Exhibit 1

CABIN ANTENNAS

Introduction

In the GEC Cabin System, passenger handsets communicate via a low power RF link to a Cabin Unit which performs the functions of a small PABX. In order to provide maximum RF signal coverage throughout the aircraft cabin a passive antenna array is connected to the Cabin Unit. The antennas are located on the ceiling of the cabin, the position determined by an RF survey prior to installation depending on aircraft type/role-fit.

Antenna Physical Characteristics

The cabin radiators are plane antennas having dimensions shown in Figures 1, 2 and 3. There are 3 different types of antenna designated 6dB Splitter, 12dB Splitter and Terminating. The radiating surface and matching/splitter are etched onto a low conductivity fibreglass substrate which has a defined dielectric performance. The copper is tin plated after etching to prevent signal degradation due to oxidisation.

For a typical installation the antennas are fitted into non-conducting flame resistant covers to preserve cabin appearance.

Antenna Electrical Characteristics

The cabin antennas are nominally 50 ohm impedance and have a radiated pattern of maximum signal strength at 90 degrees to the radiating surface. The reverse side of the antenna is an earth plane providing reflection of the radiated signal into the cabin area. The antennas are connected in series to the Cabin Unit. Within the Cabin Unit there is a passive splitter which provides 2 external connections to the antennas. From the Cabin Unit the coaxial cable is fed to a 12dB antenna/splitter. This antenna radiates and provides a connection to the next antenna. The next antenna is a 6dB antenna/splitter which also radiates and provides a connection to the final antenna which is a terminating type which radiates and terminates into 50 ohms. The antenna array is shown in Figure 4.

The cabin antennas are fixed-position mounted in the horizontal plane at the aircraft cabin ceiling. The half-power points (-3dB) are at 45 degrees to the perpendicular. In free-space the polar diagram shows the antennas to have a major lobe at 90 degrees to the plane of the radiating surface. Within a metallic tubular environment representative of an airframe, reflected power significantly alters the radiation pattern to the extent that within the prescribed enclosure the antenna characteristics approximates that of an isotropic radiator.

With up to 6 such antennas installed in a cabin environment the desired design objective of providing total coverage is achieved.

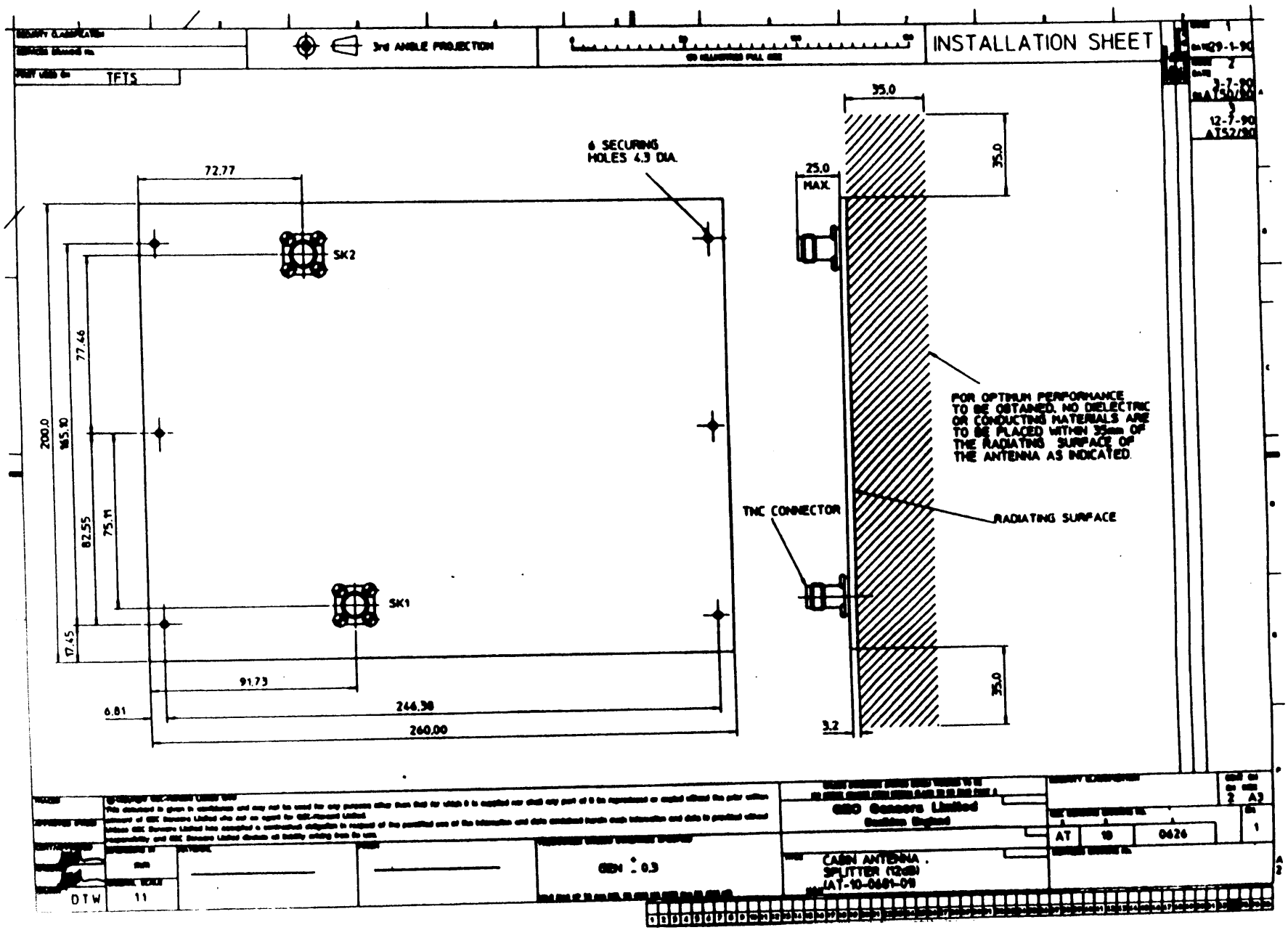
INSTALLATION SHEET
3rd ANGLE PROJECTION
TFTS
6 SECURING HOLES 4.3 DIA.
72.77
SK2
SK1
77.46
82.55
75.11
17.45
200.0
185.10
91.73
6.81
246.38
260.00
35.0
25.0 MAX.
35.0
35.0
3.2
FOR OPTIMUM PERFORMANCE TO BE OBTAINED, NO DIELECTRIC OR CONDUCTING MATERIALS ARE TO BE PLACED WITHIN 35mm OF THE RADIATING SURFACE OF THE ANTENNA AS INDICATED.
TNC CONNECTOR
RADIATING SURFACE
GEC Sensors Limited
Stanbridge England
CABIN ANTENNA
SPLITTER (12dB)
(AT-10-0681-01)
AT
10
0626
DTW
11
2 A3
1

FIGURE 1

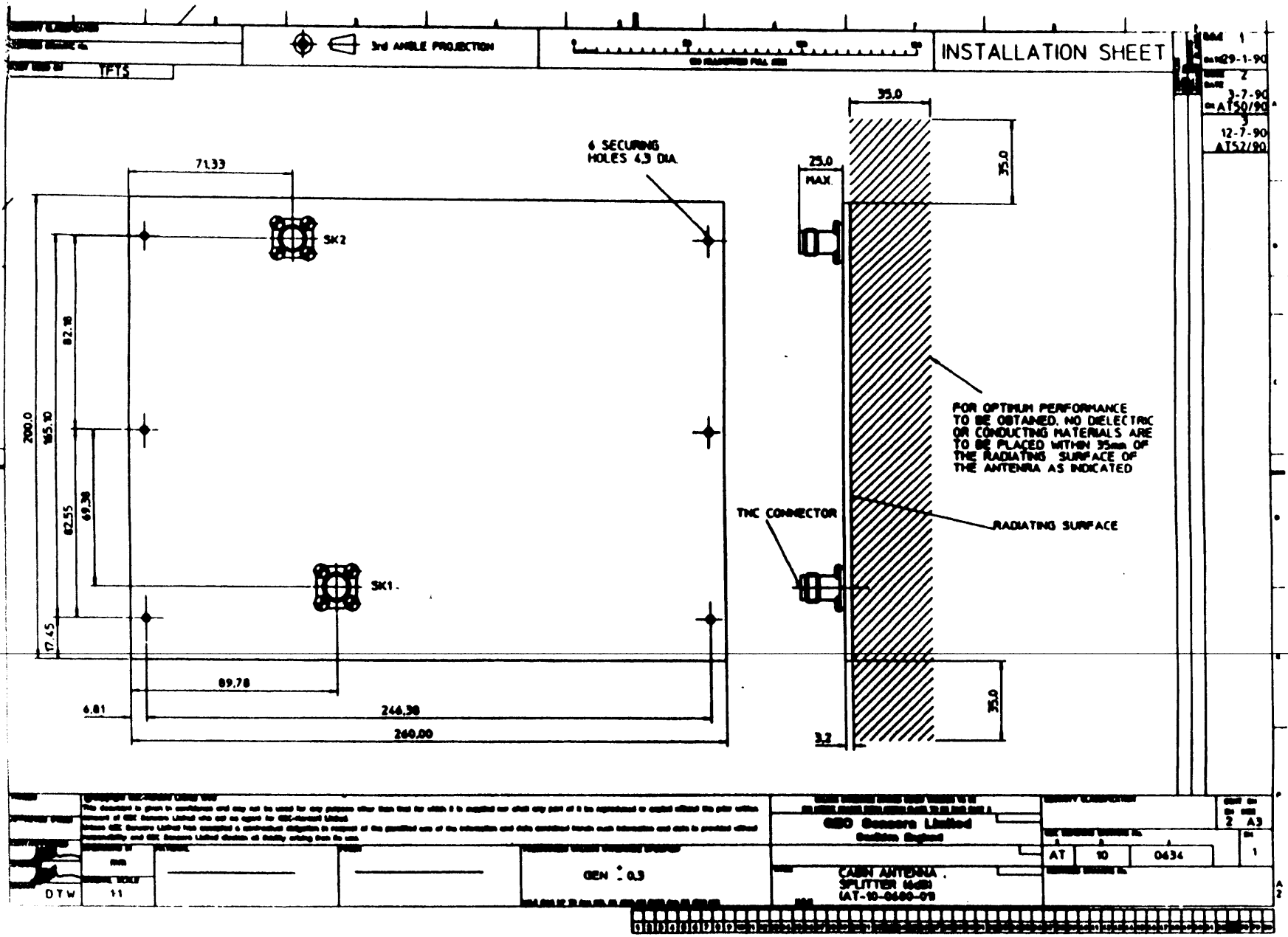
INSTALLATION SHEET
3rd ANGLE PROJECTION
TFTS
6 SECURING HOLES 4.3 DIA.
SK2
SK1
71.33
82.18
82.55
69.38
17.45
200.0
165.10
89.78
6.81
244.38
260.00
35.0
25.0 MAX.
35.0
FOR OPTIMUM PERFORMANCE TO BE OBTAINED, NO DIELECTRIC OR CONDUCTING MATERIALS ARE TO BE PLACED WITHIN 35mm OF THE RADIATING SURFACE OF THE ANTENNA AS INDICATED
TNC CONNECTOR
RADIATING SURFACE
35.0
3.2
GEC Sensors Limited
Sudbury England
CABIN ANTENNA
SPLITTER (4dB)
(AT-10-0600-01)
AT
10
0434
GEN ± 0.3
DTW
11
29-1-90
3-7-90
AT50/90
12-7-90
AT52/90

FIGURE 2

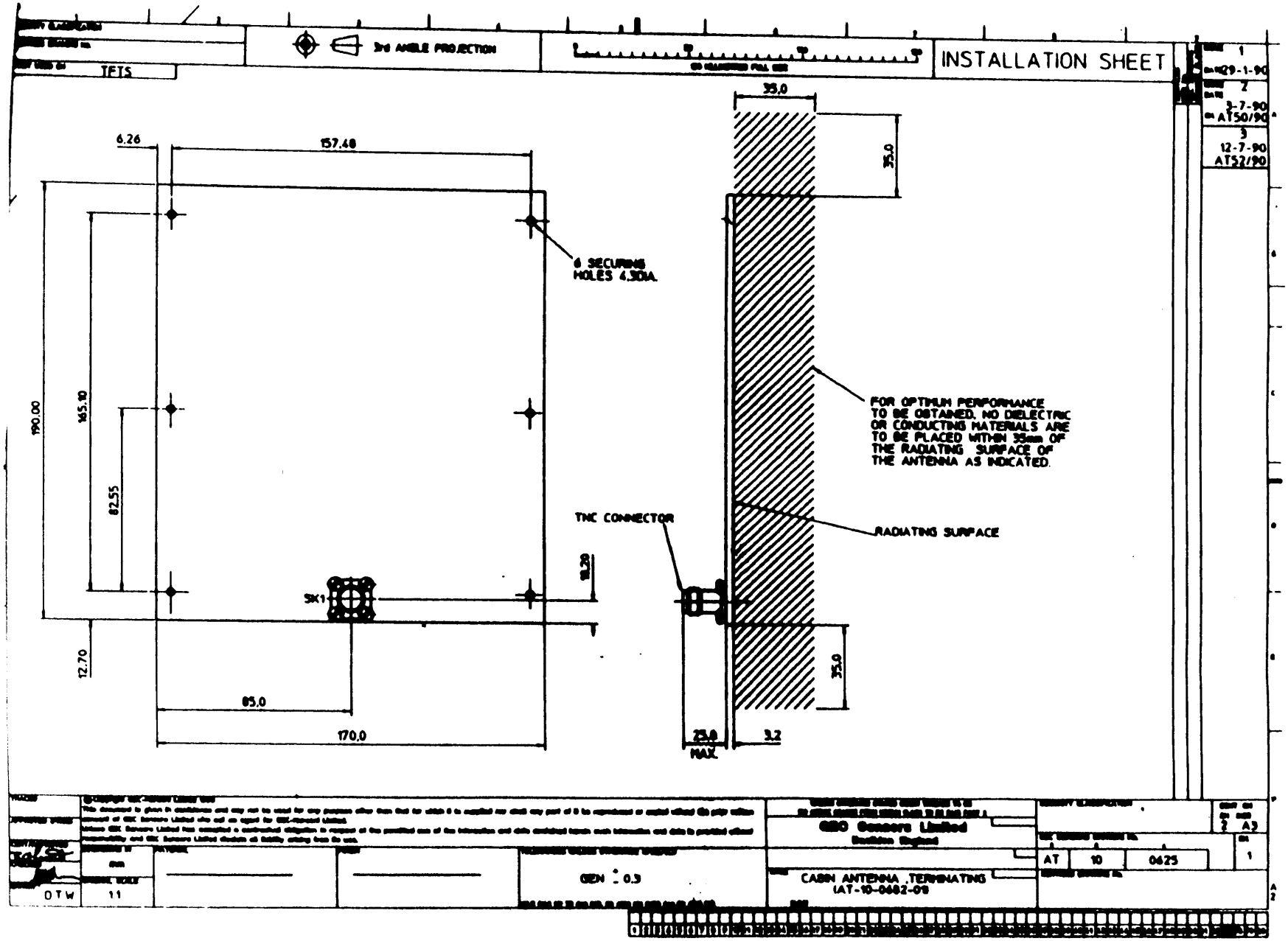
INSTALLATION SHEET
3rd ANGLE PROJECTION
TETS
35.0
6.26
157.48
35.0
6 SECURING HOLES 4.30DIA.
190.00
165.10
82.55
FOR OPTIMUM PERFORMANCE TO BE OBTAINED, NO DIELECTRIC OR CONDUCTING MATERIALS ARE TO BE PLACED WITHIN 35mm OF THE RADIATING SURFACE OF THE ANTENNA AS INDICATED.
TNC CONNECTOR
RADIATING SURFACE
SK1
18.28
12.70
85.0
170.0
25.0 MAX
3.2
35.0
GEC Sensors Limited
Sheffield England
CABIN ANTENNA ,TERMINATING
(AT-10-0402-09
AT 10 0425
GEN ± 0.3
DTW
11

FIGURE 3

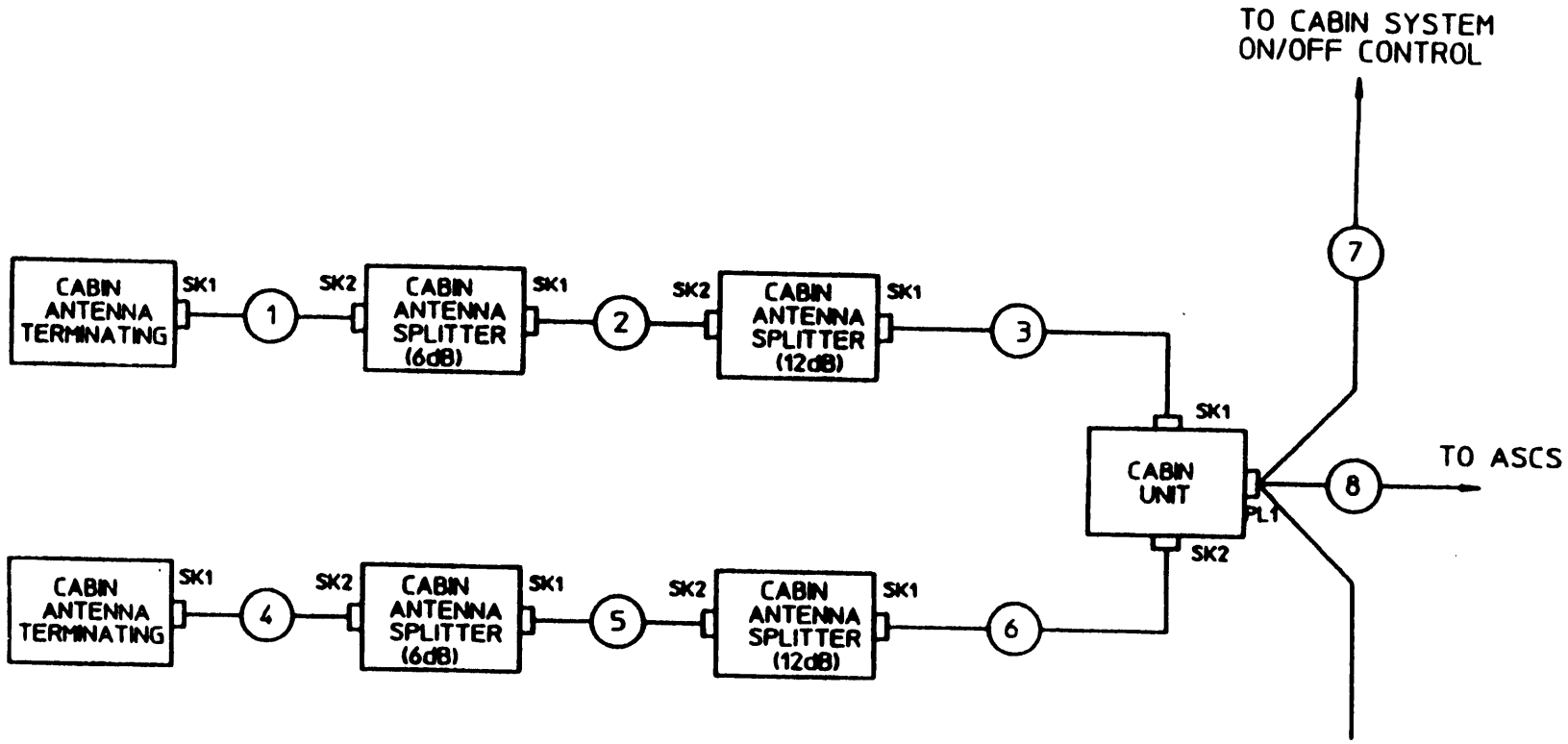
TO CABIN SYSTEM
ON/OFF CONTROL
CABIN ANTENNA TERMINATING
SK1
1
SK2
CABIN ANTENNA SPLITTER (6dB)
SK1
2
SK2
CABIN ANTENNA SPLITTER (12dB)
SK1
3
SK1
CABIN UNIT
PL1
SK2
7
8
TO ASCS
CABIN ANTENNA TERMINATING
SK1
4
SK2
CABIN ANTENNA SPLITTER (6dB)
SK1
5
SK2
CABIN ANTENNA SPLITTER (12dB)
SK1
6

FIGURE 4

FIGURE 5 CABIN ANTENNA

Exhibit 2

Boeing wishes to install and test the GEC Sensors Air Fone on foreign aircraft. We also want to continue their program of research. To succeed in this it is necessary to determine the influence that both the airframe and its electronic systems have upon the telephone equipment. Specific areas of research will be the analysis of frequencies and power levels required to sustain the reliable, high quality performance without interference to other related and non-related systems internal and external to the airframe. To maintain continuous coverage within the airframe the effects of galleys, seat configurations and storage areas upon radiation patterns also require that the equipment be evaluated within a representative environment, a scenario which cannot be meaningfully simulated in a laboratory. Similarly, evaluations of the variations in acoustic environment for different aircraft will be made to determine the effects on speech intelligibility.