: V-28035-GSE VAB

11. VEHICLE EFFECTIVITY: AS- 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
Low Bay	N/A	N/A

15. TEST CONFIGURATION

Not Applicable

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

[X] GROUND POWER	[ ] LCC MEASURING (LVO)	[ ] ETR/KSC RADAR
[ ] S-IB OR S-IC STAGE PWR	[ ] LCC MEASURING (INS)	[ ] ETR COMMAND XMITTER
[ ] S-II STAGE POWER	[ ] GSE MEASURING (LVO)	[ ] LOCAL COMMAND (C.L.)
[ ] S-IVB STAGE POWER	[ ] GSE MEASURING (INS)	[ ] ALDS
[ ] IU POWER	[ ] LCC DATA DISPLAY	[ ] LCC TM STA. (MONITOR)
[ ] LEM POWER	[ ] CIF DATA DISPLAY	[ ] LCC TM RECORDING
[ ] SM POWER	[X] DDAS (Low Bay)	[ ] CIF TM STA. (MONITOR)
[ ] CM POWER	[ ] DDAS TAPE RECORDING	[ ] CIF TM RECORDING
[ ] BACK-UP BATTERIES	[ ] SERVICE STRUCTURE MEAS.	[ ] CIF COMPUTER
[ ] TIMING	[ ] RCA-110A COMPUTERS	[ ] CIF DATA
[ ] COUNTDOWN CLOCK	[ ] ACE	[ ] TM RECORDS
[ ] ETR SEQUENCER	[ ] L/V W-G ECS	[ ] REAL-TIME CIF COMPUT.
[ ] ETR COUNTDOWN CLOCK	[ ] CM W-G ECS	[ ] POST-TEST CIF COMPUT.
[ ] ETR S.R.O.	[ ] FACILITY ECS (GAS)	[ ] KSC TRACKING
[ ] ETR R.S.O.	[ ] H.P. GAS	[ ] RFI MONITORING
[ ] ETR PAD SAFETY	[ ] CCF	[ ] RF READOUTS (ETR)
[ ] KSC PAD SAFETY	[ ] FACILITY TV (OTV)	[ ] RF READOUTS (KSC)
[ ] SECURITY POLICE	[X] FACILITY COMM. (OIS)	[ ] WEATHER FORECAST
[ ] FIRE FIGHTING	[ ] FILM CAMERAS	[ ] MCC-C
[ ] MEDICAL	[ ] SEARCH LIGHTS	[ ] MCC-H
[ ]	[ ]	[ ] FOOD SERVICE
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION

KSC OPERATIONS **APOLLO/SATURN TEST CATALOG**	PAGE 1 OF 2
1. TEST TITLE Range Secure Antenna Checks - SIVB Flight Stage	2. KSC TEST NO. V-28036-SIVB2 3. STAGE, VEHICLE OR GSE SIVB

4. TEST OBJECTIVES

This procedure verifies the operating characteristics of the Range Secure Antenna Systems.

5. TEST DESCRIPTION/EQUIPMENT STATUS

I. This is an RF Subsystem test which checks the following:

A. Range Secure Antenna and associated unit characteristics.

B. Cable attenuation measurements from the umbilical plate to the receivers.

II. Stage power is not required for this test.

III. Access to the stage forward interstage area is required.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
F. O. Jordan for R. H. Richardson	D C McSmith	
7. ORGANIZATION	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
Douglas		AS- 502

KSC FORM 23-191A (2/66)

APOLLO/SATURN TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2

1. TEST TITLE	2. KSC TEST NO.
Range Secure Antenna Check - SIVB Flight Stage	V-28036-SIVB2
	11. VEHICLE EFFECTIVITY
	AS- 502

12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT. (IF APPLICABLE)	14. EST. TEST TIME
VAB		

15. TEST CONFIGURATION

Access to stage is required.

16. SUPPORT REQUIREMENTS CHECKLIST *(Check appropriate boxes and add any additional)*

☐ GROUND POWER	☐ LCC MEASURING (LVO)	☐ ETR/KSC RADAR
☐ S-IB OR S-IC STAGE PWR	☐ LCC MEASURING (INS)	☐ ETR COMMAND XMITTER
☐ S-II STAGE POWER	☐ GSE MEASURING (LVO)	☐ LOCAL COMMAND (C.L.)
☐ S-IVB STAGE POWER	☐ GSE MEASURING (INS)	☐ ALDS
☐ IU POWER	☐ LCC DATA DISPLAY	☐ LCC TM STA. (MONITOR)
☐ LEM POWER	☐ CIF DATA DISPLAY	☐ LCC TM RECORDING
☐ SM POWER	☐ DDAS	☐ CIF TM STA. (MONITOR)
☐ CM POWER	☐ DDAS TAPE RECORDING	☐ CIF TM RECORDING
☐ BACK-UP BATTERIES	☐ SERVICE STRUCTURE MEAS.	☐ CIF COMPUTER
☐ TIMING	☐ RCA-110A COMPUTERS	☐ CIF DATA
☐ COUNTDOWN CLOCK	☐ ACE	☐ TM RECORDS
☐ ETR SEQUENCER	☐ L/V W-G ECS	☐ REAL-TIME CIF COMPUT.
☐ ETR COUNTDOWN CLOCK	☐ CM W-G ECS	☐ POST-TEST CIF COMPUT.
☐ ETR S.R.O.	☐ FACILITY ECS (GAS)	☐ KSC TRACKING
☐ ETR R.S.O.	☐ H.P. GAS	☐ RFI MONITORING
☐ ETR PAD SAFETY	☐ CCF	☐ RF READOUTS (ETR)
☐ KSC PAD SAFETY	☐ FACILITY TV (OTV)	☐ RF READOUTS (KSC)
☐ SECURITY POLICE	☐ FACILITY COMM. (OIS)	☐ WEATHER FORECAST
☐ FIRE FIGHTING	☐ FILM CAMERAS	☐ MCC-C
☐ MEDICAL	☐ SEARCH LIGHTS	☐ MCC-H
☐	☐	☐ FOOD SERVICE
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

OTHERS:

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

17. OTHER APPLICABLE REFERENCE DOCUMENTATION