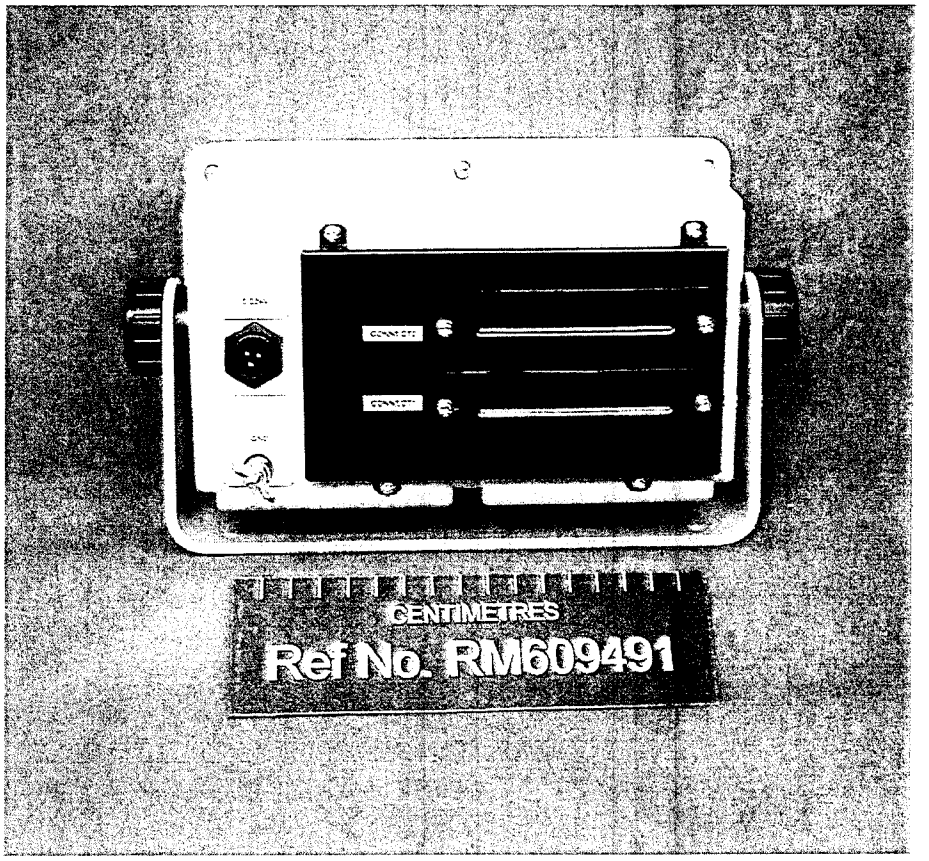
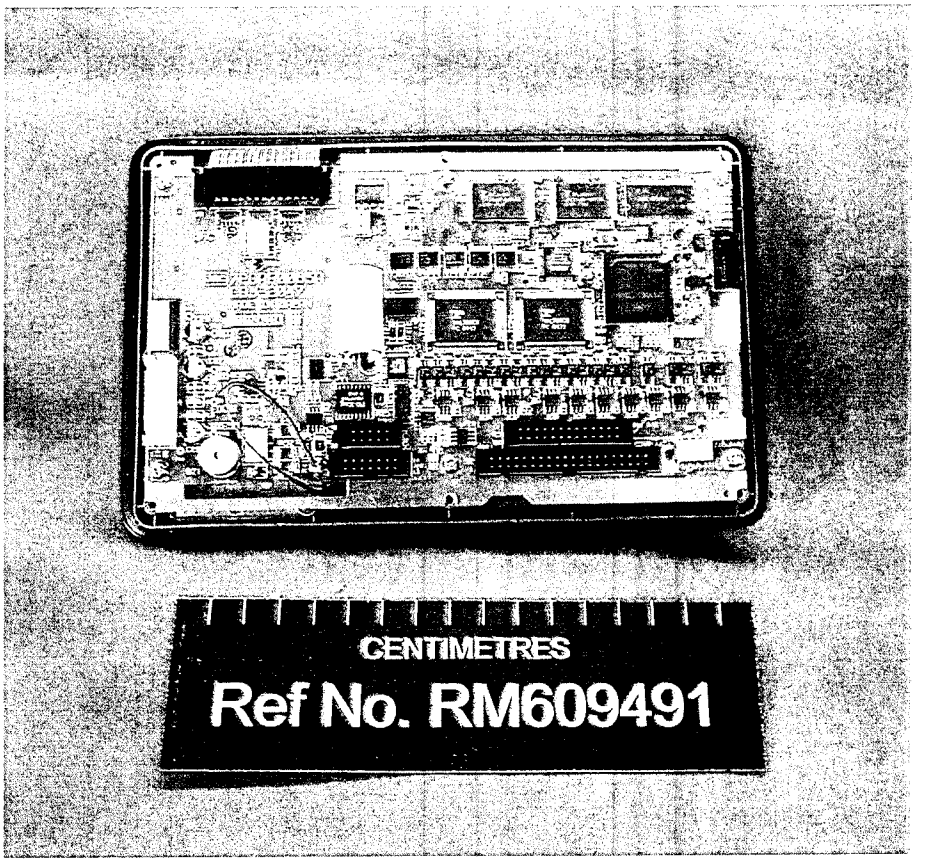
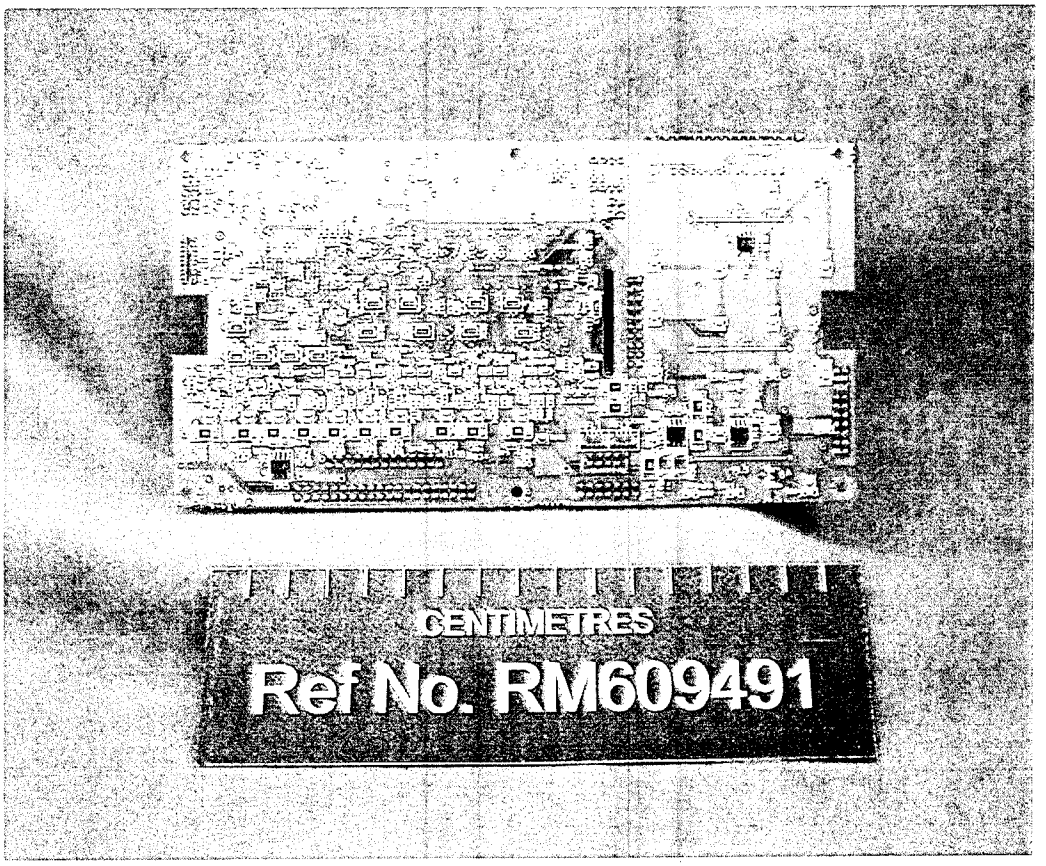
NCM-722 AIS Controller – Front View



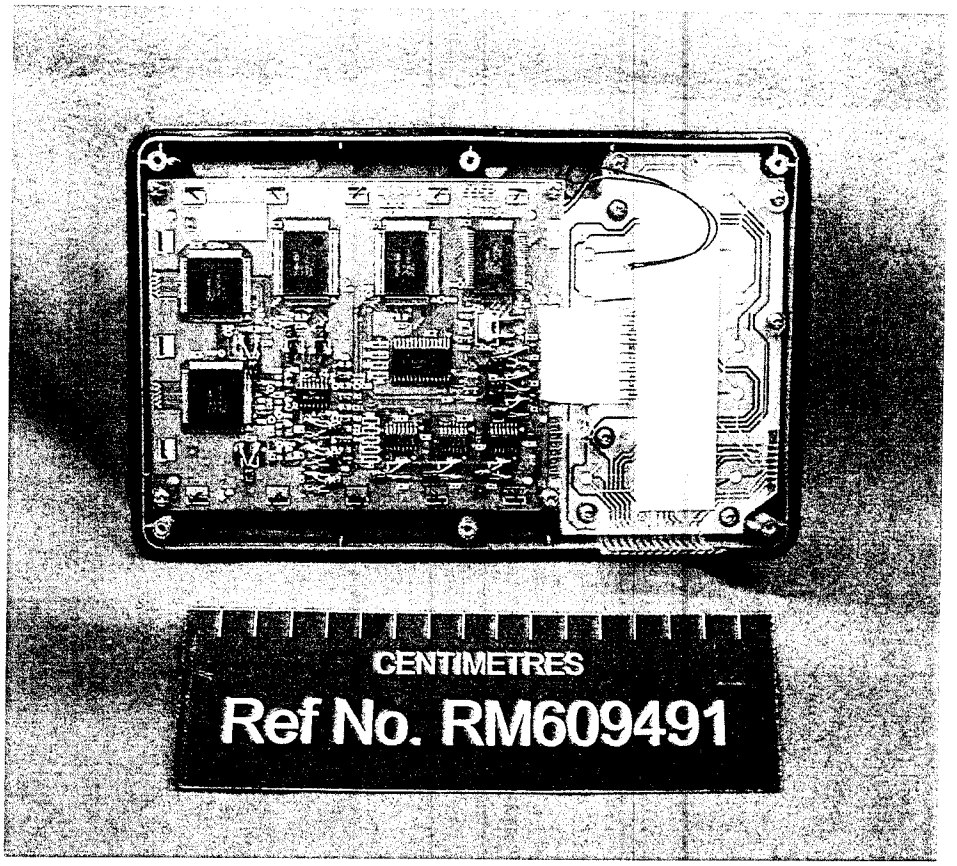
NCM-722 AIS Controller – Rear View



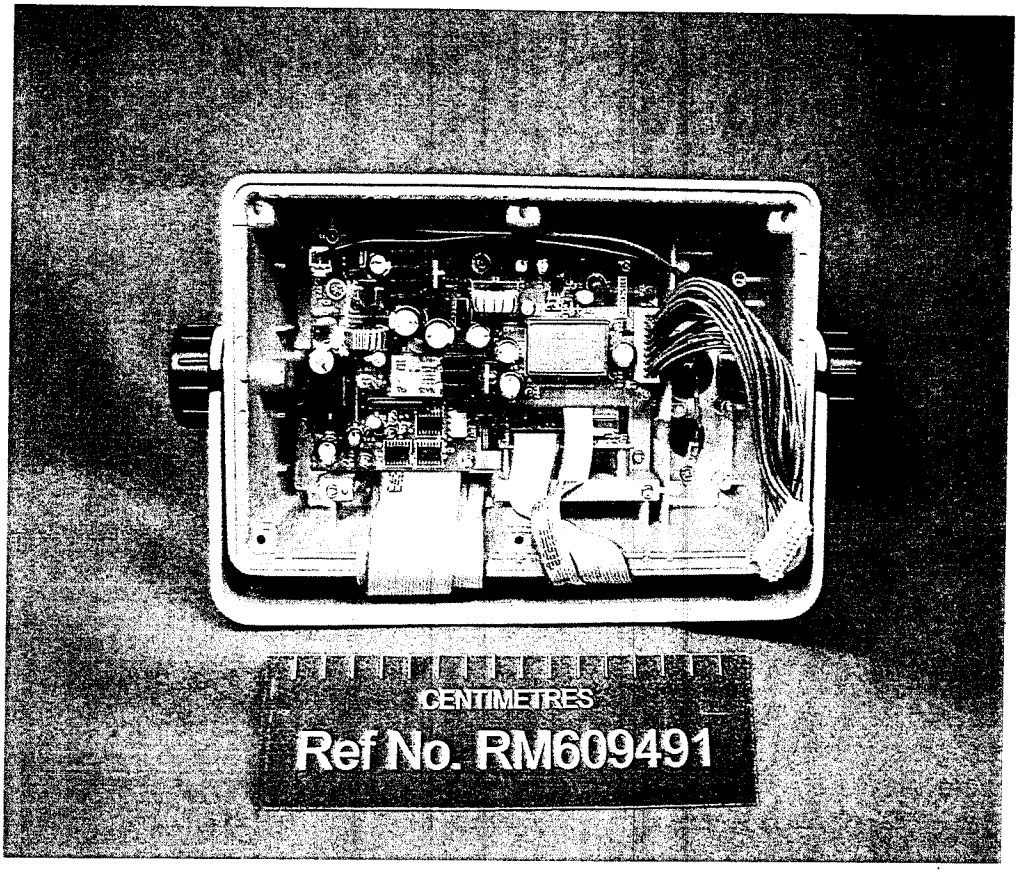
NCM-722 AIS Controller – Internal View 1



NCM-722 AIS Controller – Internal View 2



NCM-722 AIS Controller – Internal View 3



NCM-722 AIS Controller – Internal View 4

NCM-722 AIS Controller – Label View

ANNEX A

Manufacturers Declarations

(consisting of 9 pages)

Manufacturer's Self-Certification IEC61993-2, clause 17.7.5

I hereby declare that the Japan Radio Co., Ltd. Automatic Identification System Type JHS-180 fulfils the following conditions of IEC61993-2, clause 7.4.1.

7.4.1 Management of regional operating settings

(M.1371-1/ A2/4.1; IALA Technical clarifications to recommendation ITU-R M.1371-1)

1. The 1st paragraph

1.1 Requirement

All stored regional operating settings shall be time/date-tagged and they should be tagged with information by what input means this regional operating setting was received (TDMA Msg 22, DSC telecommand, Manual input via MKD, ACA sentence input via Presentation Interface).

1.2 Result

NTE-180 AIS Transponder stores all 8 regional operation settings with date, time, and input means in its memory. The AIS Transponder can output the ACA and ACS sentences to presentation interface (PI) replying for query of ACA. ACA and ACS sentences include information source, date and time.

2. The 2nd paragraph

2.1 Requirement

The AIS shall constantly check, if the nearest boundary of the regional operating area of any stored regional operating setting is more than 500 miles away from the current position of own station, or if any stored regional operating setting was older than five weeks. Any stored regional operating setting which fulfils any one of these conditions shall be erased from the memory.

2.2 Result

(1) When boundary is more than 500 miles away from the current position

This item is tested in IEC61993-2 section 17.7.1.

(2) When 5 weeks passed

The AIS transponder compares the tagged time and date with present time input from GPS receiver, and when it passed five weeks from the record, the AIS Transponder erases the data.

3. The 3rd paragraph

3.1 Requirement

The regional operating settings set shall be handled as a whole, i.e. a change requested for any parameter of the regional operating settings shall be interpreted as a new regional operating setting.

3.2 Result

This item is tested in IEC61993-2 section 17.7.2.

The recorded data can be display and edit by AIS Controller. After editing the data, AIS Controller sends the data to the AIS Transponder as a new data.

4. The 4th paragraph

4.1 Requirement

When the user requests to manually input a regional operating setting via the Minimum Keyboard and Display (MKD), the regional operating settings in use, which may be the default operating settings, shall be presented to the user on the MKD. The user shall then be allowed to edit these settings partly or in full. The AIS shall ensure, that a regional operating area is always input and that it conforms to the rules for regional operating areas laid out in M.1371-1 A2/4.1. After completion of input of an acceptable regional operating settings set, the AIS shall require the user to confirm a second time that the input data shall be stored and possibly used instantaneously.

4.2 Result

This item is tested in IEC61993-2 section 17.7.2.

The recorded data can be display and edit by AIS Controller. After editing the data, AIS Controller sends the data to the AIS Transponder as a new data.

5. The 5th paragraph

5.1 Requirement

The AIS shall not accept, i.e. ignore, any new regional operating setting which includes a regional operating area, which does not conform to the rules for regional operating areas laid out in M.1371-1 A2/4.1.

5.2 Result

This item is tested in IEC61993-2 section 17.7.4.

6. The 6th paragraph

6.1 Requirement

The AIS shall not accept a new regional operating setting, which was input to it via the Presentation Interface, if the regional operating area of this new regional operating setting partly or totally overlaps or matches the regional operating area of any of the stored regional operating settings, which were received from a base station either by msg 22 or by DSC telecommand within the last two hours.

6.2 Result

This item is tested in IEC61993-2 17.7.2.

7. The 7th paragraph

7.1 Requirement

A message 22 addressed to own station or a DSC telecommand addressed to own station shall be accepted only if the AIS is in a region defined by one of the stored regional operating settings. In this case the set of regional operating settings shall be composed by combining the received parameters with the regional operating area in use.

7.2 Result

This item is tested in IEC61993-2 17.7.3.

8. The 8th paragraph

8.1 Requirement

If the regional operating area of the new, accepted regional operating setting overlaps in part or in total or matches the regional operating areas of one or more older regional operating settings, this or these older regional operating settings shall be erased from the memory. The regional operating area of the new, accepted regional operating setting may be neighbouring tightly and may thus have the same boundaries as older regional operating settings. This shall not lead to the erasure of the older regional operating settings.

8.2 Result

This item is tested in IEC61993-2 17.7.1.

CORROSION TEST

The corrosion test was conducted on the basis of the IEC60945.

The surface materials with actual results used in similar models of our transceiver, for instance the JSS-850 which have been approved in 1997, are used for units of JHS-180.

DESCRIPTION OF TEST

The test parts which were the same as materials used for the equipment were placed in the chamber described below and subjected to a saline environment as stipulated in the IEC60945 clause 8.12.

The conditions as stipulated in the IEC60945 clause 8.12 were maintained.

On completion of the above test, the test parts were visually examined and it was confirmed that there were no undue deterioration or corrosion of the metal parts, finishes to the naked eye.
The results were prints taken (copies included).

Salt spray instrument:
It is internationally accepted apparatus for evaluating corrosion resistance of metal finishing, anodized aluminum, rust preventing oil and electric parts.

1. Model	CASSER- II R-IS0-3
2. Manufacturer	SUGA TEST INSTRUMENTS CO..LTD
3. Applicable standards	JIS D0201. H8502. H8610. H8611. H8681 H8617. K5400. Z2371 ISO 3768. 3769. 3770/ASTM B117. B258
4 . Dimensions	1540mm(W) x 860mm(D) x 1260mm(H)

9. The 9th paragraph

9.1 Requirement

Subsequently the AIS shall store a new, accepted regional operating setting in one free memory location of the eight memories for regional operating settings. If there is no free memory location, the oldest regional operating setting shall be replaced by the new, accepted one.

9.2 Result

This item is tested in IEC61993-2 Section 17.7.1.

10. The 10th paragraph

10.1 Requirement

No means other then defined herein shall be allowed to clear any or all of the stored regional operating settings. In particular, it shall not be possible to solely clear any or all of the stored regional operating settings by a manual input via the MKD or by an input via the Presentation Interface without inputting a new regional operating setting.

10.2 Result

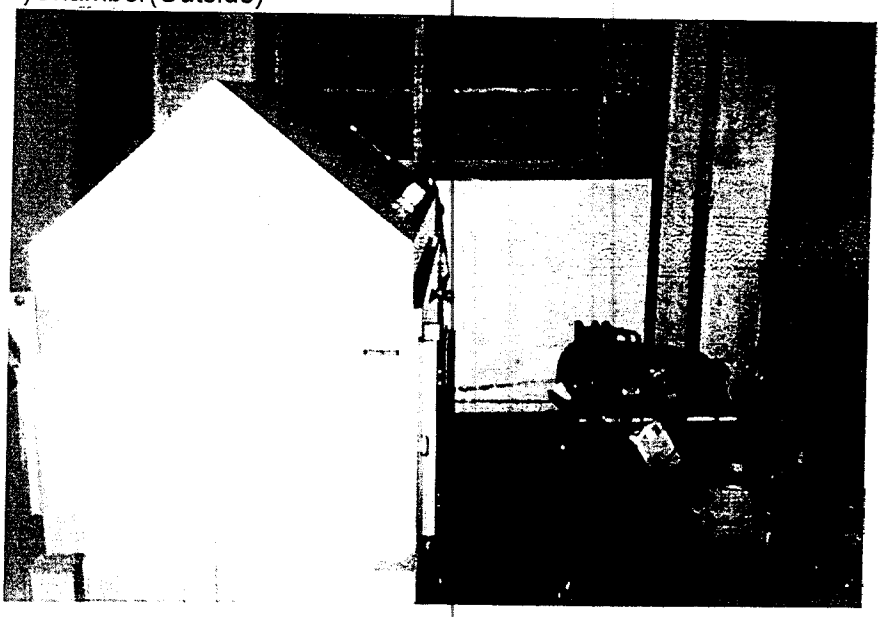
AIS Controller has no menu to clear the stored regional operating settings and the stored regional operating setting data in the AIS Transponder can not be cleared other than inputting a new setting.

M. Kawaguchi

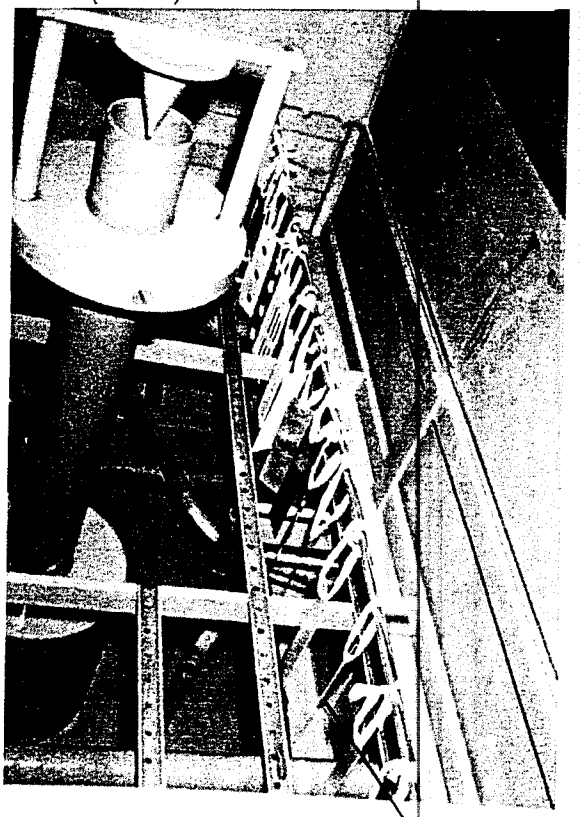
M. Kawaguchi
Manager of Network & Communication Group
Engineering Department
26 June 2002

1.Facilities

1)Chamber(Outside)

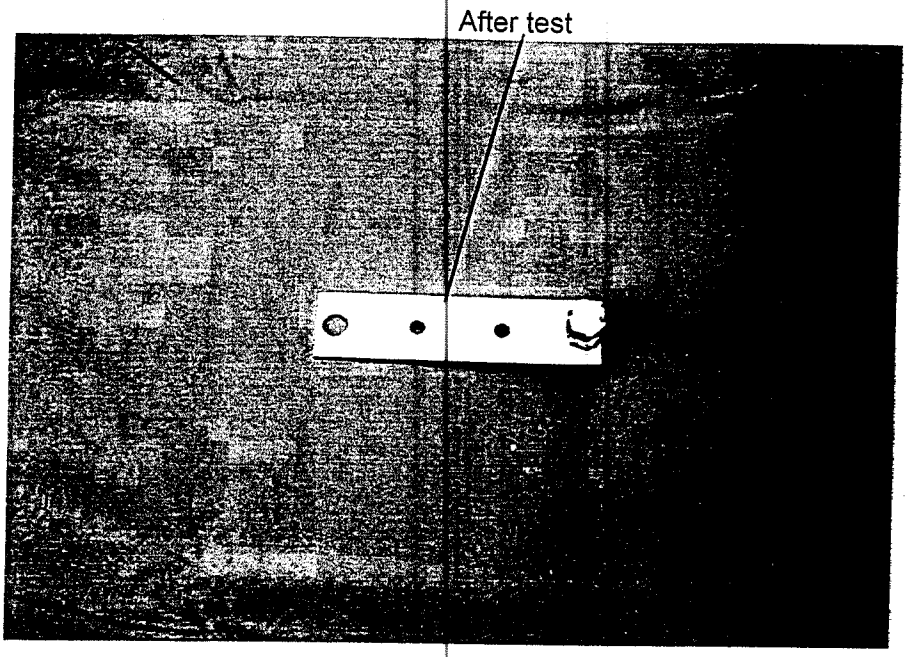


1-2) Chamber(Inside)

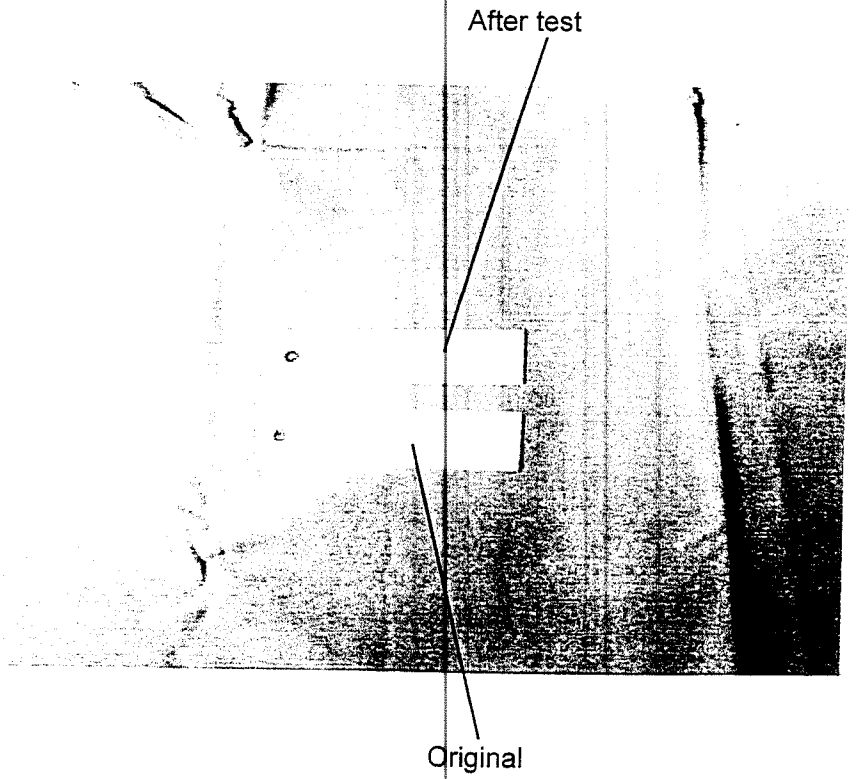


Metal parts

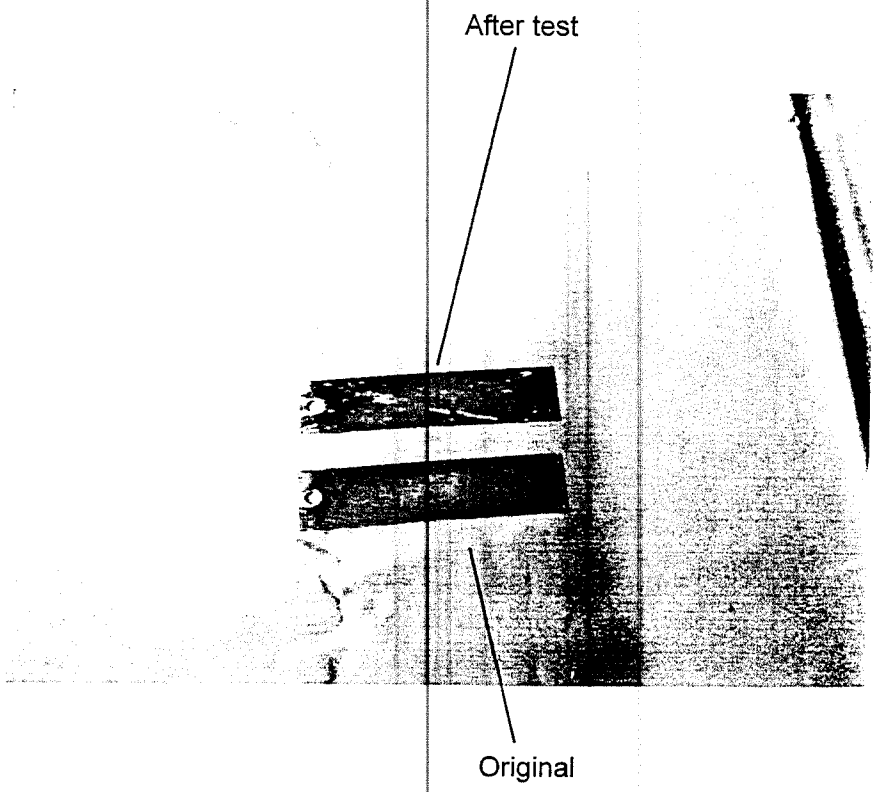
2-1)Chromate treatment



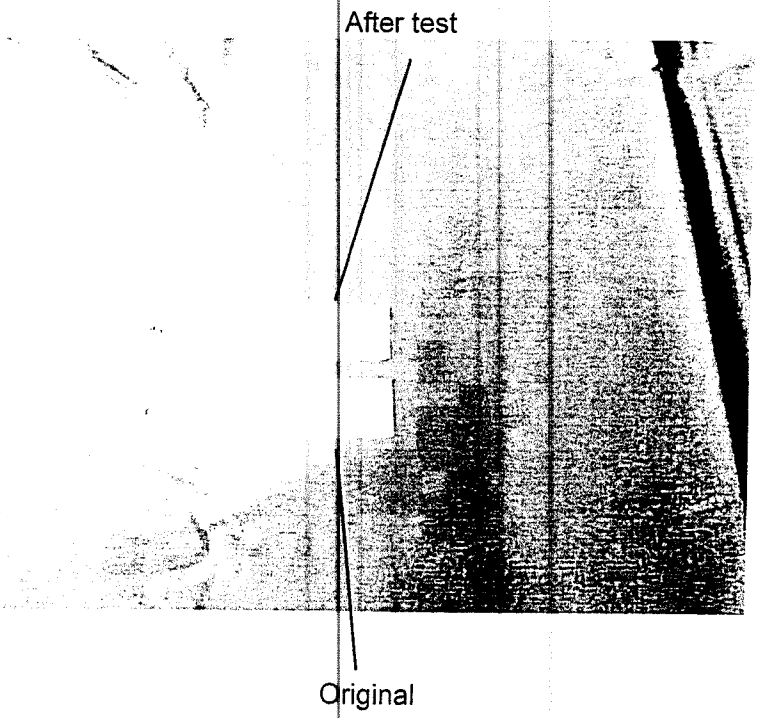
2-2)Baking finish with melamine



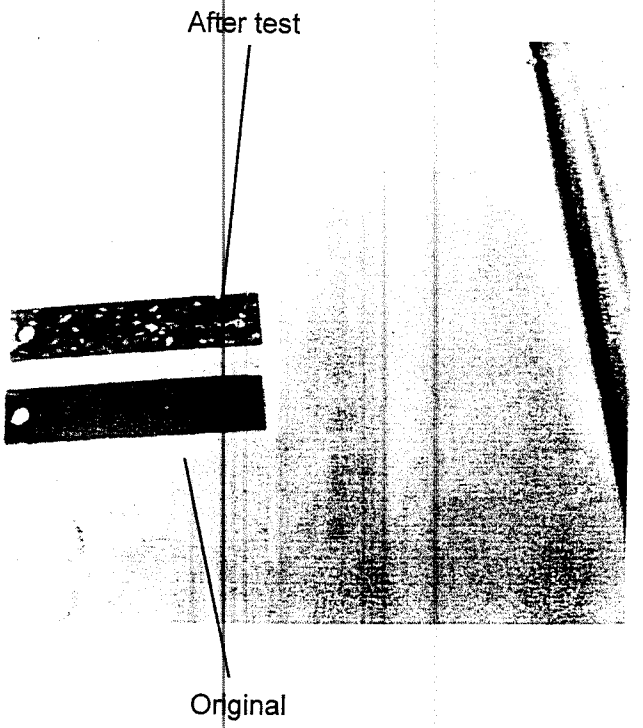
3.1)Zinc electroplating



3.2)Baking finish with melamine



4.Copper alloy plate (Nickel Plating)



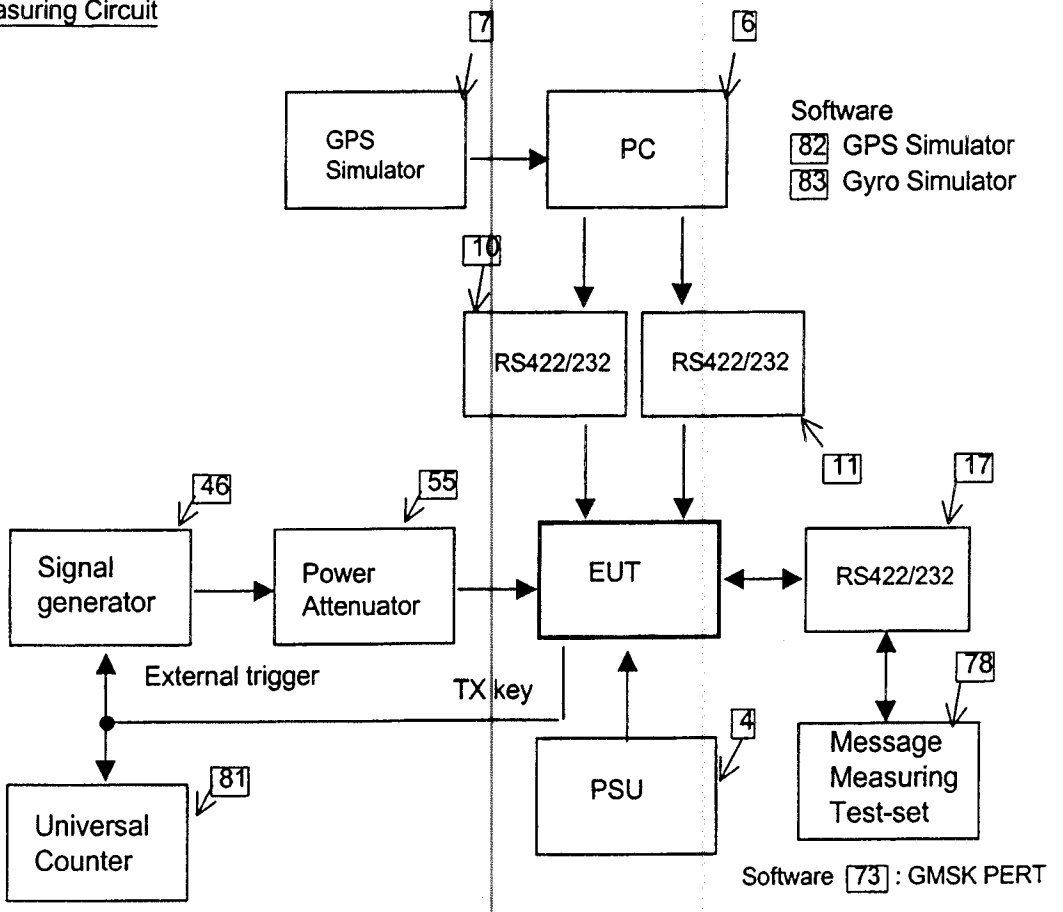
ANNEX B

Codes and Code Format for TDMA Receiver Measurements

(consisting of 2 pages)

15.3.10 Transmit to receive switching time

Measuring Circuit

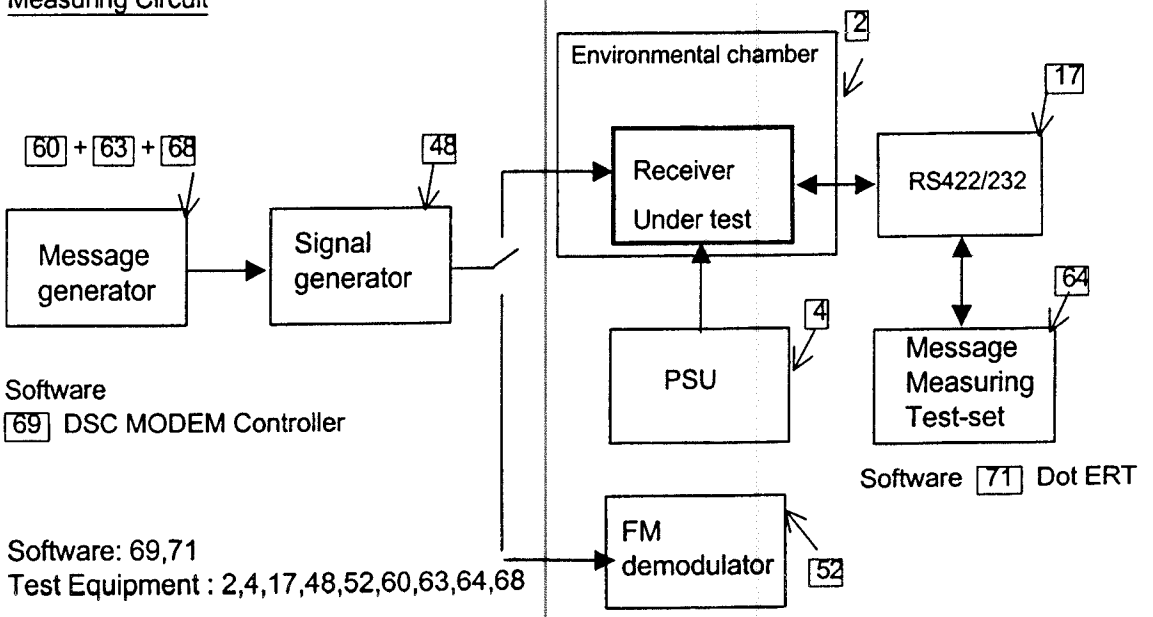


Software: 73,82,83
Test Equipment : 4,6,7,10,11,17,46,55,78

15.4 DSC Receiver

15.4.1 Maximum Sensitivity

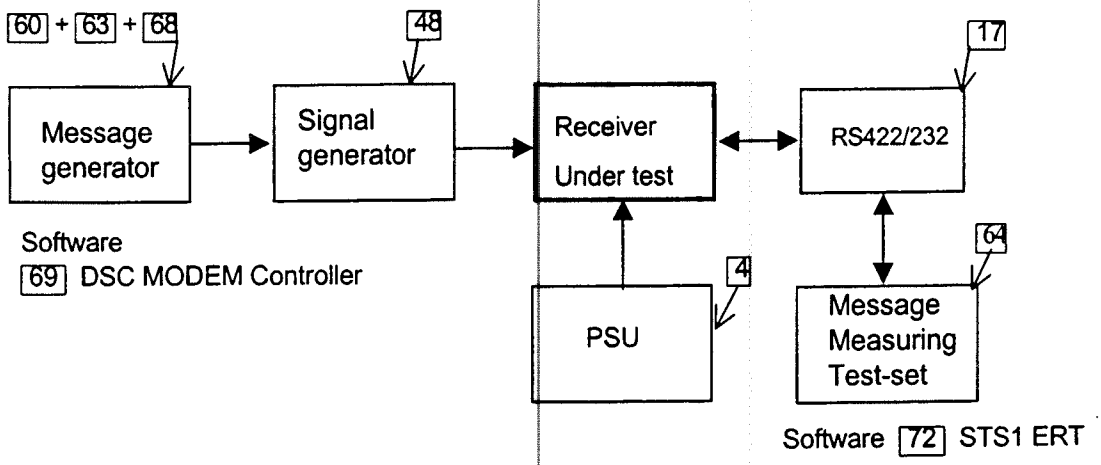
Measuring Circuit



Software: 69,71
Test Equipment : 2,4,17,48,52,60,63,64,68

15.4.2 Error behaviour at high levels

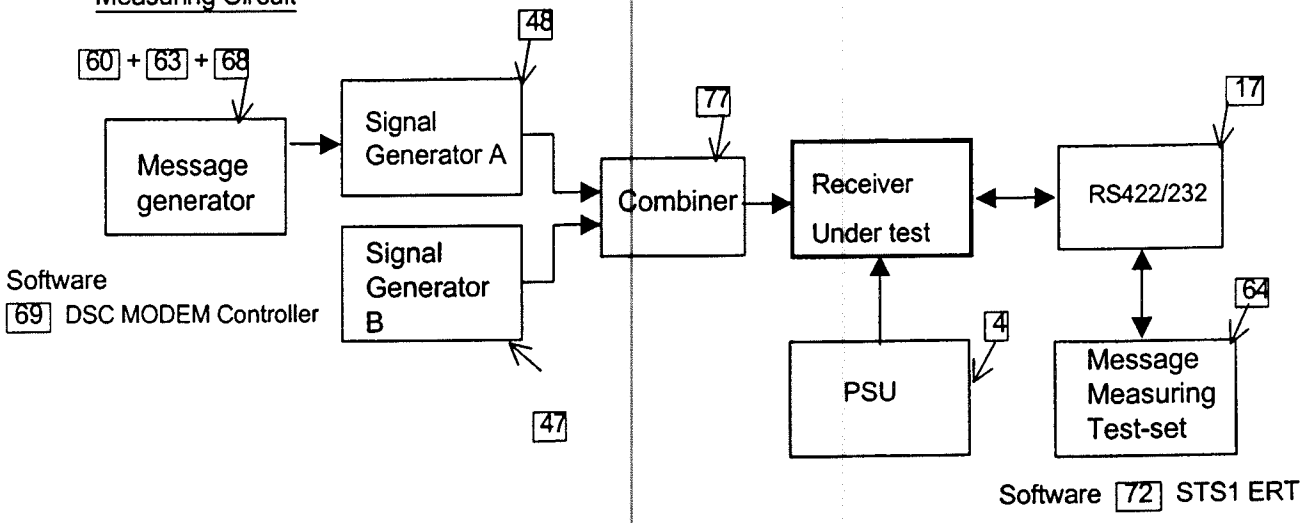
Measuring Circuit



Software: 69,72
Test Equipment : 4,17,48,60,63,64,68

15.4.3 Co-channel rejection

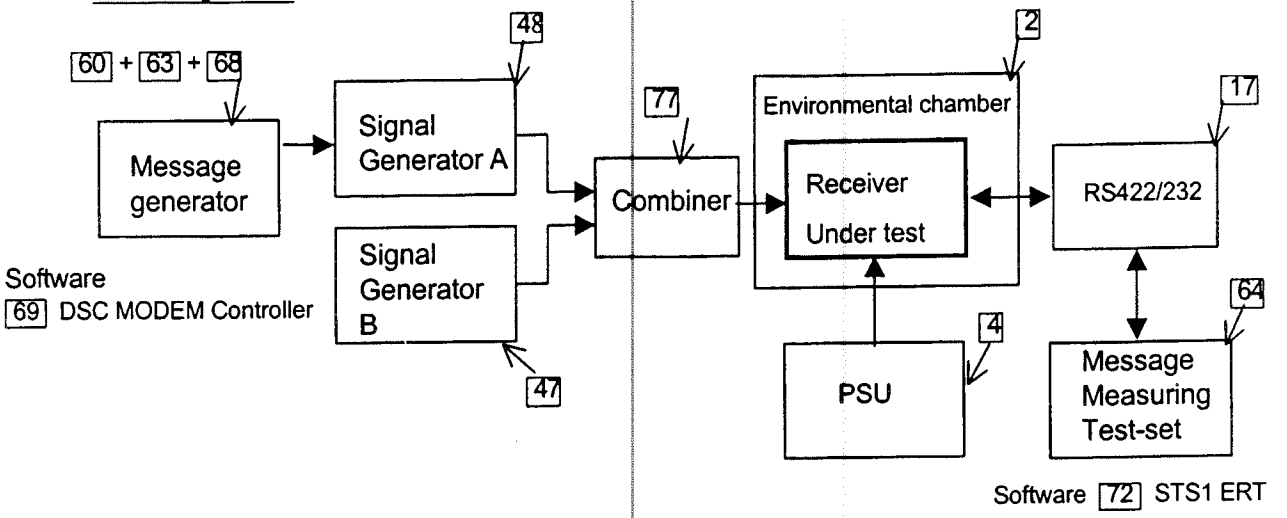
Measuring Circuit



Software: 69,72
Test Equipment : 4,17,47,48,60,63,64,68,77

15.4.4 Adjacent channel selectivity

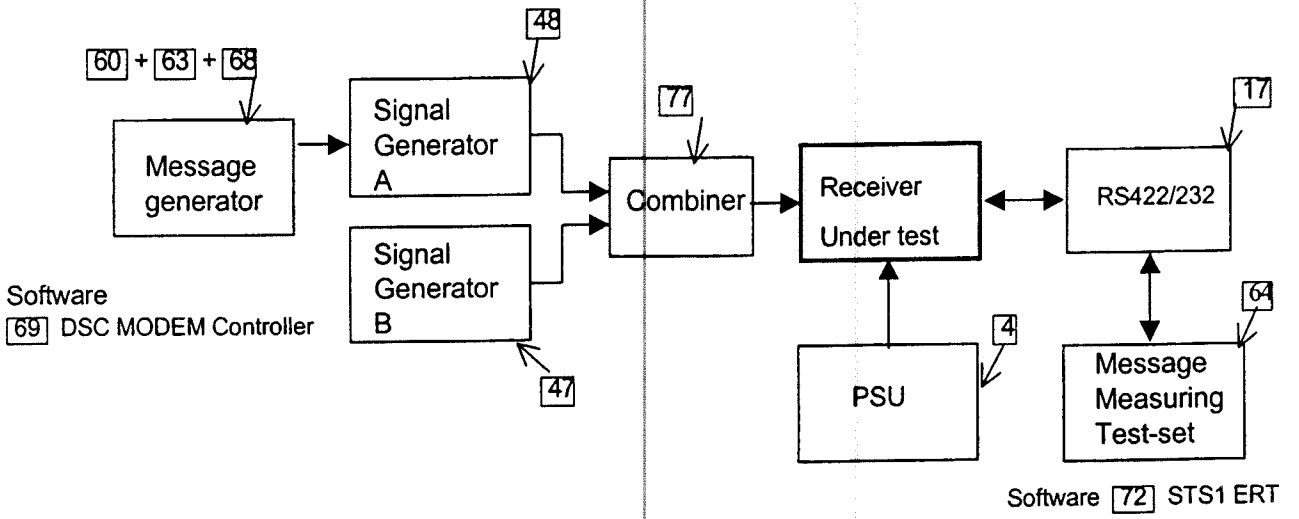
Measuring Circuit



Software: 69,72
Test Equipment : 2,4,17,47,48,60,63,64,68,77

15.4.5 Spurious response rejection

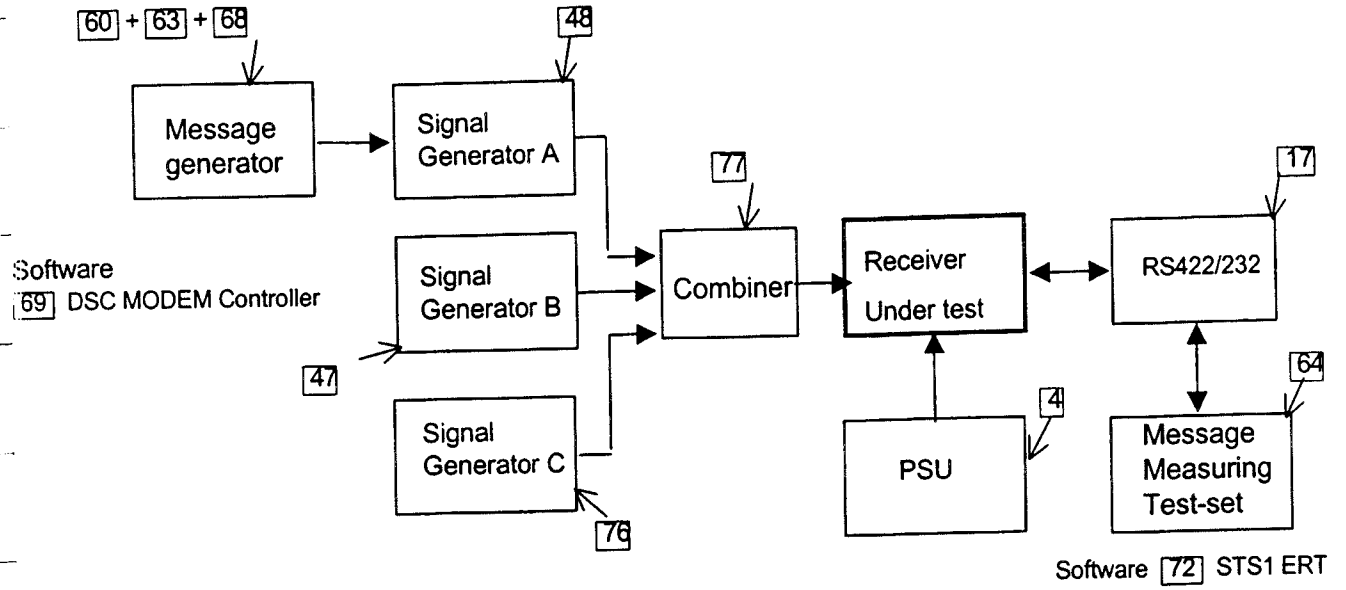
Measuring Circuit



Software: 69,72
Test Equipment : 4,17,47,48,60,63,64,68,77

15.4.6 Intermodulation response rejection

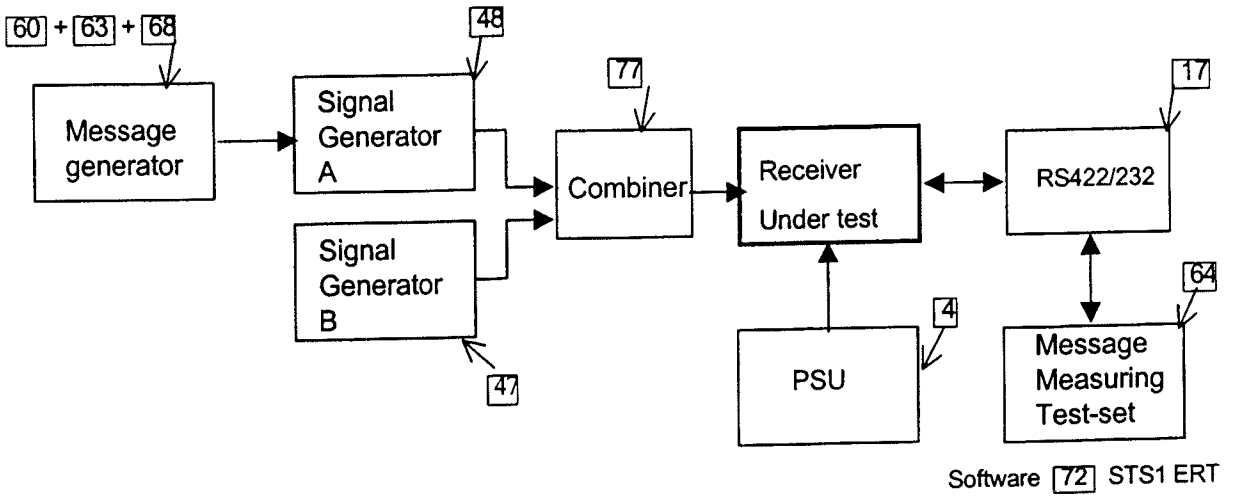
Measuring Circuit



Software: 69,72
Test Equipment : 4,17,47,48,60,63,64,68,76,77

15.4.7 Blocking or desensitisation

Measuring Circuit

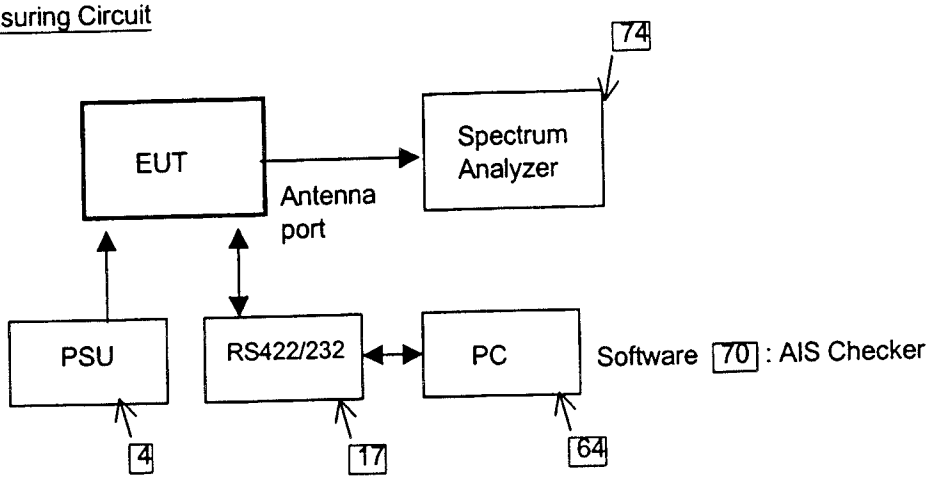


Software: 69,72
Test Equipment : 4,17,47,48,60,63,64,68,77

15.5 Conducted spurious emissions conveyed to the antenna

15.5.1 Spurious emissions from the receiver

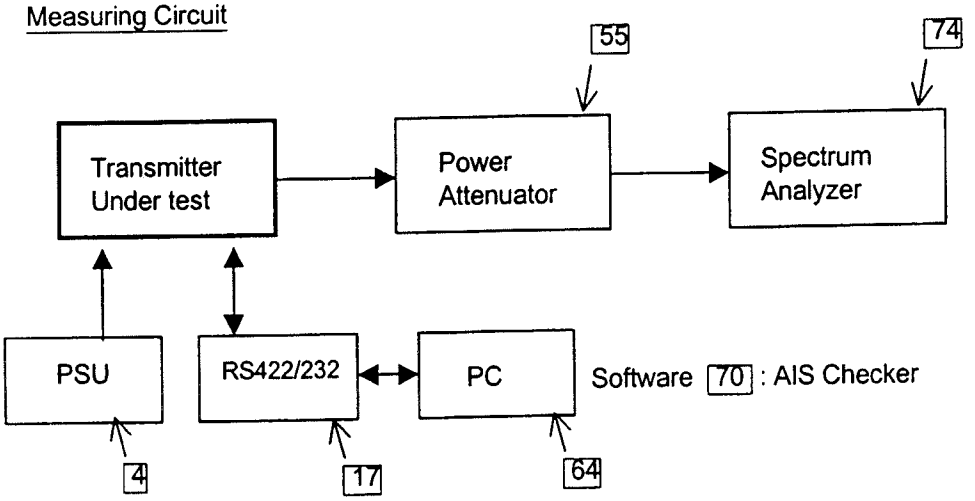
Measuring Circuit



Software: 70
Test Equipment : 4,17,64,74

15.5.2 Spurious emissions from the transmitter

Measuring Circuit



Software: 70
Test Equipment : 4,17,55,64,74

Codes and Code Format for TDMA Receiver Measurements

1. Specification Codes for IEC61993-2 TDMA Receiver Measurements (15.3 etc).

1) Two packets pattern
2) Data field is "10101010..." or "110011001100..."
3) Broadcast binary message

ITU 3.3.8.2.6 Message 8: Binary Broadcast Message TABLE 22

Parameter	Number of bits	Description		
Message ID	6	Identifier for message ;always 8		
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to 3.3.8.2.1.1		
Source ID	30	MMSI number of source station		
Spare	2	Not used. Should be set to zero		
Binary Data	Max 968	Application Identifier	16 bits	Should be as described in 3.3.8.2.4.1
		Application Data	Max 952 bits	Application specific data
Total Number of bits	Max 1008	Occupies 1 to 5 slots		

1.1 "0101"

Binary data field should be "0000" pattern before NRZI conversion, this becomes "0101" pattern after NRZI conversion.

Message ID	6	001000
Repeat Indicator	2	00
Source ID	30	0000 0000 0000 0000 0000 0000 0000 00
Spare	2	00
Binary data		
Application Identifier	16	0000 0000 0100 0000
Application data	80	0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
total 136		
Data(hex)		2000 0000 0000 4000 0000 0000 0000 0000 00
CRC of Data field		db14 :1101 1011 0001 0100

Data is inputted on LSB first and 8bit unit.

Before NRZI

Datafield 20 00 00 00 00 00 40 00 00 00 00 00 00 00 00 00 00

	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	27	28	29	30	31	32
1 32	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
33 64	0	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65 96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
97 128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129 160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161 192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0	0	1	0	1	0	0	0
193 224	0	1	1	1	1	1	1	0																								

After NRZI conversion (Object is 9th bit or later)

	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	27	28	29	30	31	32
1 32	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
33 64	1	1	1	1	1	1	1	0	1	0	1	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
65 96	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	1	0
97 128	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
129 160	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
161 192	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	1	0	1	0	1	0
193 224	1	1	1	1	1	1	1	0																								

1.2 "0011"
Binary data field should be "0101" pattern before NRZI conversion, this becomes "0011" pattern after NRZI conversion.

Message ID	6	001000
Repeat Indicator	2	00
Source ID	30	0101 0101 0101 0101 0101 0101 0101 01
Spare	2	00
Binary data		
Application Identifier	16	0000 0000 0100 0000
Application data	80	0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101 0101
total 136		
Data(hex)		2055 5555 5400 4055 5555 5555 5555 5555 55
CRC of Data field		691a :0110 1001 0001 1010

Before NRZI

Datafield: 20 55 55 55 54 00 40 55 55 55 55 55 55 55 55 55 55

	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	27	28	29	30	31	32
1 32	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
33 64	0	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
65 96	1	0	1	0	1	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
97 128	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
129 160	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
161 192	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	0	1	1	0	0	1	0	1	1	0	0	0
193 224	0	1	1	1	1	1	1	0																								

After NRZI conversion (Object is 9th bit or later)

	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	27	28	29	30	31	32
1 32	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
33 64	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
65 96	1	0	0	1	1	0	0	1	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
97 128	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0
129 160	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0
161 192	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
193 224	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0

ANNEX C

Test Procedures for Type Approval Testing

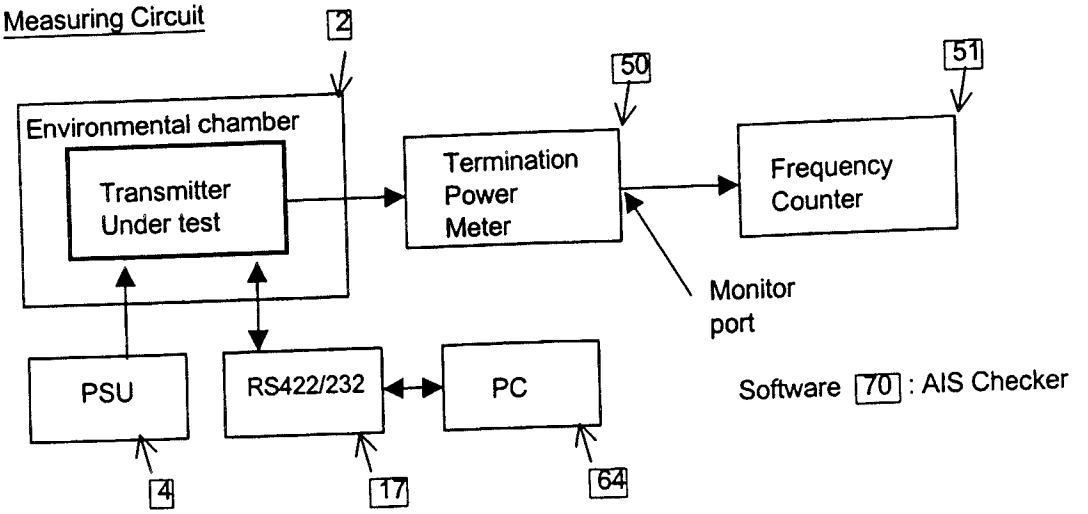
(consisting of 15 pages)

Contents for Physical Tests

15.1 TDMA Transmitter

15.1.1 Frequency Error

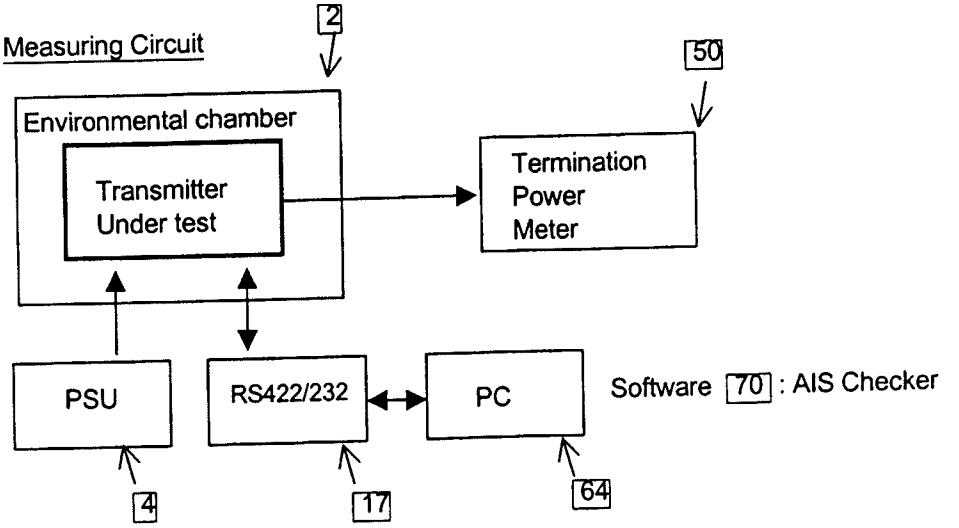
Measuring Circuit



Software: 70
Test Equipment : 2,4,17,50,51,64

15.1.2 Carrier Power

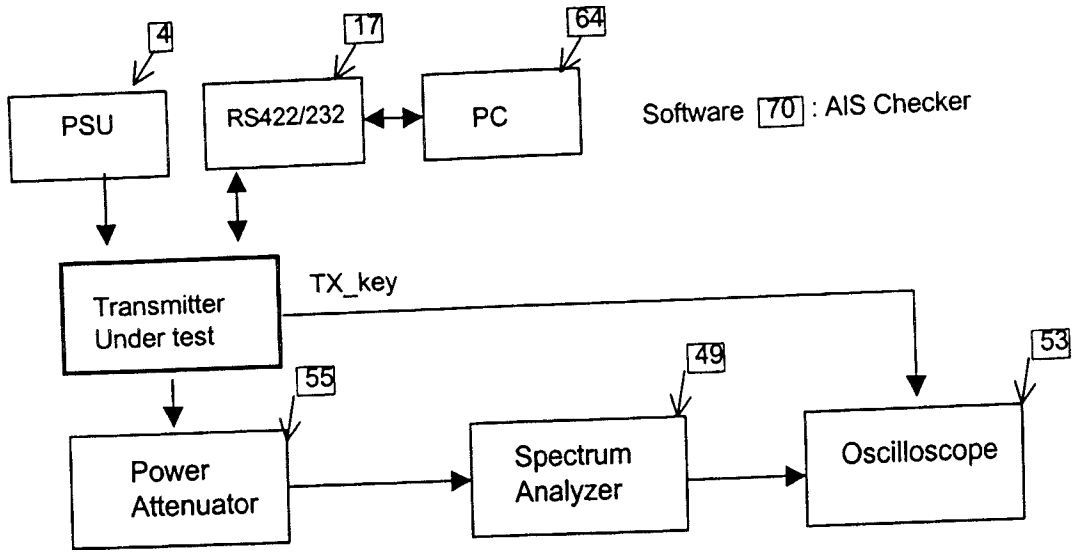
Measuring Circuit



Software: 70
Test Equipment : 2,4,17,50,64

15.1.6 Transmitter Release time

Measuring Circuit

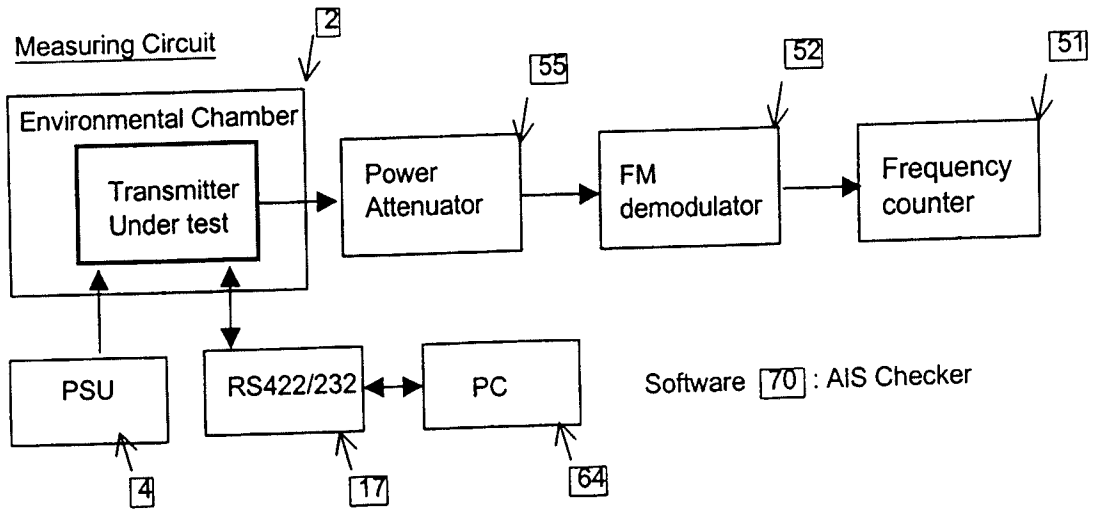


Software: 70
Test Equipment : 4,17,49,53,55,64

15.2 DSC Transmissions

15.2.1 Frequency error of the DSC Signal

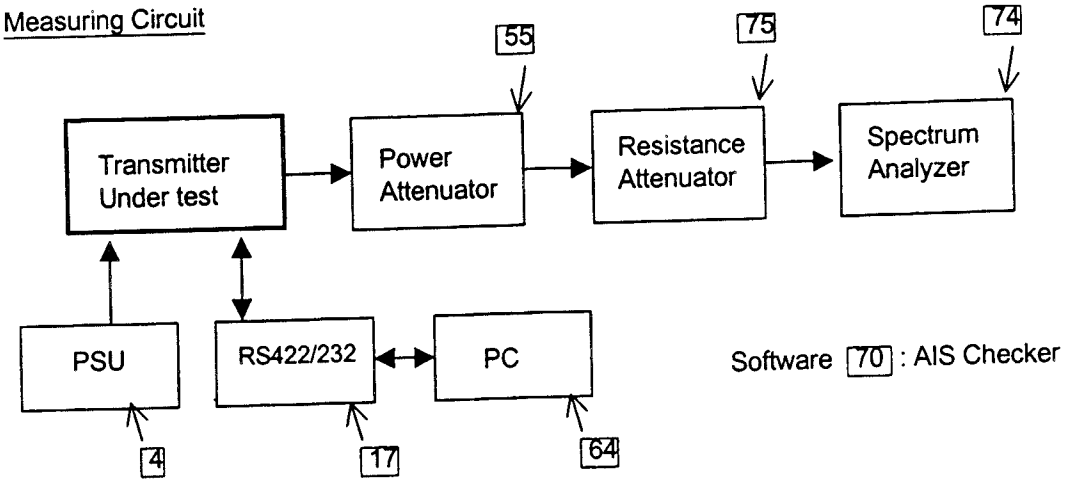
Measuring Circuit



Software: 70
Test Equipment : 2,4,17,51,52,55,64

15.1.3 Modulation spectrum 25kHz channel mode

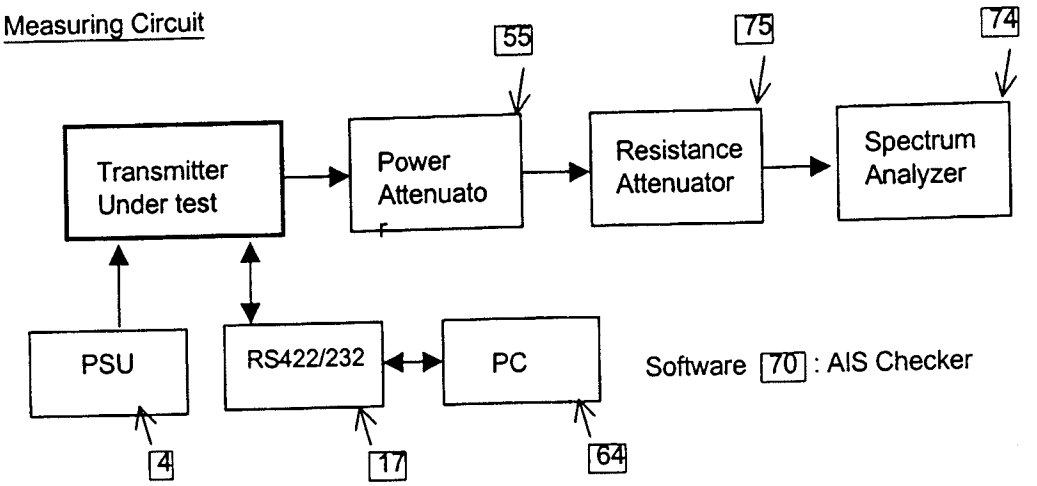
Measuring Circuit



Software: 70
Test Equipment : 4,17,55,64,74,75

15.1.4 Modulation spectrum 12.5kHz channel mode

Measuring Circuit

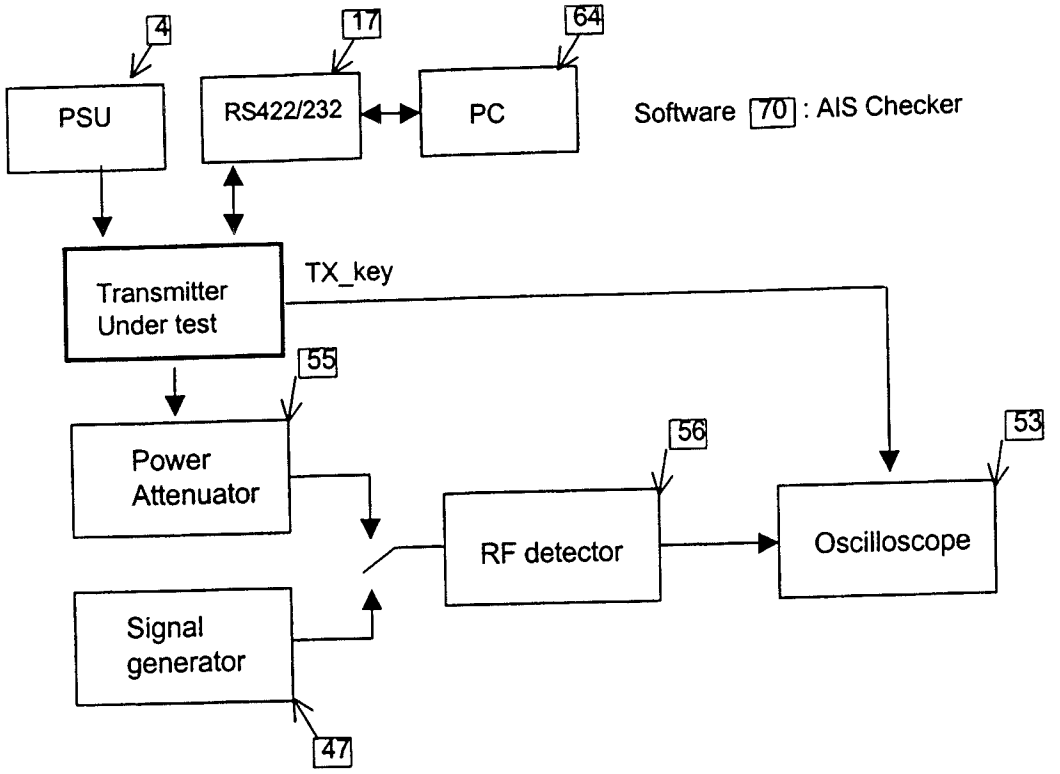


Software: 70
Test Equipment : 4,17,55,64,74,75

15.1.5 Transmitter attack time

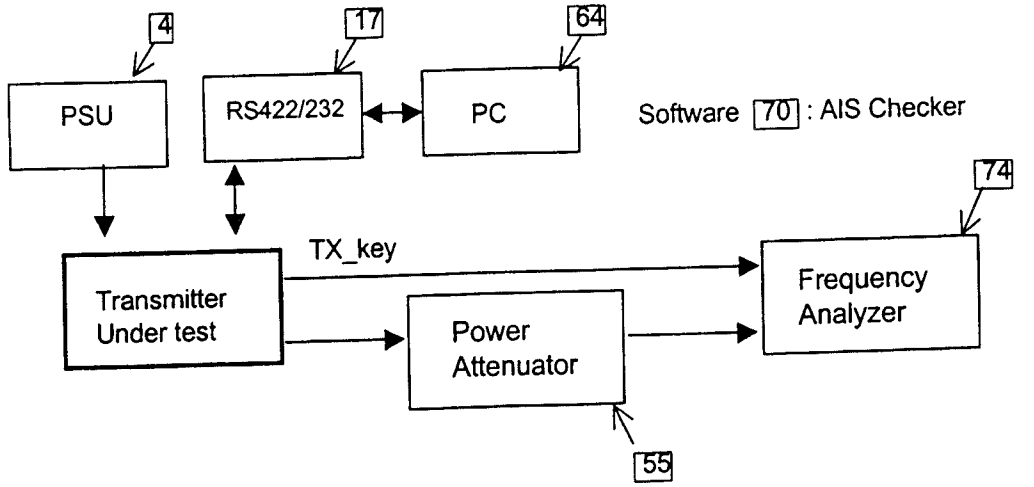
Measuring Circuit

a) Transient Power level



Software: 70
Test Equipment : 4,17,47,53,55,56,64

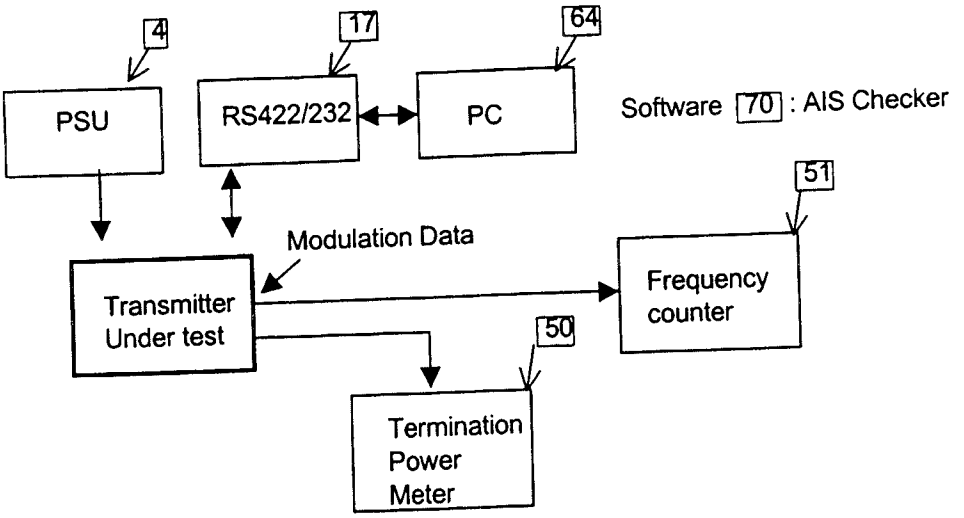
b) Carrier frequency



Software: 70
Test Equipment : 4,17,55,64,74

15.2.2 Modulation rate

Measuring Circuit

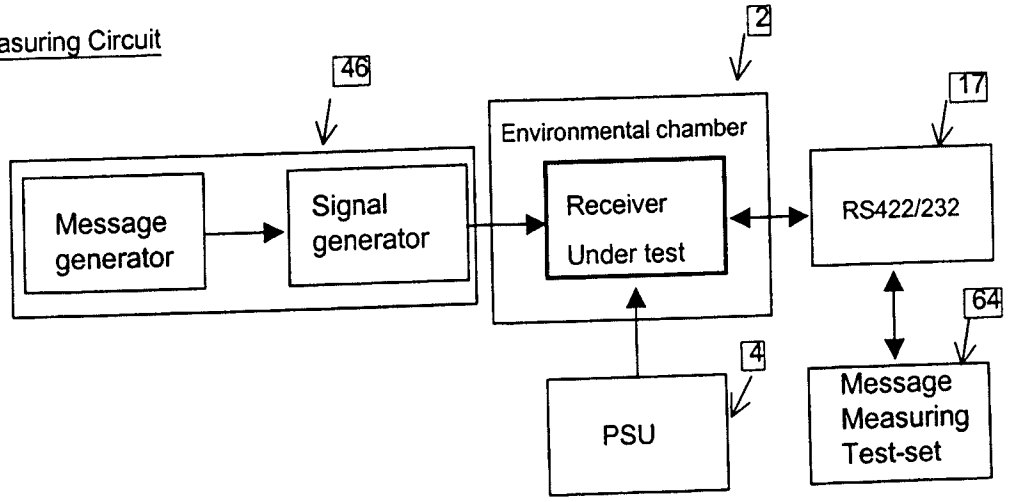


Software: 70
Test Equipment : 4,17,50,51,64

15.3 TDMA Receivers

15.3.1 Sensitivity – 25kHz operation

Measuring Circuit

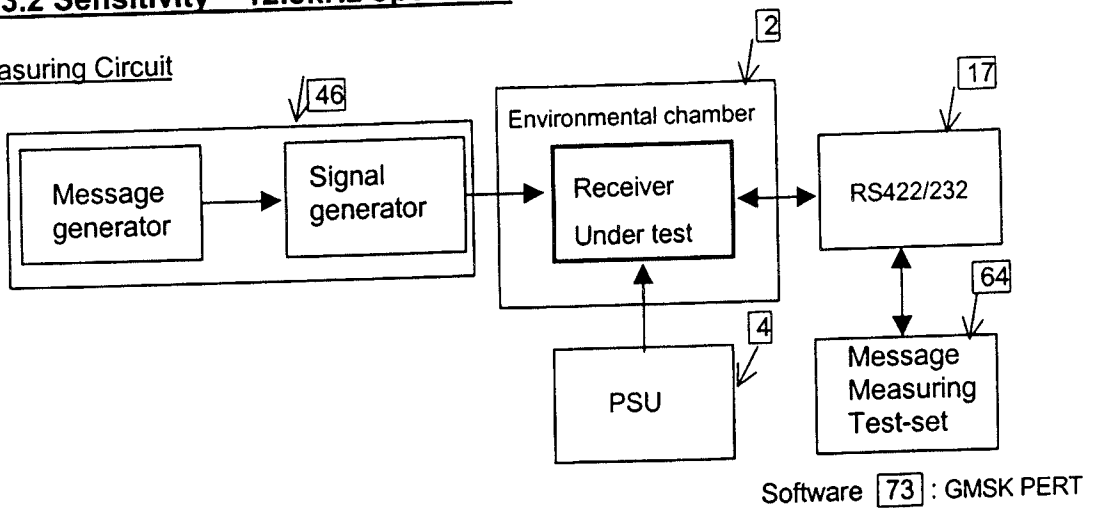


Software 73 : GMSK PERT

Software: 73
Test Equipment : 2,4,17,46,64

15.3.2 Sensitivity – 12.5kHz operation

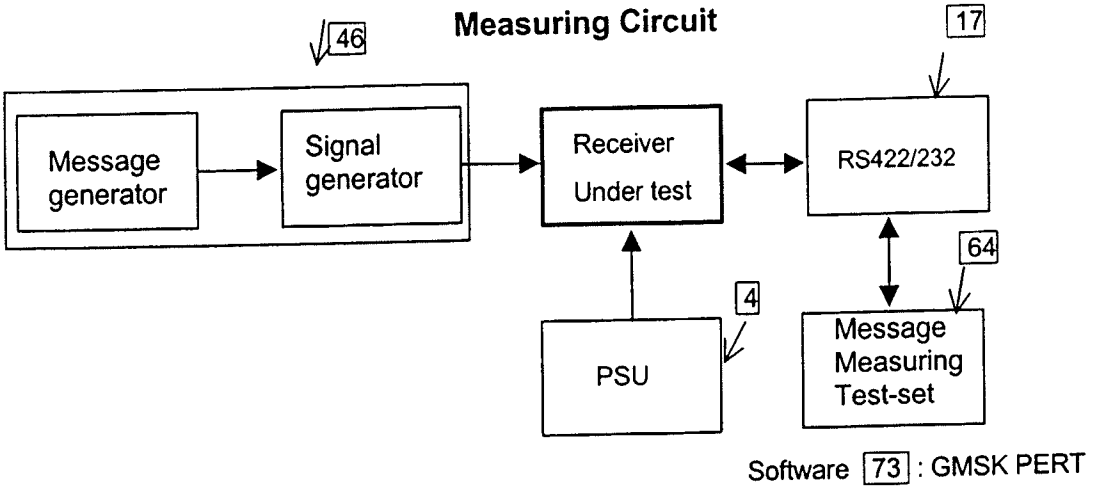
Measuring Circuit



Software 73 : GMSK PERT

Software: 73
Test Equipment : 2,4,17,46,64

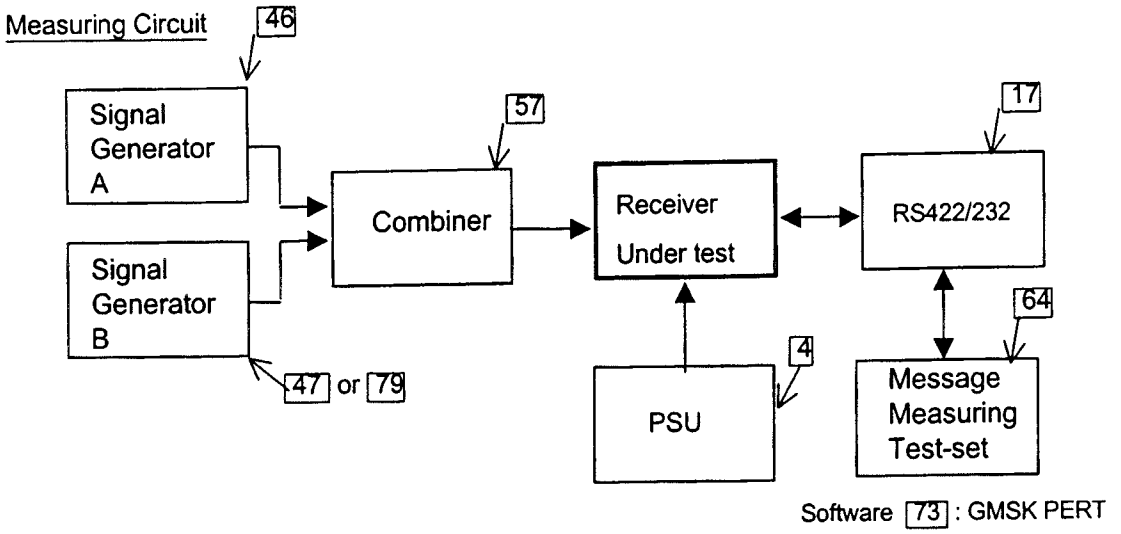
15.3.3 Error behaviour at high levels



Software 73 : GMSK PERT

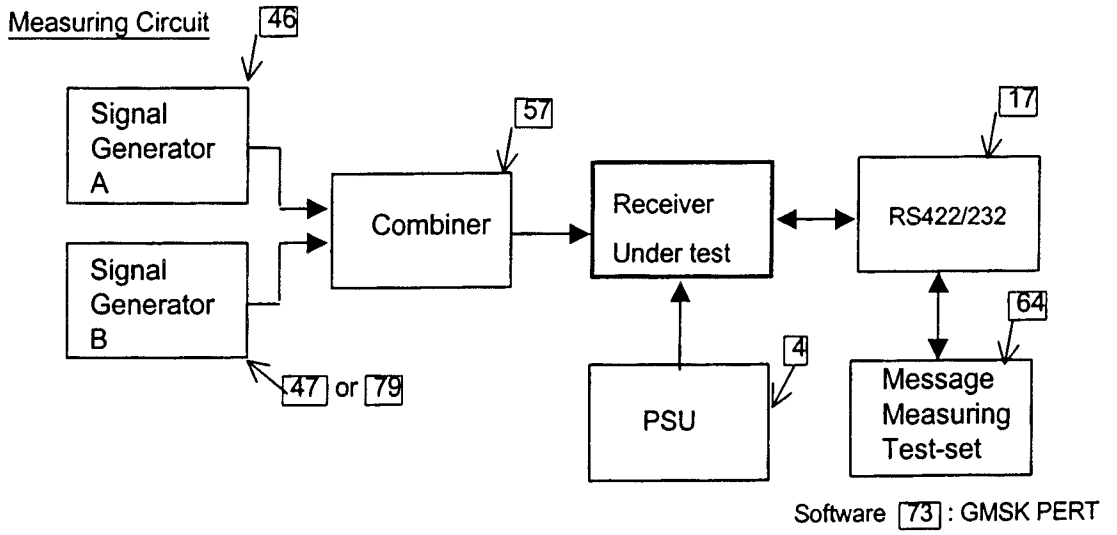
Software: 73
Test Equipment : 4,17,46,64

15.3.4 Co-channel rejection – 25kHz operation



Software: 73
Test Equipment : 4,17,46,47,57,64,79

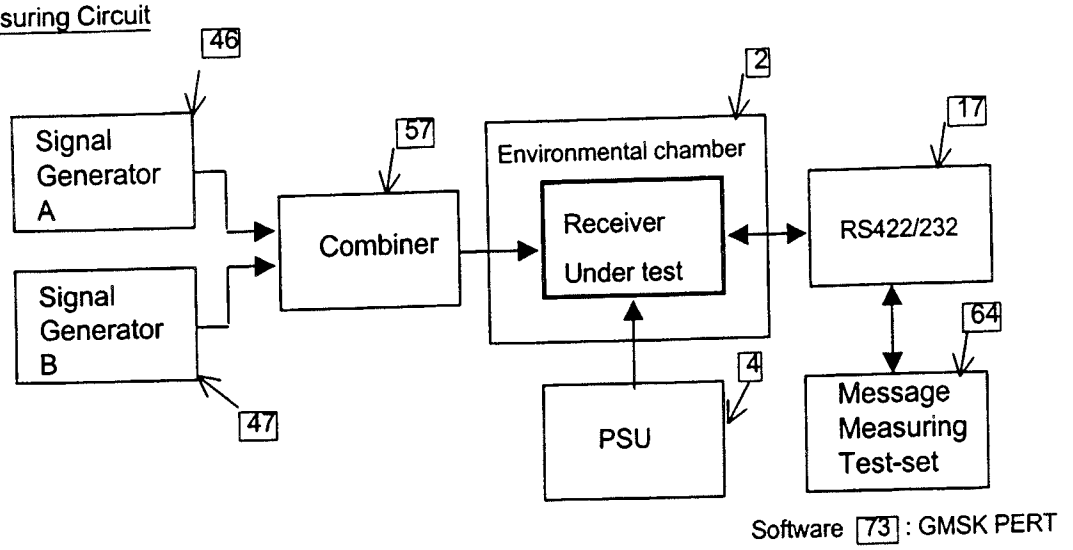
15.3.5 Co-channel rejection – 12.5kHz operation



Software: 73
Test Equipment : 4,17,46,47,57,64,79

15.3.6 Adjacent channel selectivity – 25kHz operation

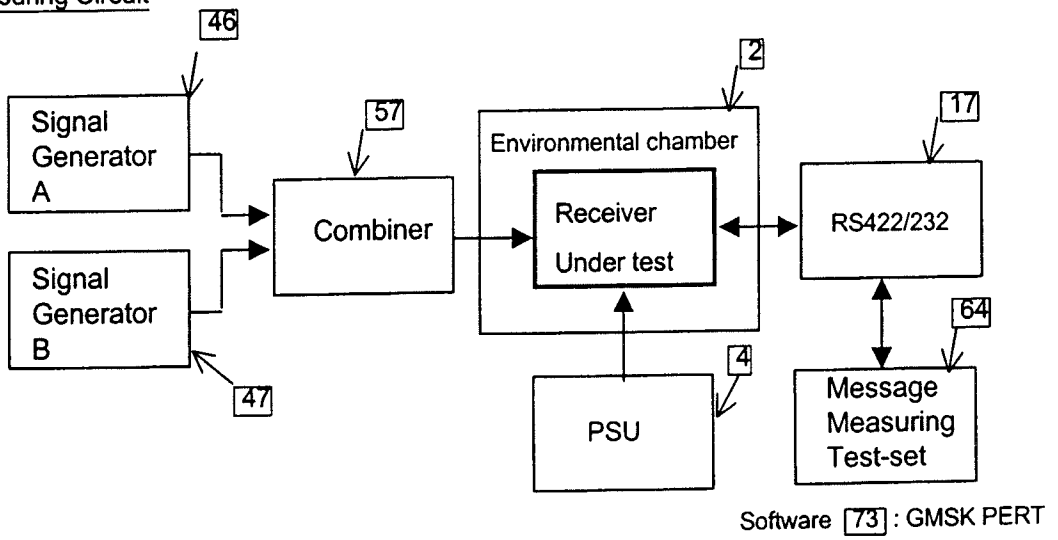
Measuring Circuit



Software: 73
Test Equipment : 2,4,17,46,47,57,64

15.3.7 Adjacent channel selectivity – 12.5kHz operation

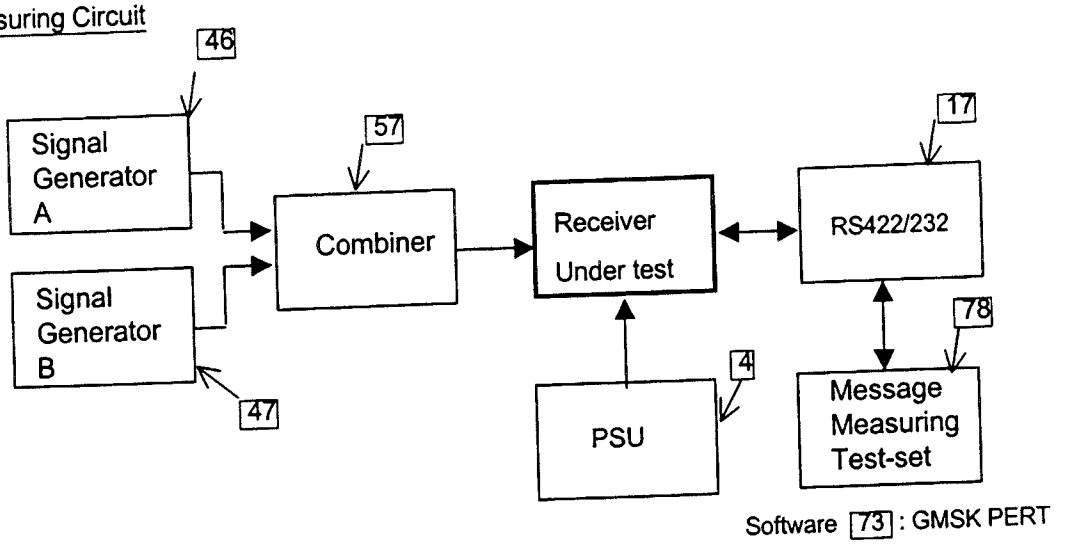
Measuring Circuit



Software: 73
Test Equipment : 2,4,17,46,47,57,64

15.3.8 Spurious response rejection

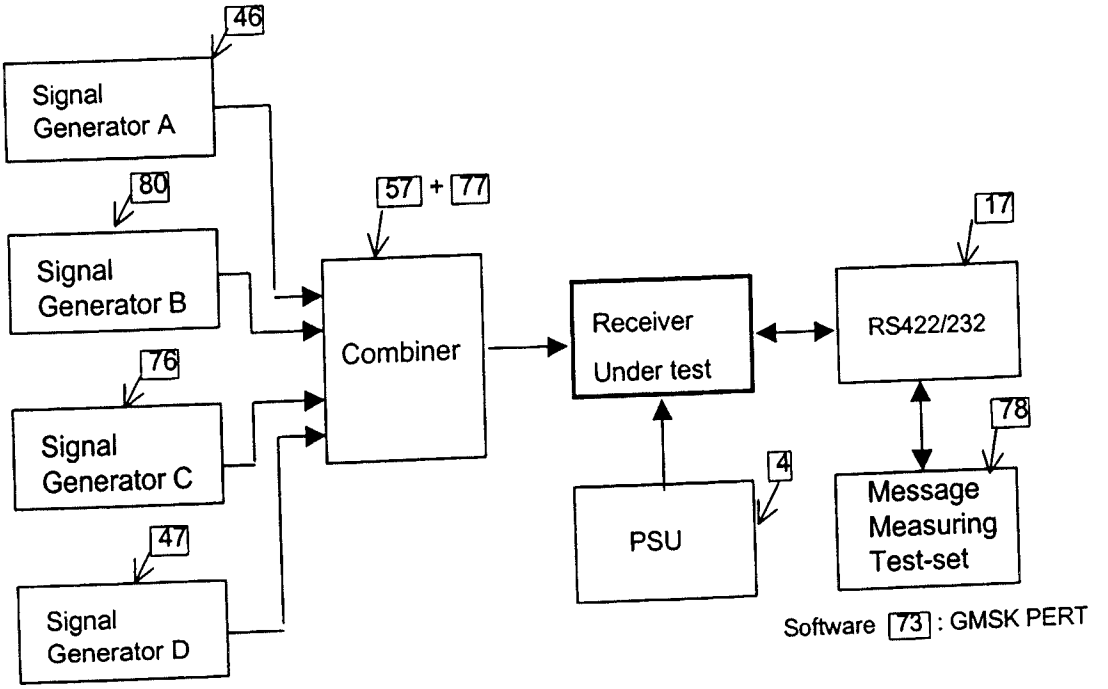
Measuring Circuit



Software: 73
Test Equipment : 4,17,46,47,57,78

15.3.9 Intermodulation response rejection and blocking

Measuring Circuit



Software: 73
Test Equipment : 4,17,46,47,57,76,77,78,80