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ABSTRACT

This volume of D290-75303-2 contains shock spectra generated by activation of the separation devices between IUS stage 1 and IUS stage 2. The IUS Qualification Test Vehicle (QTV) was the test article. Test shock spectra are presented for IUS components and component design requirements.

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KEY WORDS

IUS
pyroshock
qualification
shock spectra
test data

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2-A Comparison of Component CQT Requirement with
QTV I/II Staging Pyroshock Environment

7

Figure No.

2-1 thru 2-216 Comparison of Shock Environment with CQT
Requirements

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ACRONYMS

AFTA	Aft Frame Tilt Actuator
ASE	Airborne Support Equipment
CI	Critical Item
CIU	Communication Interface Unit
CQT	Component Qualification Test
DOD	Department of Defense
DTV	Development Test Vehicle
EMU	Environmental Measurement Unit
ESS	Equipment Support Section
FTS	Flight Termination System
IDA	Isolation Diode Assembly
IUS	Inertial Upper Stage
PCP	Power Control Panel
PCU	Power Control Unit
PDU	Power Distribution Unit
PRLA	Payload Retention Latch Assembly
PSD	Power Spectral Density
PSU	Pyro Switching Unit
PTU	Power Transfer Unit
P95/50	Probability of 95% with 50% Confidence
QTV	Qualification Test Vehicle
RBA	Resistor Board Assembly
RCS	Reaction Control System
REM	Rocket Engine Module
RIMU	Redundant Inertial Measurement Unit
S&A	Safe and Arm
SCU	Signal Conditioning Unit
SGLS	Space Ground Link Subsystem
SIU	Signal Interface Unit
SRM	Solid Rocket Motor
STS	Space Transportation System (Space Shuttle)
T34D	Titan Launch Vehicle Configuration Used for IUS Launch
TIU	Titan Interface Unit
TVC	Thrust Vector Control
WBDI	Wide Band Data Interleaver

1.0 INTRODUCTION

This document contains shock spectra obtained from accelerometer outputs measured during separation of IUS stage 1 and stage 2. The IUS qualification test vehicle (QTV) was the test article. Forty-three accelerometers were used to measure the shock environment at the base of 16 components. Measurements were recorded during 3 separation events. Comparisons of the measured shock spectra and the component design requirements are shown on the data plots. The tests were conducted in November-December 1981.

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2.0 QTV I/II STAGING SHOCK

The QTV I/II staging is accomplished with explosive nuts at 8 longeron locations. Each location contains two nuts, one on each side of the interface. The separation sequence consists of firing the aft separation nut, which is free and moves into a nut catcher, followed 40 milliseconds later by firing the fwd nut (which is fixed). A single stud between the two nuts moves aft into the nut catcher when the fwd nut is fired. Thus, ESS components experience two pyroshock events, separated by 40 milliseconds, as a result of I/II staging.

A series of three separation tests were conducted of the I/II staging event. Shock measurements were recorded on ESS equipment and at the S/C interface. Test data, results and conclusions from the QTV I/II staging test are contained in Reference 5.1.

For ease of reference in support of Volume I analyses, this document (Volume II) contains component shock environment comparisons with component qualification requirements. Table 2-A contains a list of components and the figure numbers of shock spectra comparisons with qualification test requirements.

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5.0 REFERENCES

- 5.1 22B5-005R-1, "Pyroshock - Staging/Separation QTV", dated 12/2/81.
- 5.2 REM 22-16-1, "Qualification Report for Rocket Engine Module", dated September 1980, (Hamilton Standard)
- 5.3 D80-29, "Qualification Test Report for the IUS Computer Unit", dated May 1980, (Delco)
- 5.4 "Inertial Upper Stage Safe/Arm Device Qualification Test Report P/N 50-9758", dated 30 September 1980, (Unidynamics Phoenix, Inc.)

6.1
D290-75303-2 Vol. II

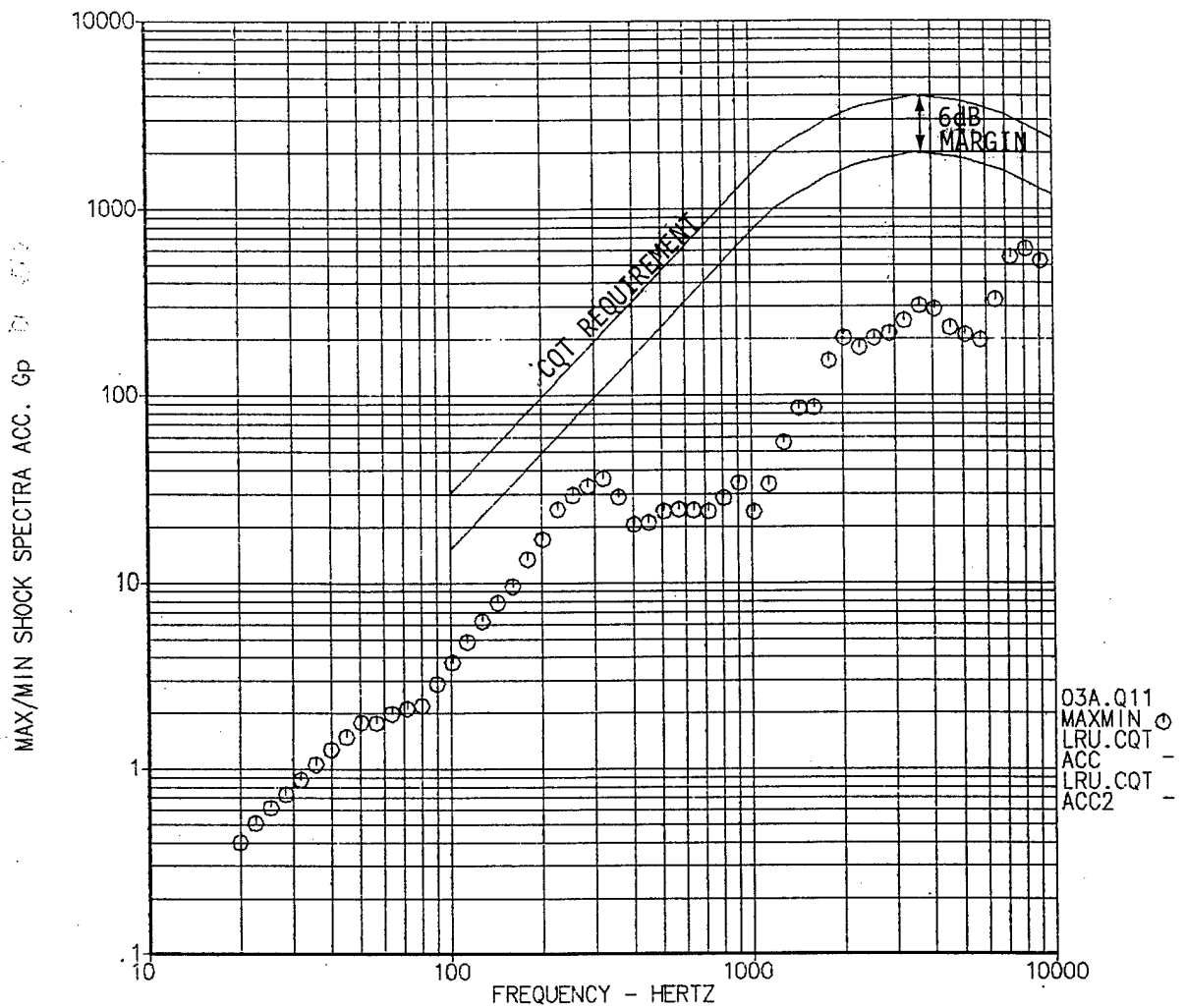
Table 2-A
COMPARISON OF COMPONENT CQT REQUIREMENT WITH
QTV I/II STAGING PYROSHOCK ENVIRONMENT

COMPONENT	ACC. NO.	FIGURE NUMBER					
		TEST 1		TEST 2		TEST 3	
		PULSE #1	PULSE #2	PULSE #1	PULSE #2	PULSE #1	PULSE #2
RIMU	3A	2-1	2-2	2-7	2-8	2-13	2-14
	R	2-3	2-4	2-9	2-10	2-15	2-16
	T	2-5	2-6	2-11	2-12	2-17	2-18
REM	4A	2-19	2-20	2-25	2-26	2-31	2-32
	R	2-21	2-22	2-27	2-28	2-33	2-34
	T	2-23	2-24	2-29	2-30	2-35	2-36
Computer	5A	2-37	2-38	2-41	2-42	2-45	2-46
	71R	2-39	2-40	2-43	2-44	2-47	2-48
ESS S&A	8A	2-49	2-50	2-53	2-54	2-57	2-58
	R	2-51	2-52	2-55	2-56	2-59	2-60
Transponder "B"	10A			2-61	2-62	2-67	2-68
	R			2-63	2-64	2-69	2-70
	T			2-65	2-66	2-71	2-72
SCU	11A	2-73	2-74	2-79	2-80	2-85	2-86
	R	2-75	2-76	2-81	2-82	2-87	2-88
	T	2-77	2-78	2-83	2-84	2-89	2-90
PDU @ 279°	12A	2-91	2-92				
	R	2-93	2-94				
	T	2-95	2-96				
SIU	15A			2-97	2-98	2-103	2-104
	R			2-99	2-100	2-105	2-106
	T			2-101	2-102	2-107	2-108
PTU	17A	2-109	2-110	2-115	2-116		
	R	2-111	2-112	2-117	2-118	2-121	2-122
	T	2-113	2-114	2-119	2-120	2-123	2-124
Decryptor "A"	18A			2-125	2-126	2-131	2-132
	R			2-127	2-128	2-133	2-134
	T			2-129	2-130	2-135	2-136

Table 2-A (Cont.)
 COMPARISON OF COMPONENT CQT REQUIREMENT WITH
 QTV I/II STAGING PYROSHOCK ENVIRONMENT

COMPUTER	ACC. NO.	FIGURE NUMBER					
		TEST 1		TEST 2		TEST 3	
		PULSE #1	PULSE #2	PULSE #1	PULSE #2	PULSE #1	PULSE #2
PSU	19A	2-137	2-138	2-143	2-144	2-149	2-150
	R	2-139	2-140	2-145	2-146	2-151	2-152
	T	2-141	2-142	2-147	2-148	2-153	2-154
Pwr Amp "B"	40A	2-155	2-156	2-161	2-162	2-167	2-168
	R	2-157	2-158	2-163	2-164	2-169	2-170
	T	2-159	2-160	2-165	2-166	2-171	2-172
RF Switch	44A	2-173	2-174	2-179	2-180	2-185	2-186
	R	2-175	2-176	2-181	2-182	2-187	2-188
	T	2-177	2-178	2-183	2-184	2-189	2-190
PDU @ 291°	55A	2-191	2-192				
	R	2-193	2-194				
DC/DC Converter	72A	2-195	2-196	2-199	2-200	2-203	2-204
	R	2-197	2-198	2-201	2-202	2-205	2-206
Pwr Amp "A"	73A	2-207	2-208			2-213	2-214
	R	2-209	2-210	2-211	2-212	2-215	2-216

FIGURE 2-1
SHOCK SPECTRA (Q = 10)
H03AQ QTV PYROSHOCK TEST 1 PULSE 1

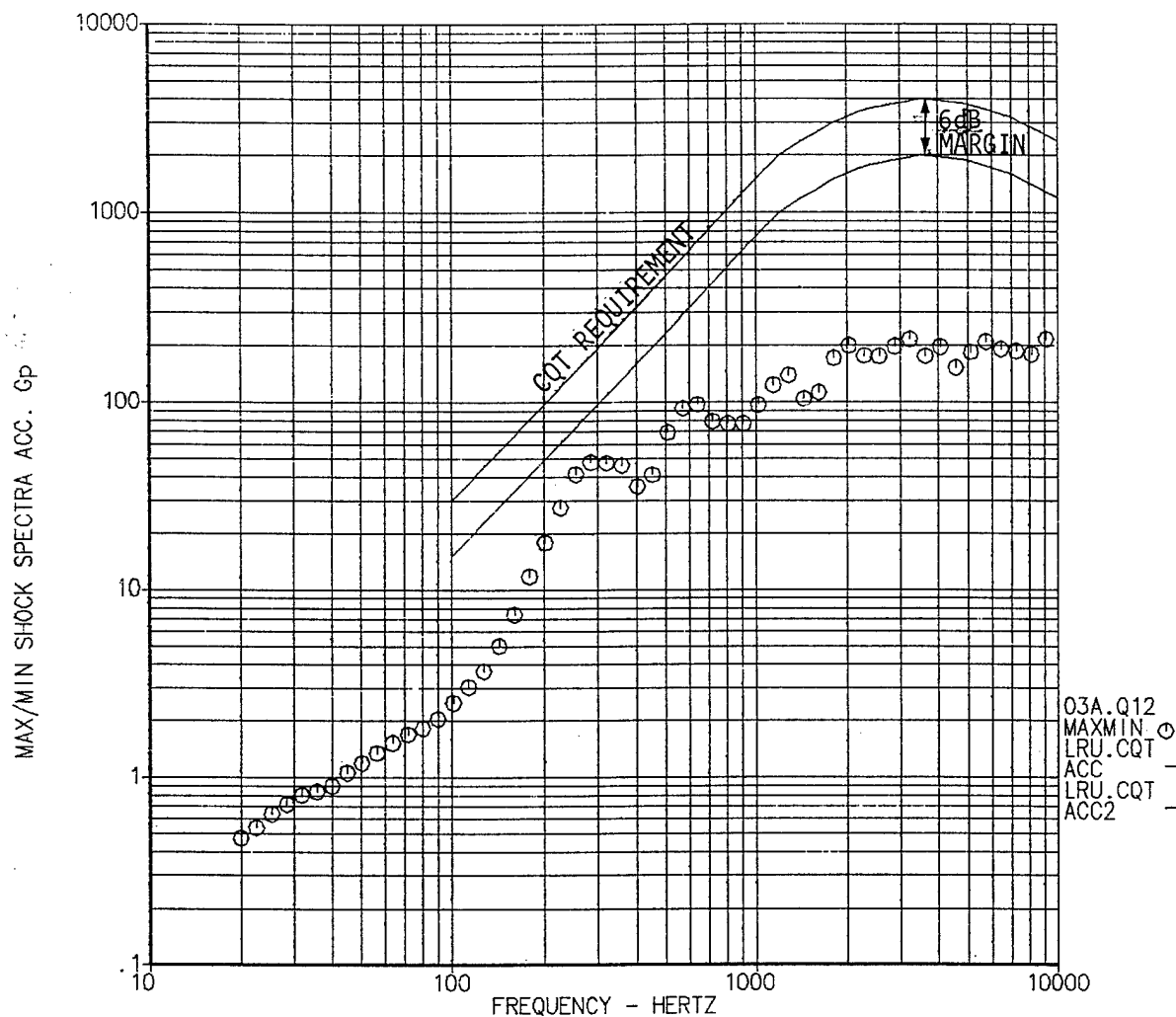


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FIGURE 2-2
SHOCK SPECTRA (Q = .10)
H03AQ QTV PYROSHOCK TEST 1 PULSE 2

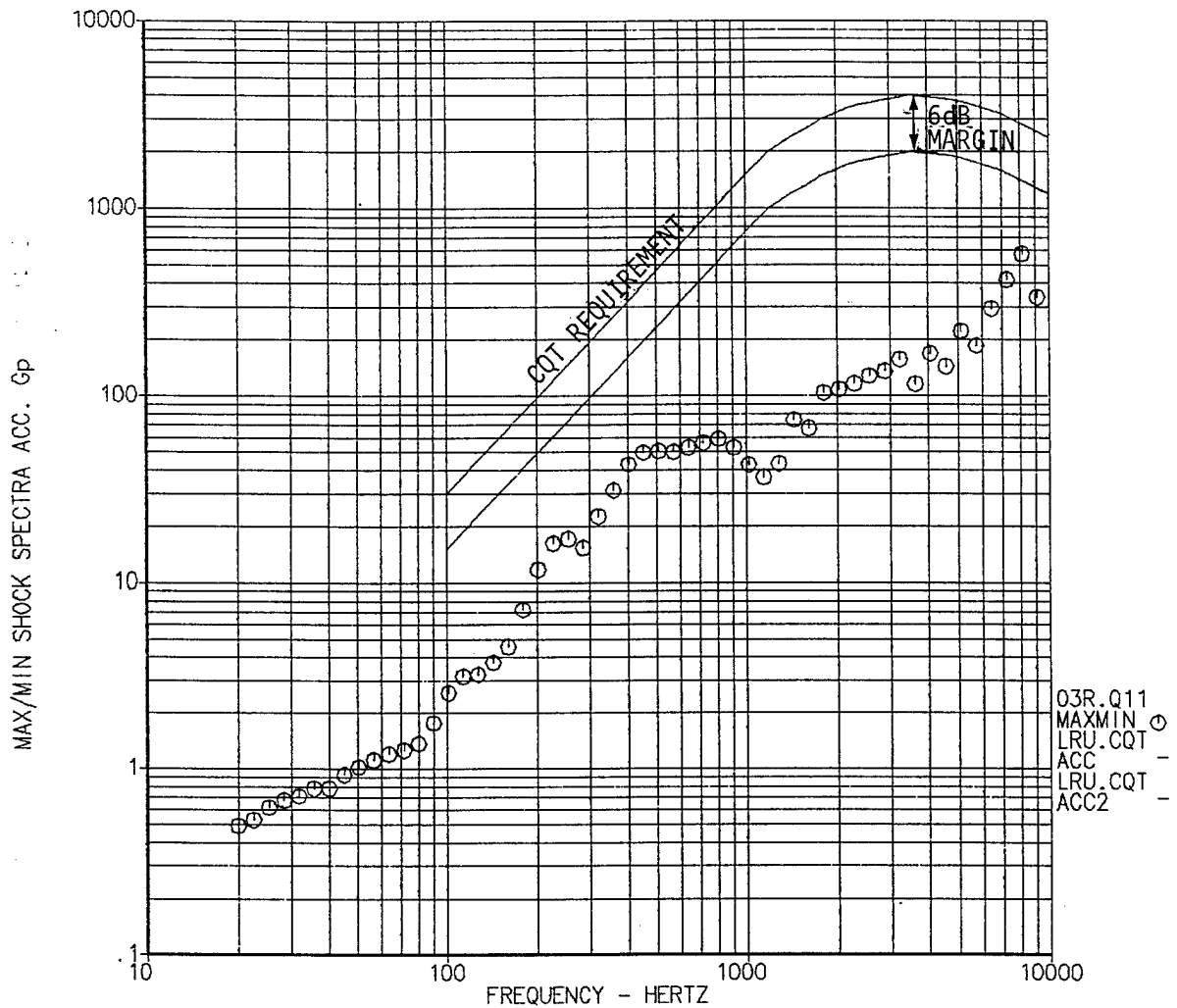


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FIGURE 2-3
SHOCK SPECTRA (Q = 10)
H03RQ QTV PYROSHOCK TEST 1 PULSE 1

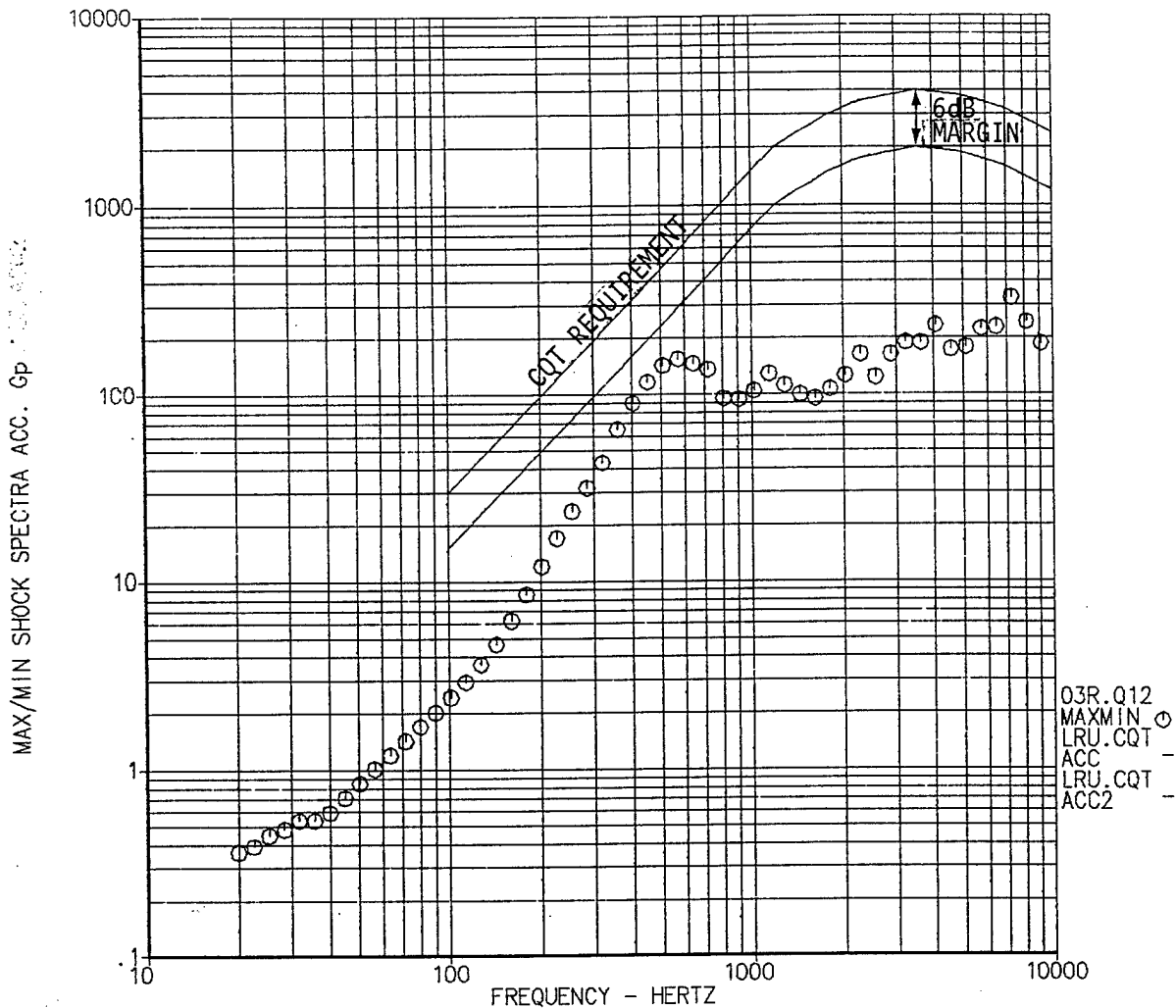


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FIGURE 2-4
SHOCK SPECTRA ($Q = .10$)
H03RQ QTV PYROSHOCK TEST 1 PULSE 2

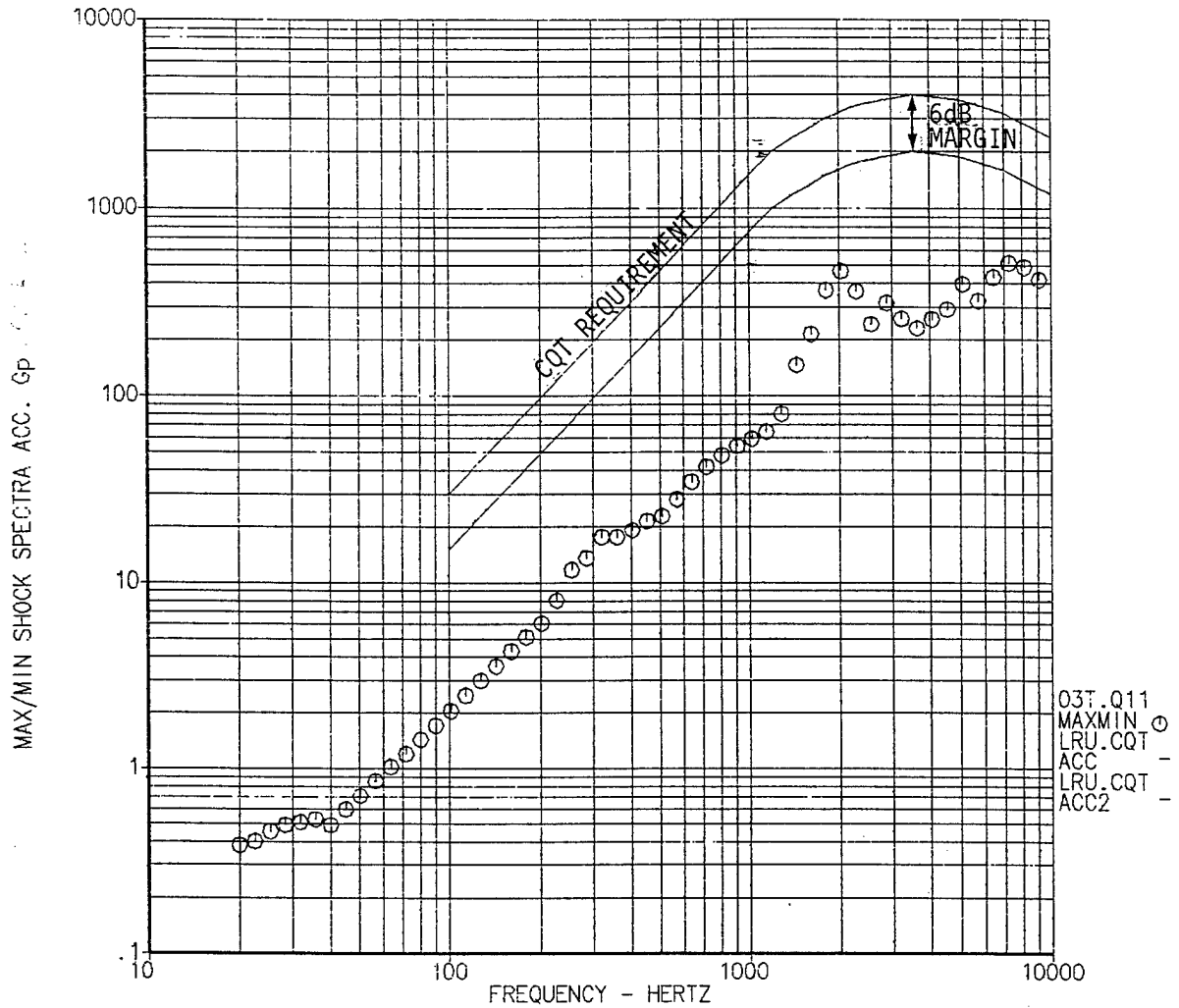


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FIGURE 2-5
SHOCK SPECTRA (Q = 10)
H03TQ QTV PYROSHOCK TEST 1 PULSE 1

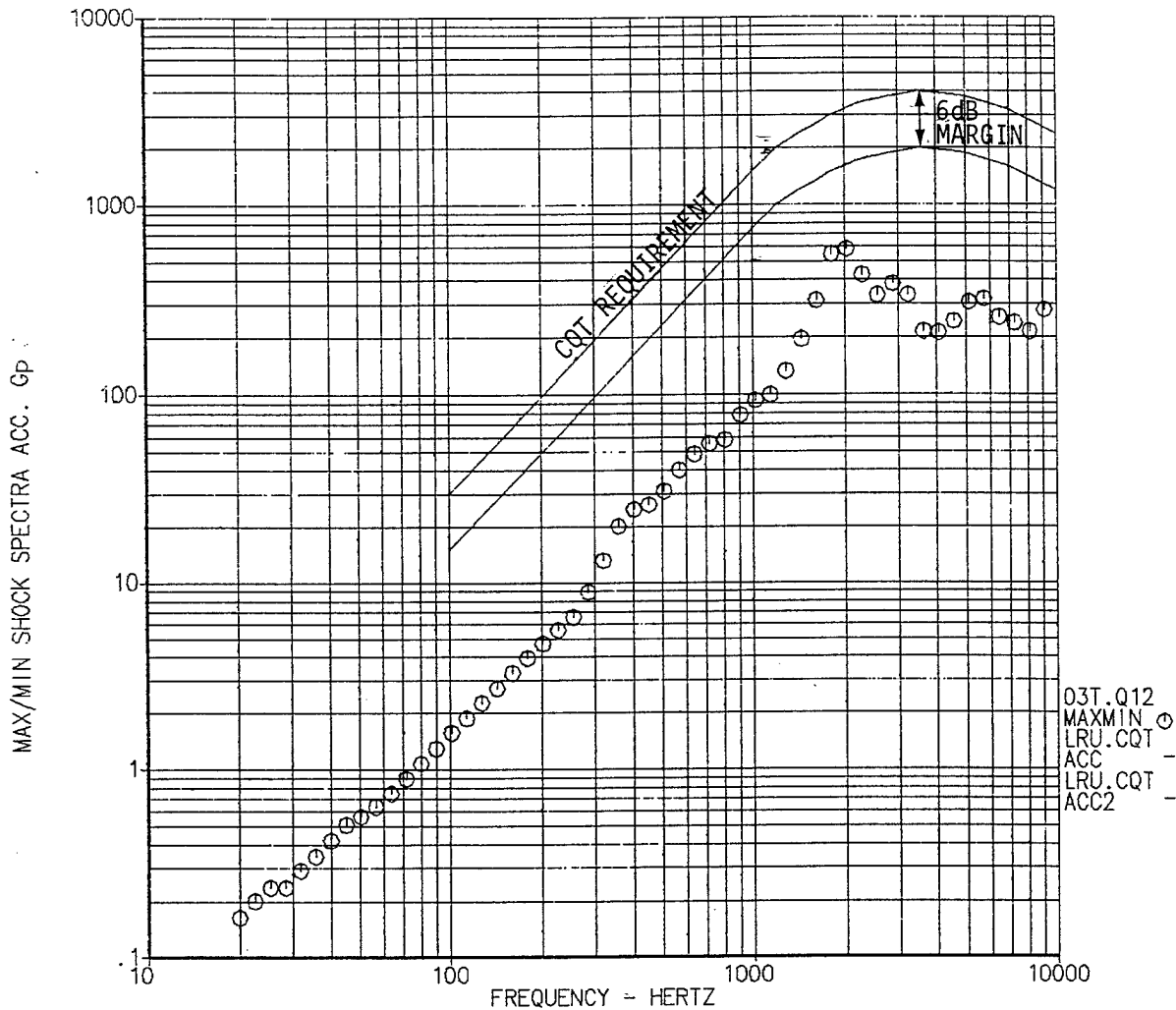


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FIGURE 2-6
SHOCK SPECTRA (Q = 10)
H03TQ QTV PYROSHOCK TEST 1 PULSE 2

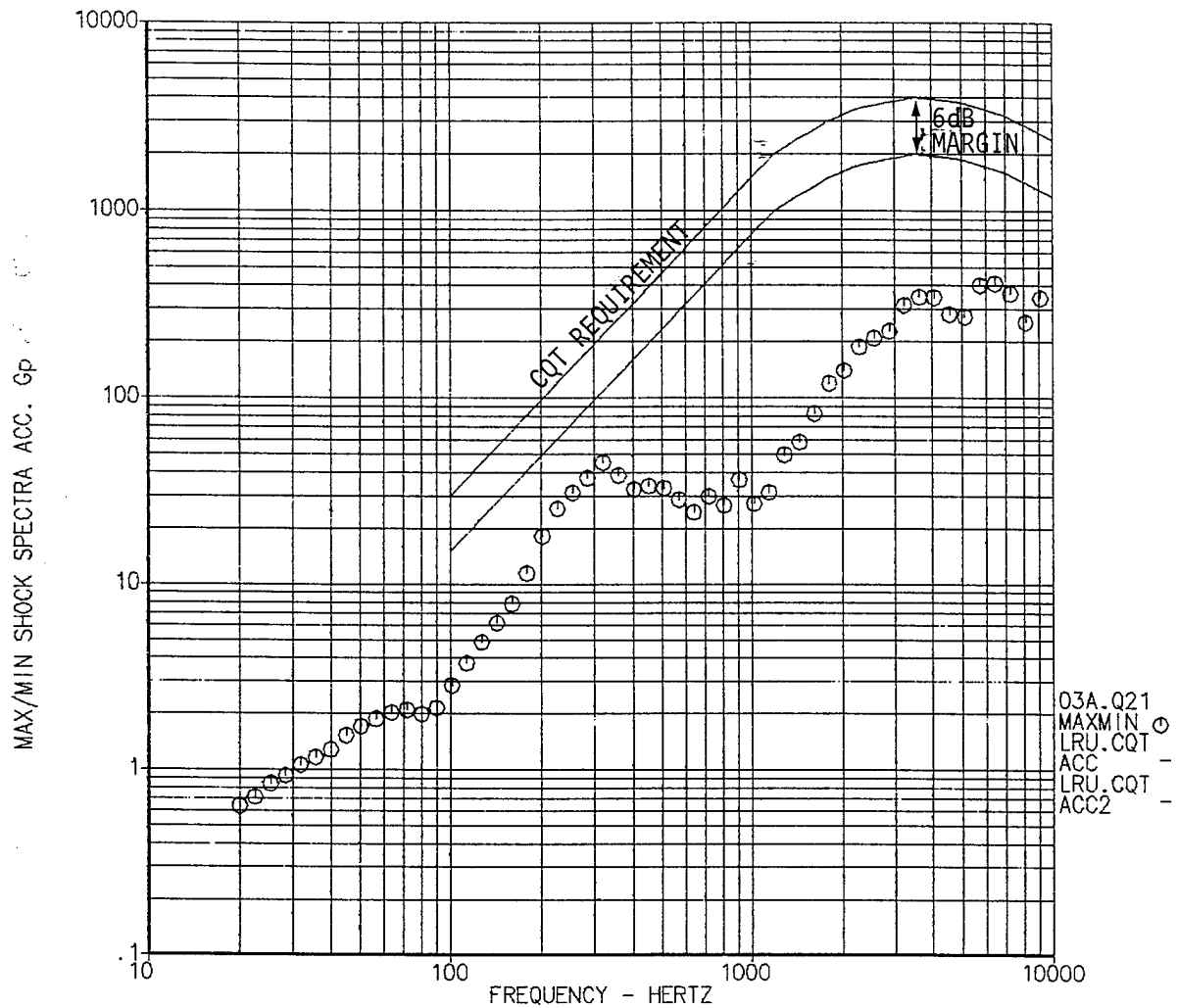


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FIGURE 2-7
SHOCK SPECTRA (Q = 10)
H03AQ QTV PYROSHOCK TEST 2 PULSE 1

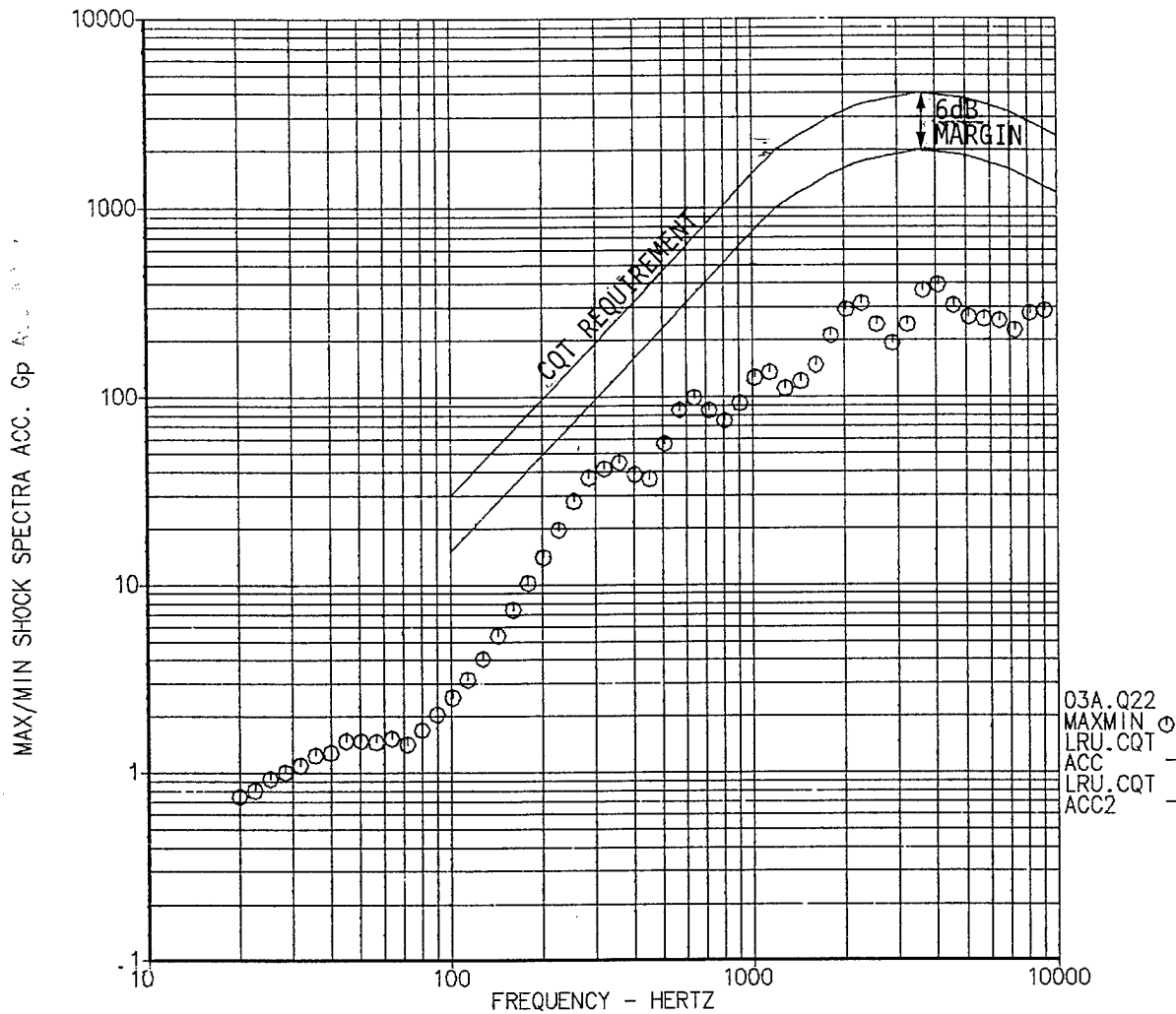


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FIGURE 2-8
SHOCK SPECTRA ($Q = 10$)
H03AQ QTV PYROSHOCK TEST 2 PULSE 2

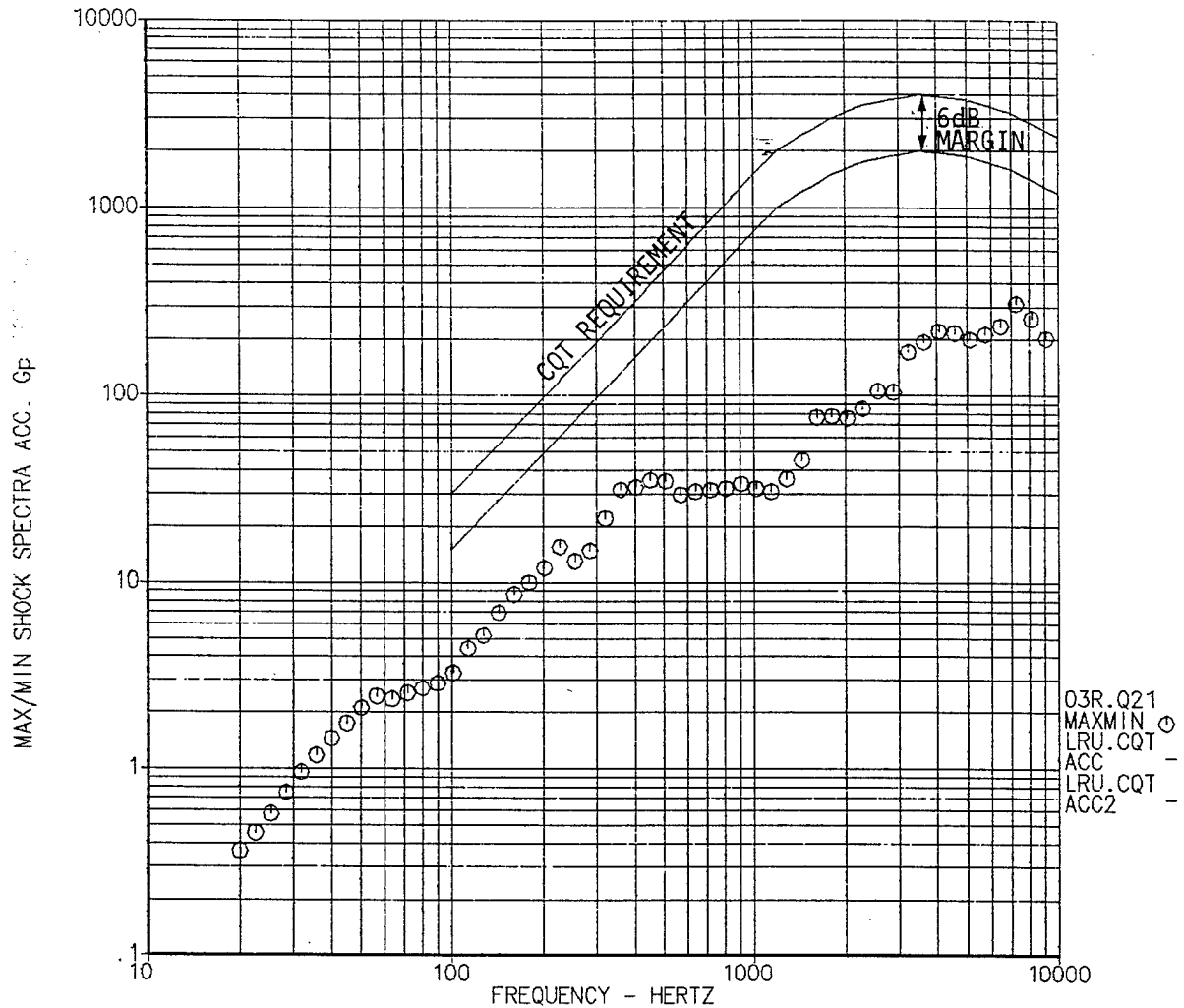


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FIGURE 2-9
SHOCK SPECTRA ($Q = 10$)
H03RQ QTV PYROSHOCK TEST 2 PULSE 1

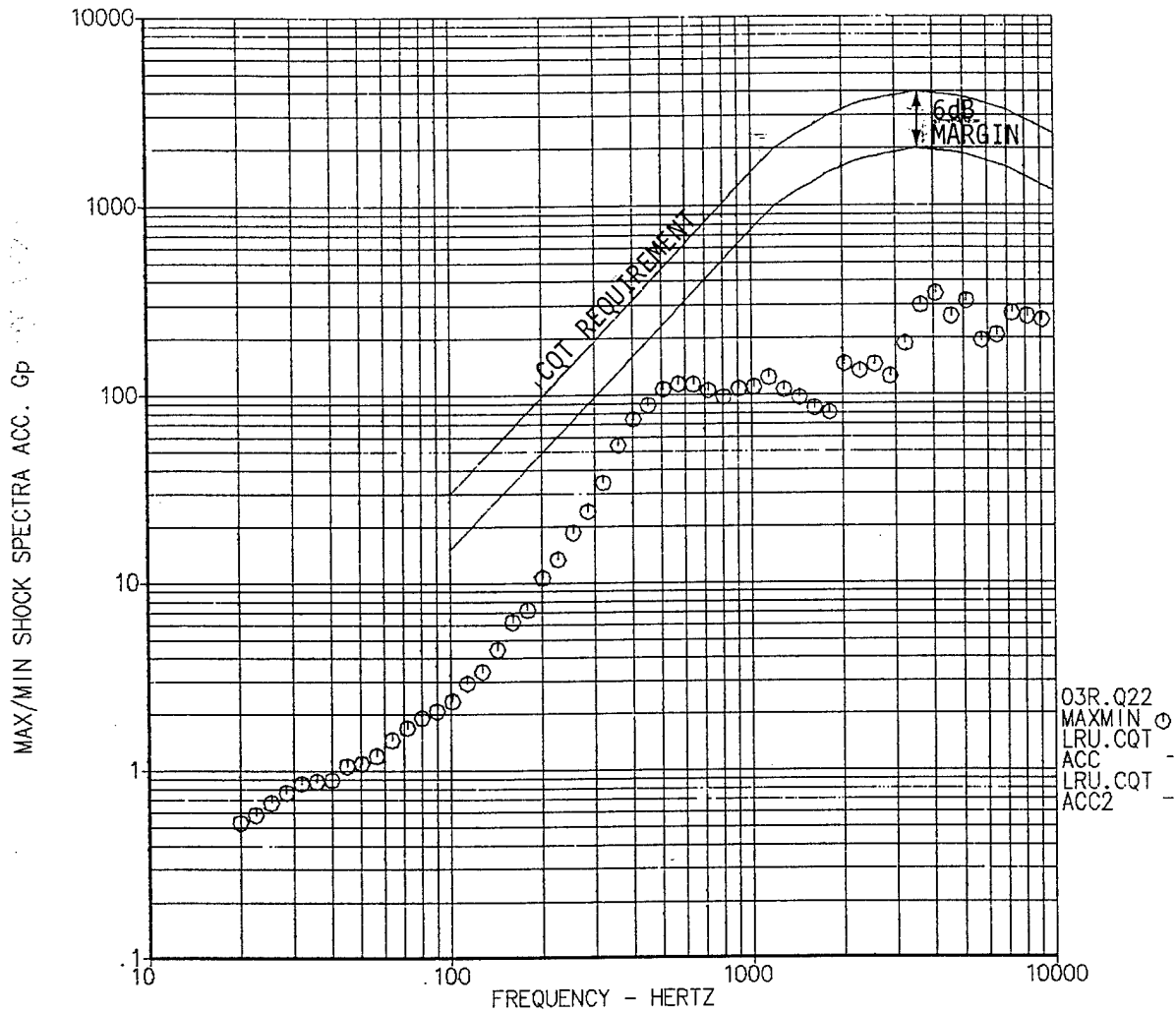


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FIGURE 2-10
SHOCK SPECTRA ($Q = 10$)
H03RQ QTV PYROSHOCK TEST 2 PULSE 2

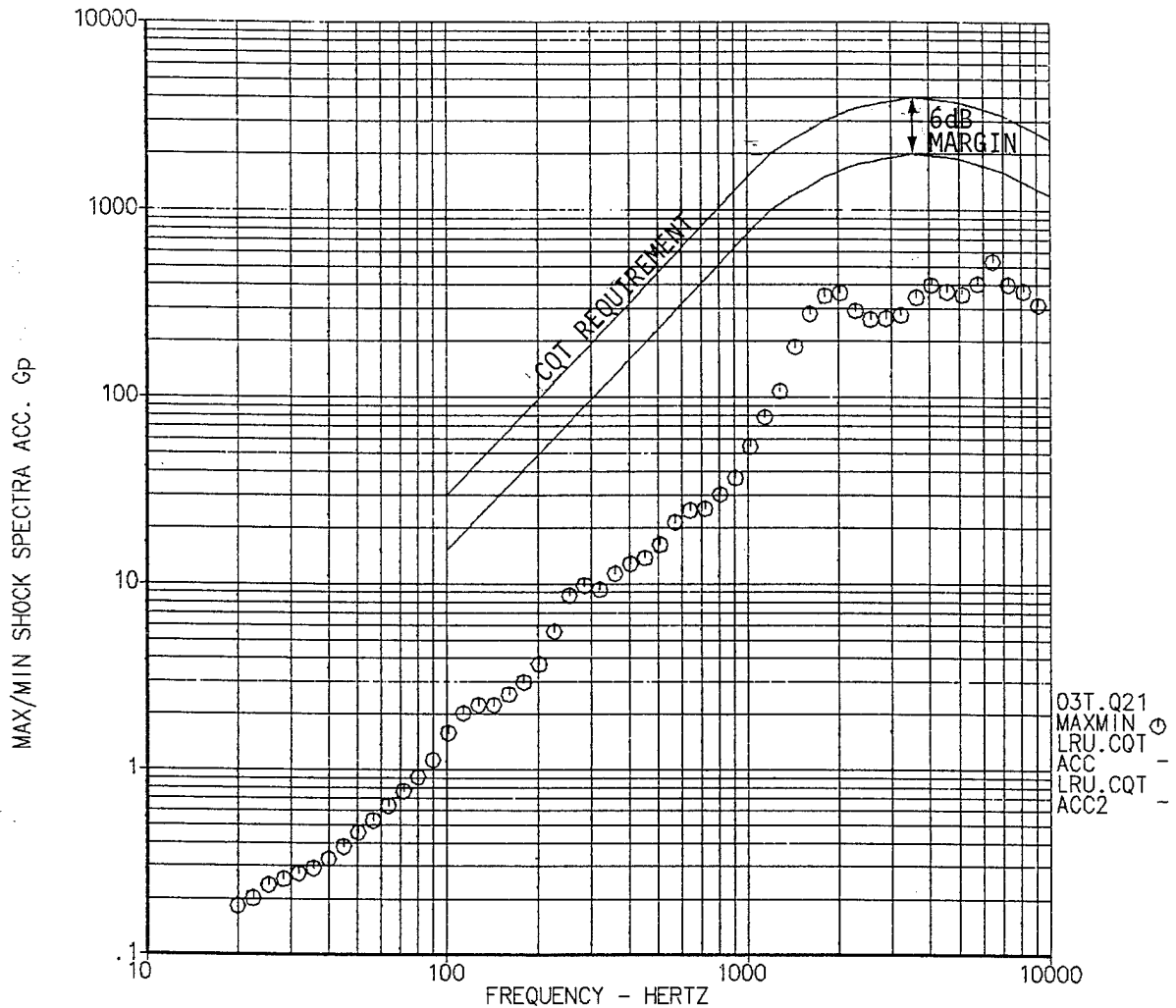


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FIGURE 2-11
SHOCK SPECTRA ($Q = .10$)
H03TQ QTV PYROSHOCK TEST 2 PULSE 1

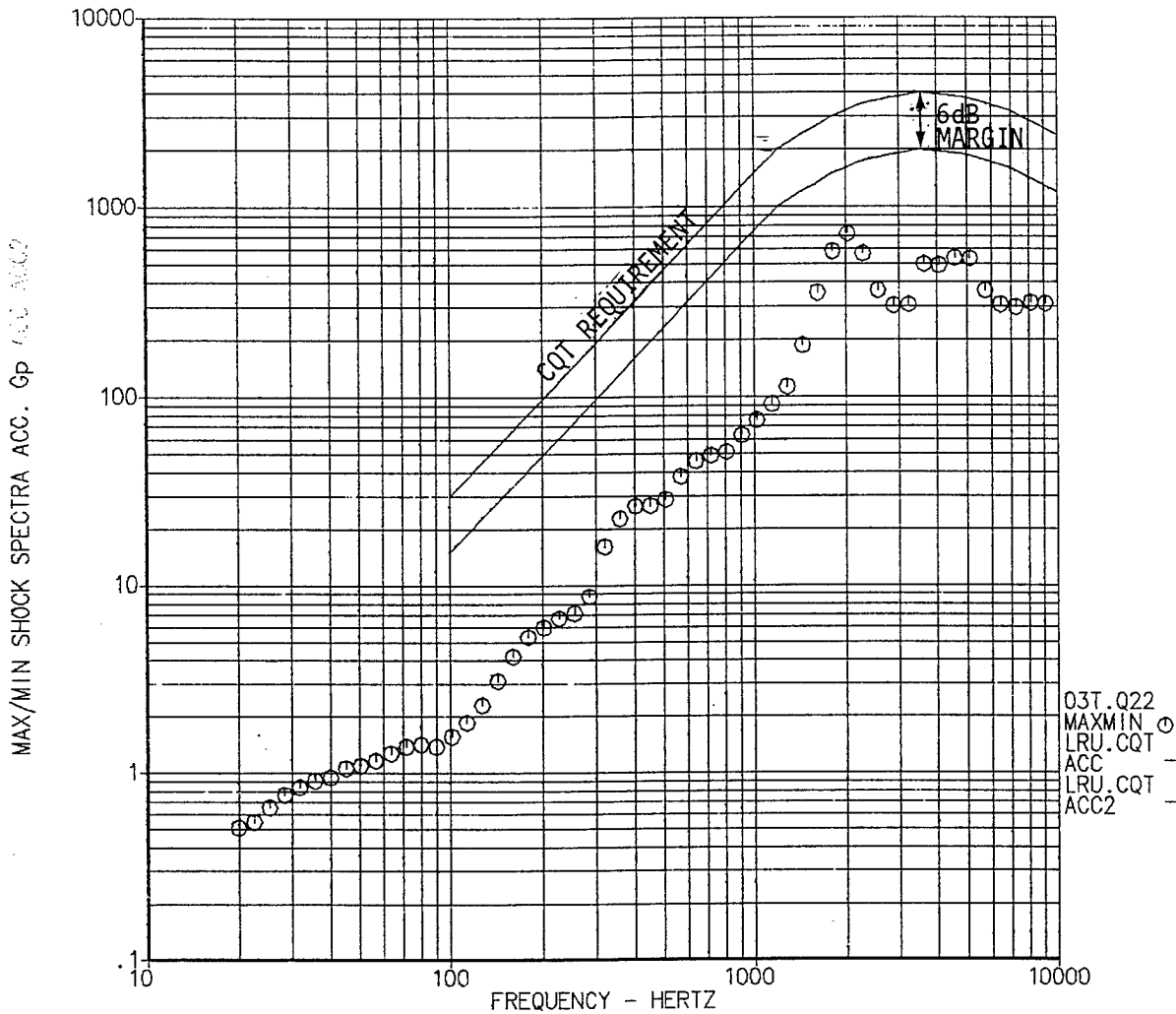


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FIGURE 2-12
SHOCK SPECTRA ($Q = 10$)
H03TQ QTV PYROSHOCK TEST 2 PULSE 2

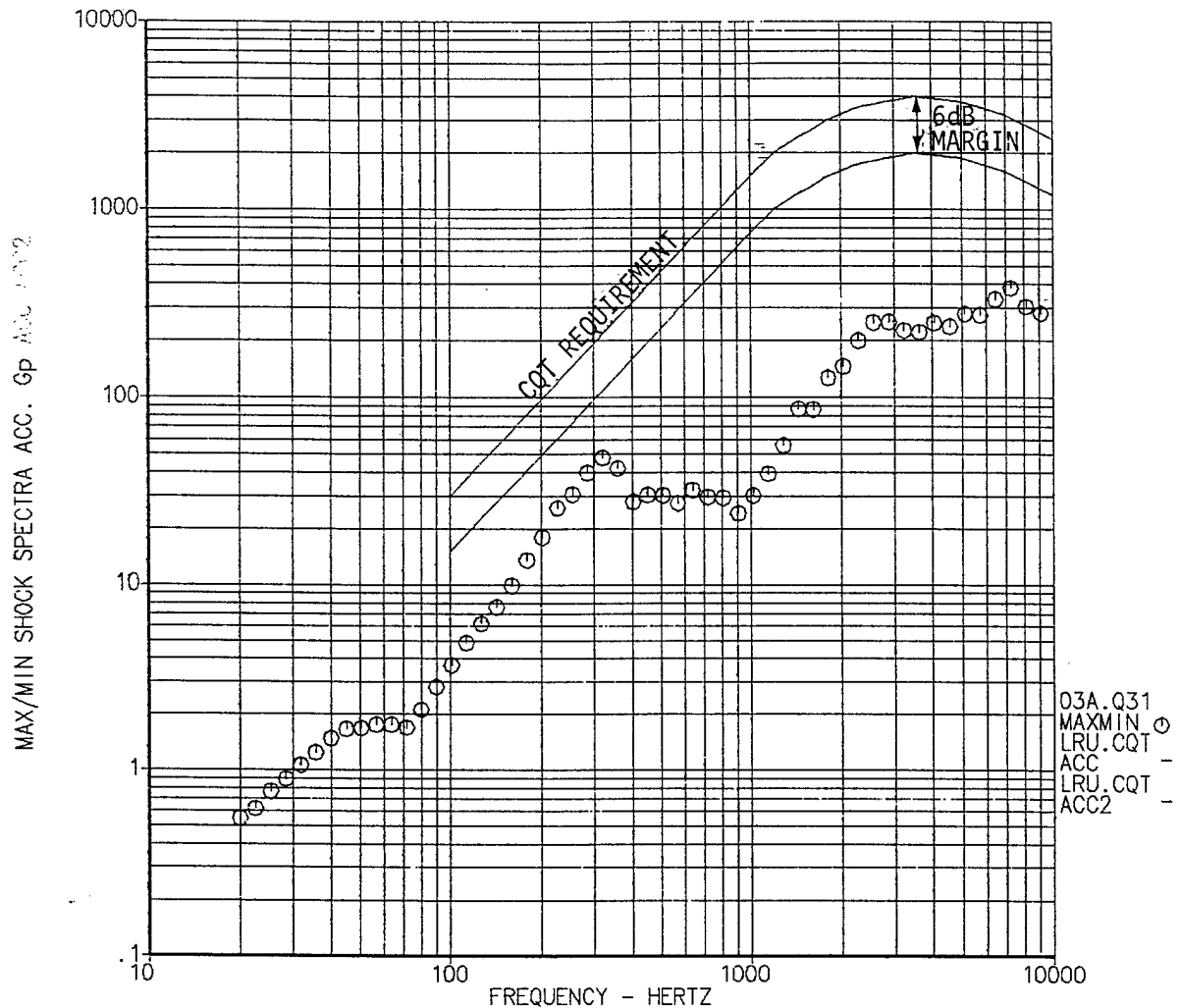


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FIGURE 2-13
SHOCK SPECTRA (Q = 10)
H03AQ QTV PYROSHOCK TEST 3 PULSE 1

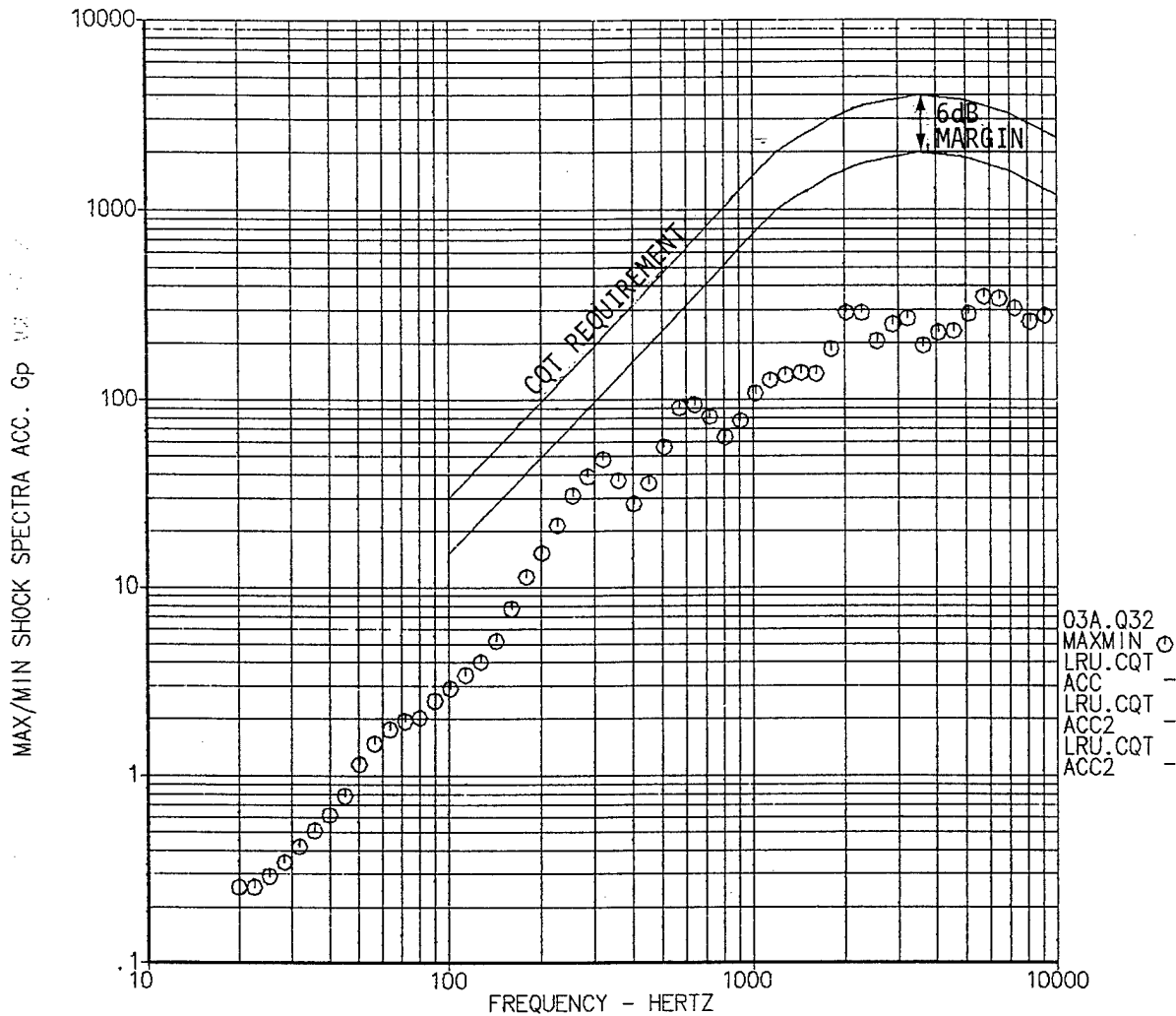


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FIGURE 2-14
SHOCK SPECTRA ($Q = 10$)
H03AQ QTV PYROSHOCK TEST 3 PULSE 2

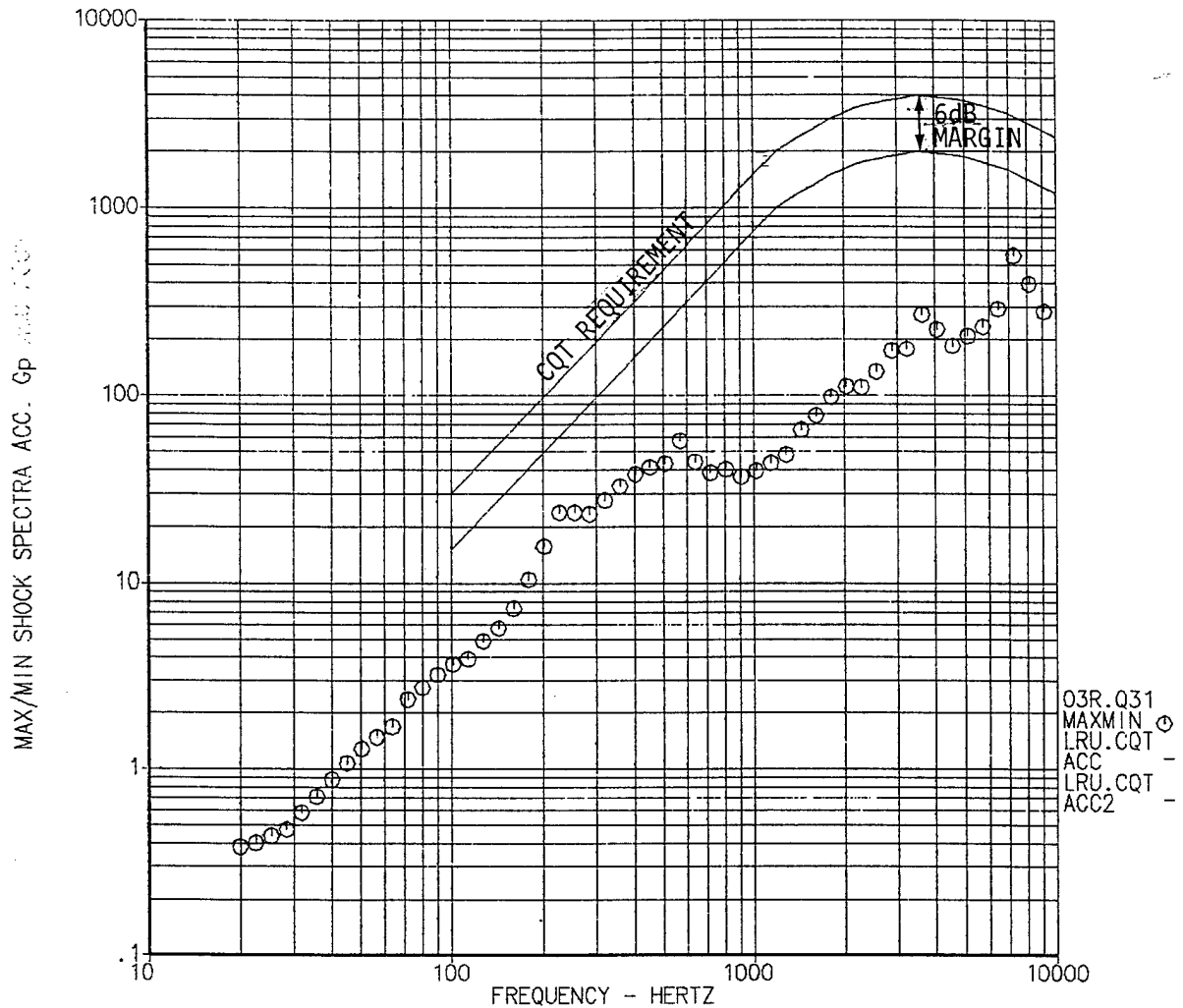


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FIGURE 2-15
SHOCK SPECTRA (Q = 10)
H03RQ QTV PYROSHOCK TEST 3 PULSE 1

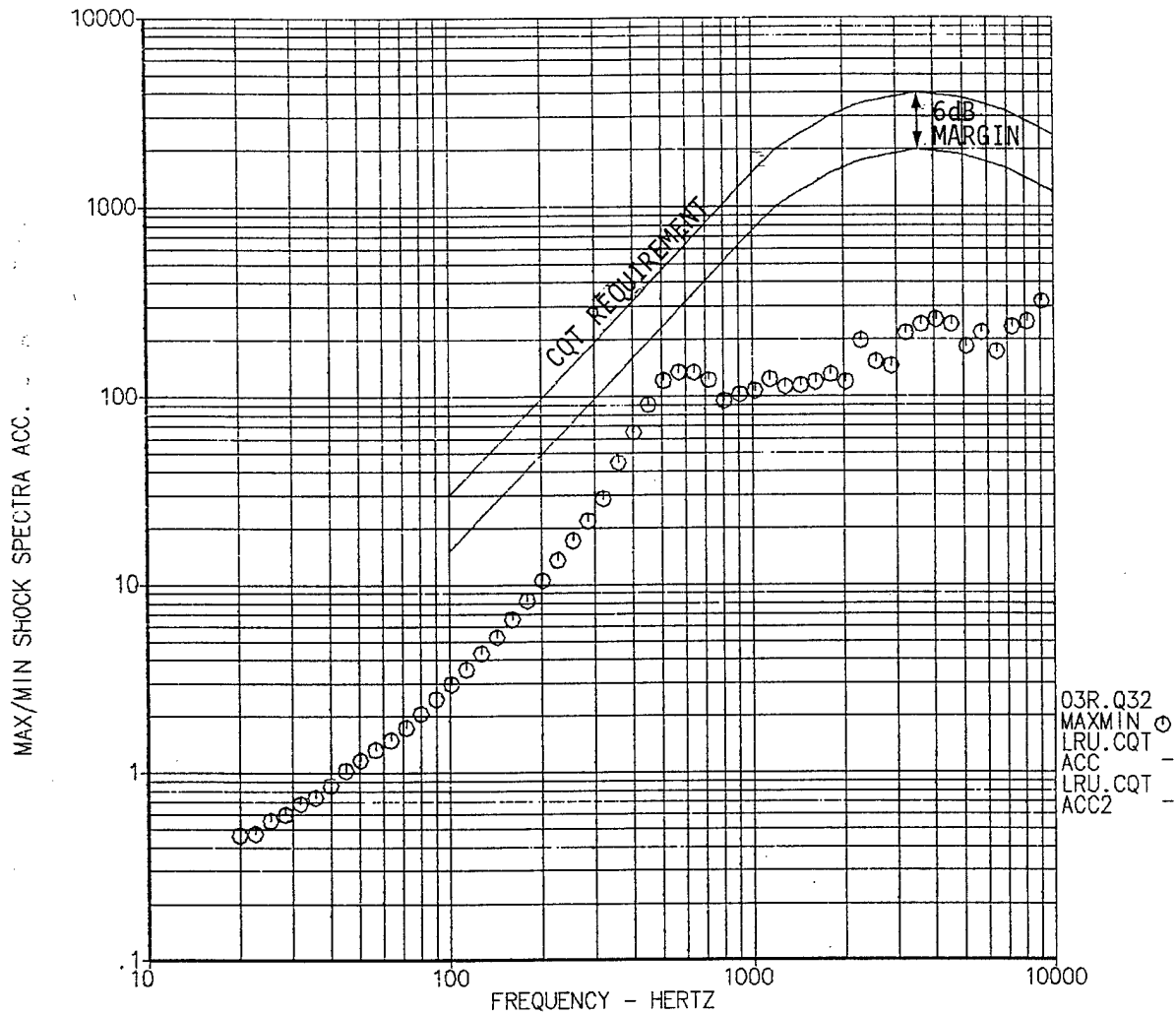


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FIGURE 2-16
SHOCK SPECTRA (Q = 10)
H03RQ QTV PYROSHOCK TEST 3 PULSE 2

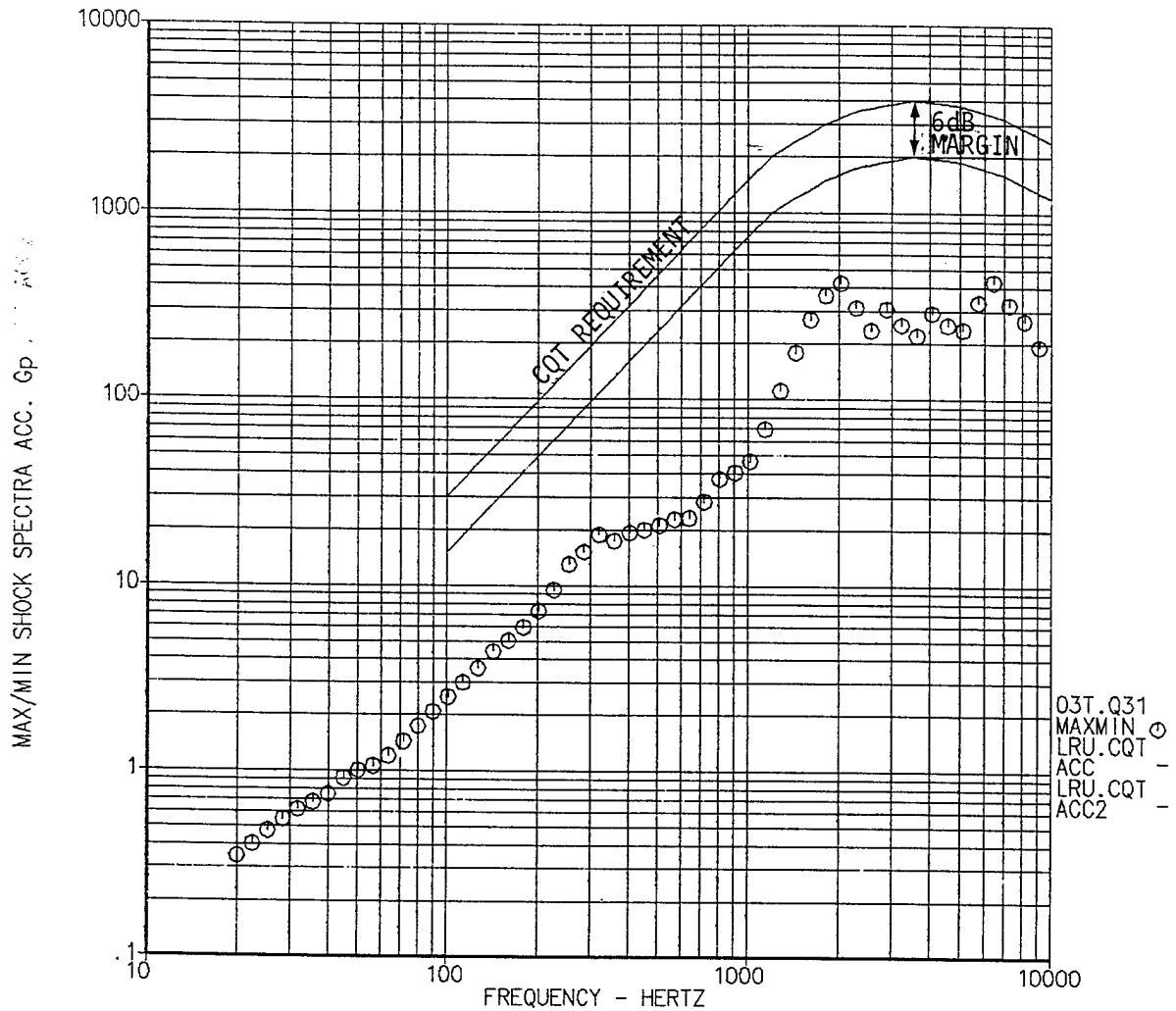


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FIGURE 2-17
SHOCK SPECTRA (Q = 10)
H03TQ QTV PYROSHOCK TEST 3 PULSE 1

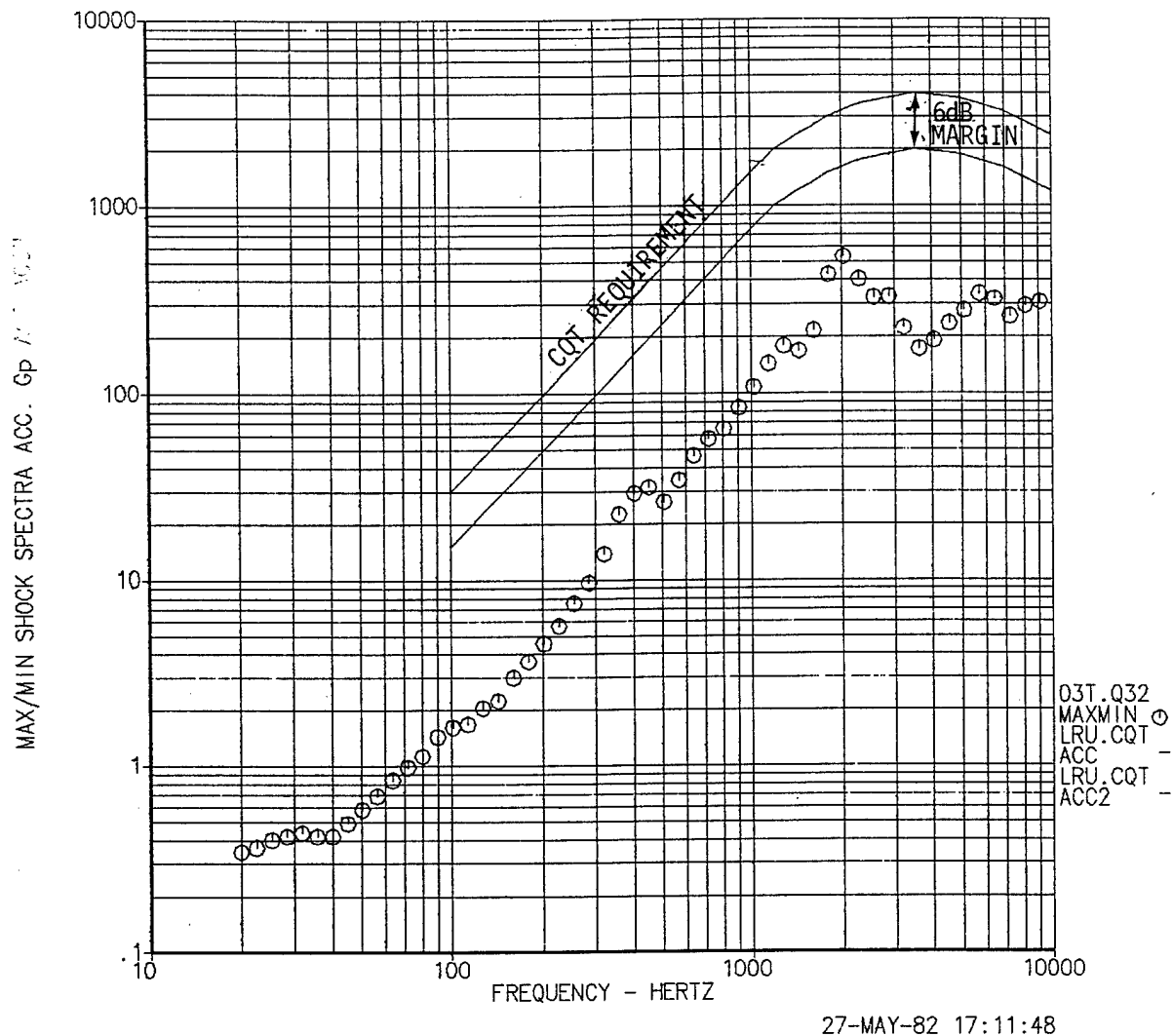


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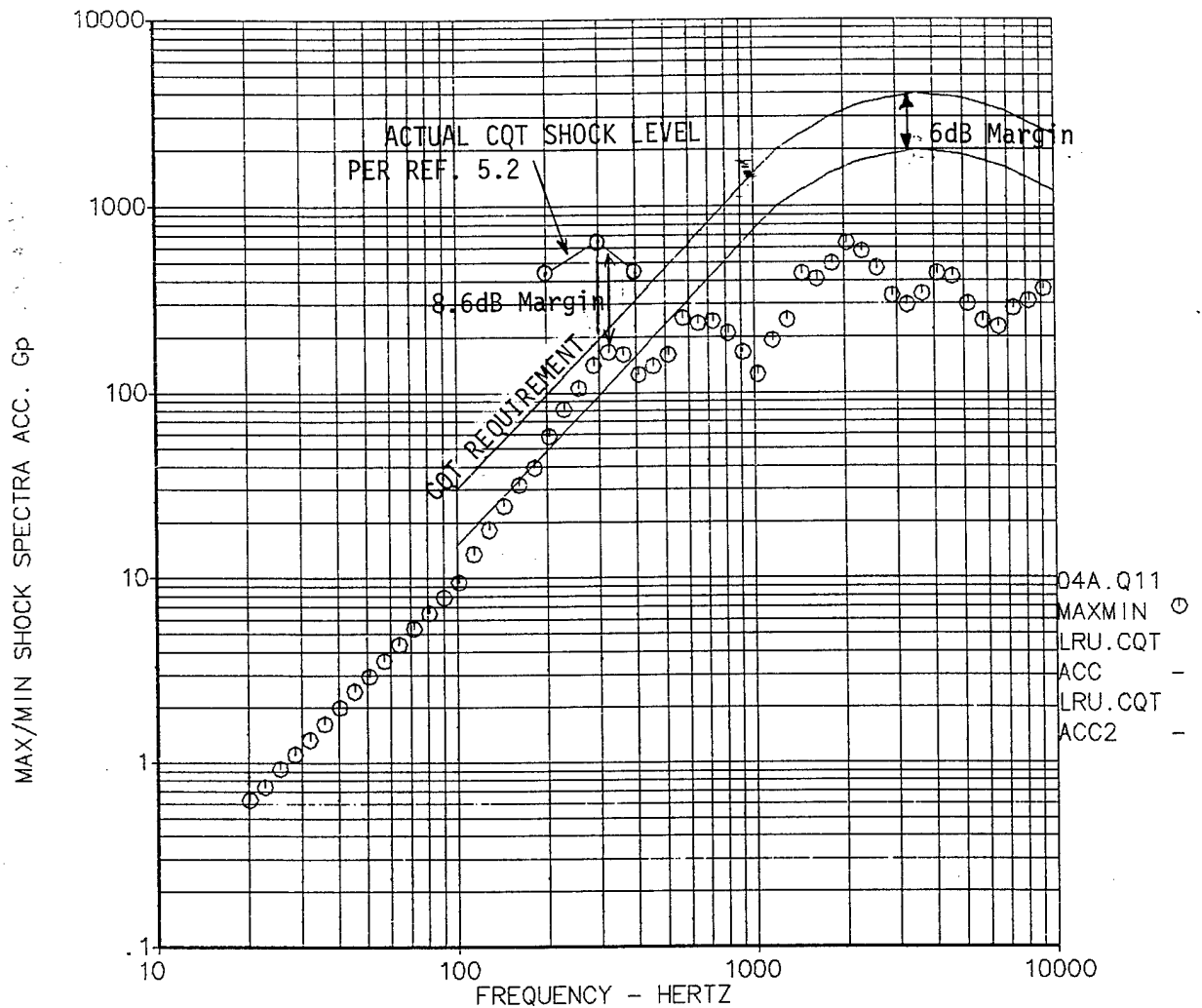
FIGURE 2-18
SHOCK SPECTRA (Q = 10)
H03TQ QTV PYROSHOCK TEST 3 PULSE 2



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FIGURE 2-19
SHOCK SPECTRA (Q = 10)
H04AQ QTV PYROSHOCK TEST 1 PULSE 1

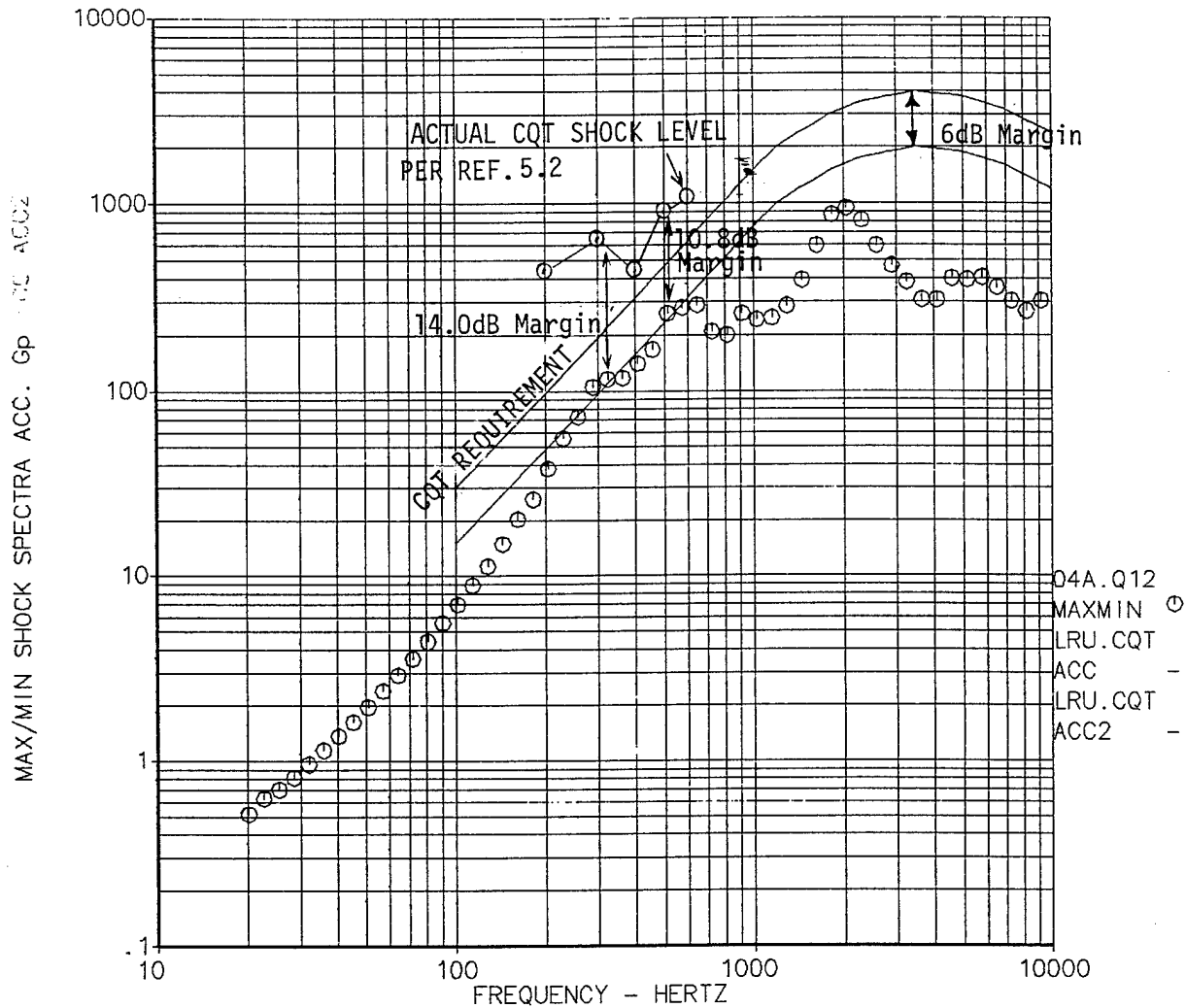


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FIGURE 2-20
SHOCK SPECTRA (Q = 10)
H04AQ QTV PYROSHOCK TEST 1 PULSE 2

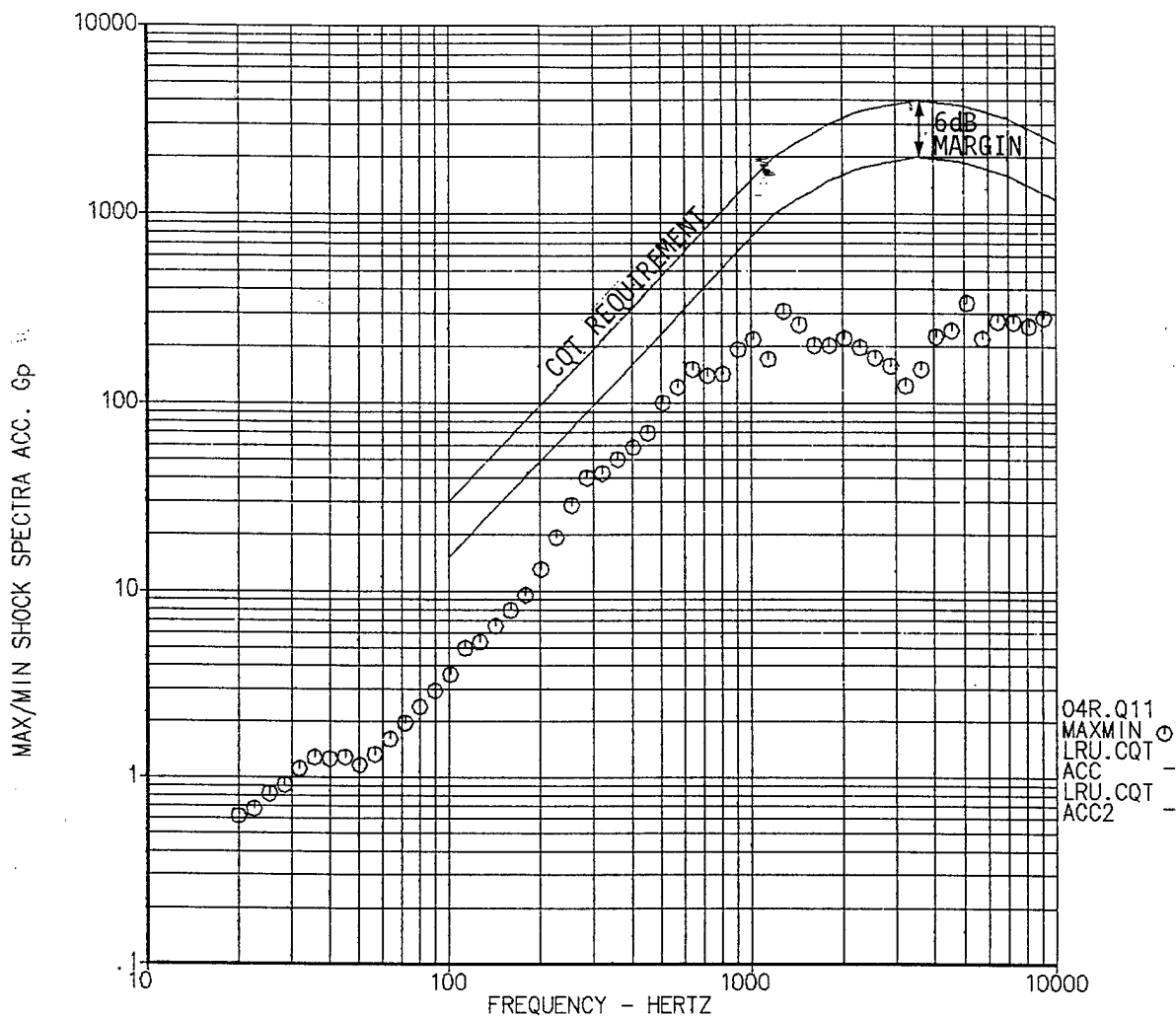


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FIGURE 2-21
SHOCK SPECTRA (Q = 10)
H04R QTV PYROSHOCK TEST 1 PULSE 1

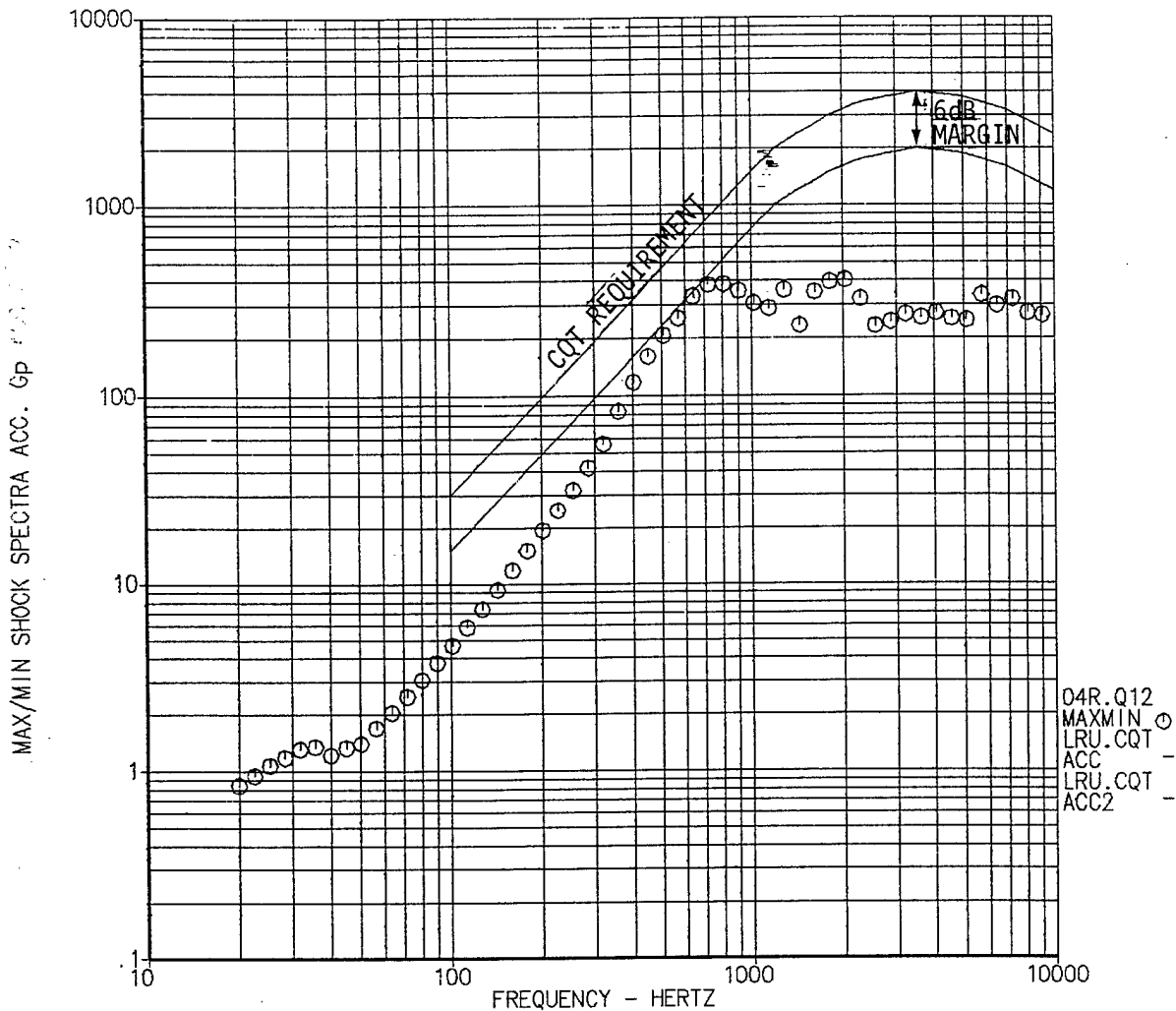


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FIGURE 2-22
SHOCK SPECTRA (Q = 10)
H04R QTV PYROSHOCK TEST 1 PULSE 2

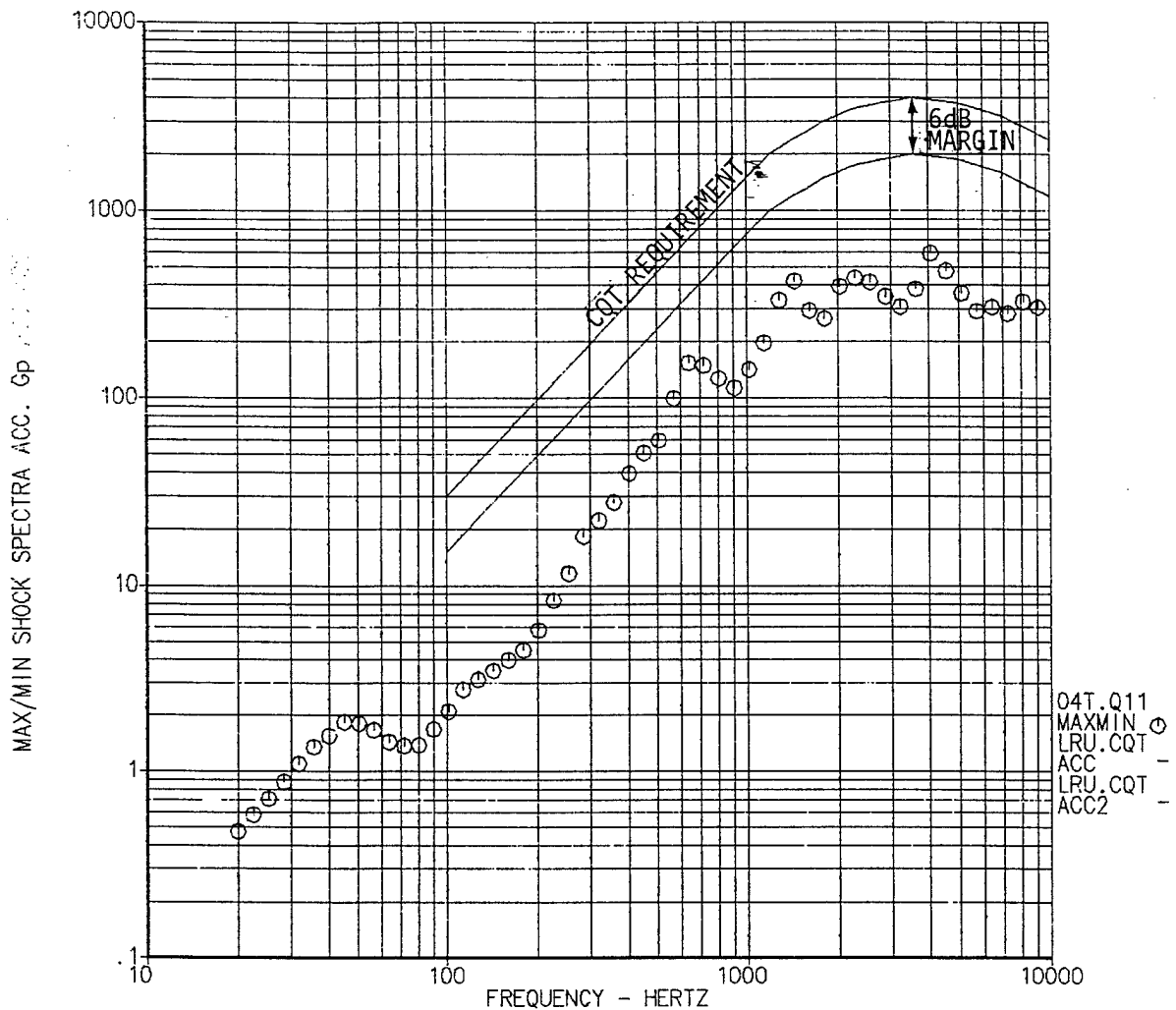


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FIGURE 2-23
SHOCK SPECTRA (Q = 10)
H04T QTV PYROSHOCK TEST 1 PULSE 1

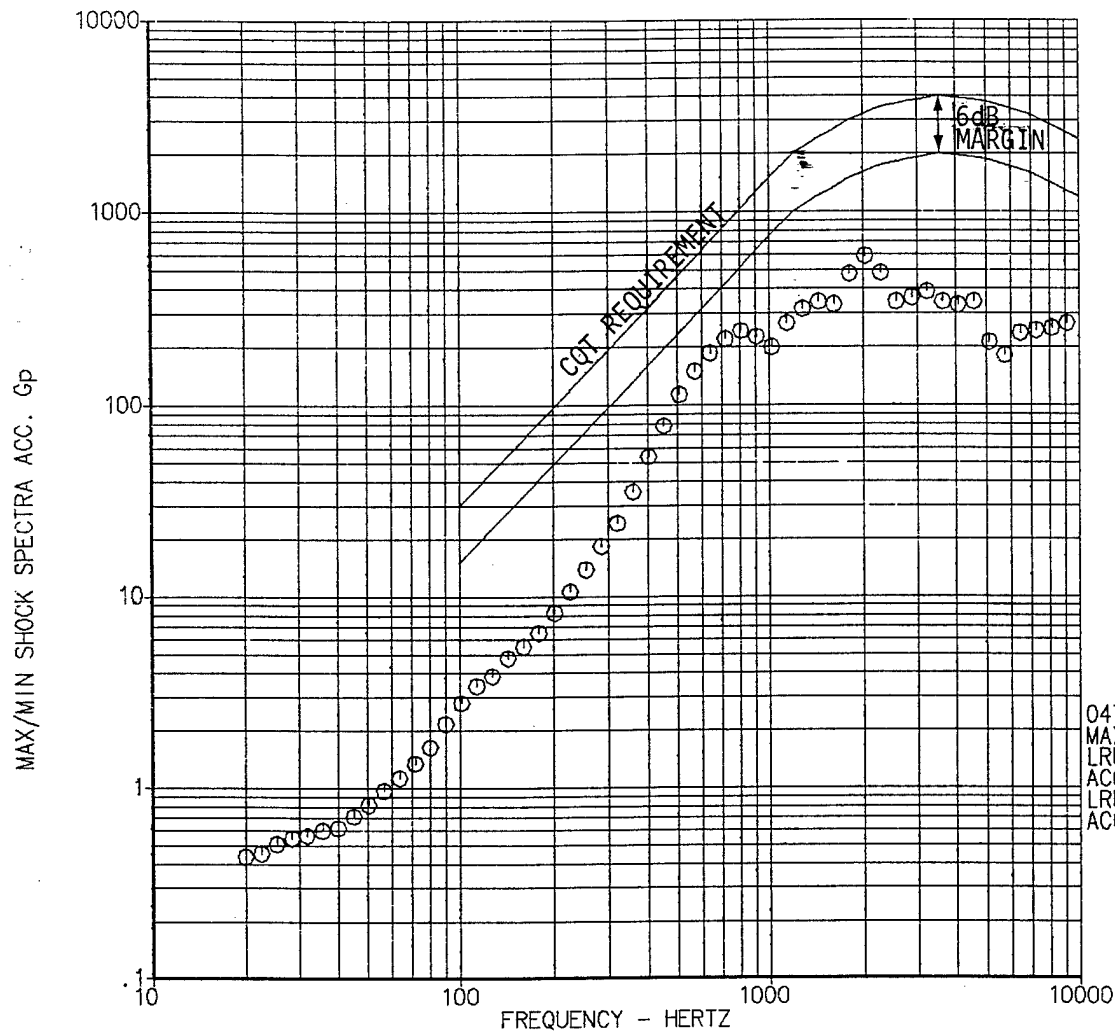


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FIGURE 2-24
SHOCK SPECTRA (Q = 10)
H04T QTV PYROSHOCK TEST 1 PULSE 2

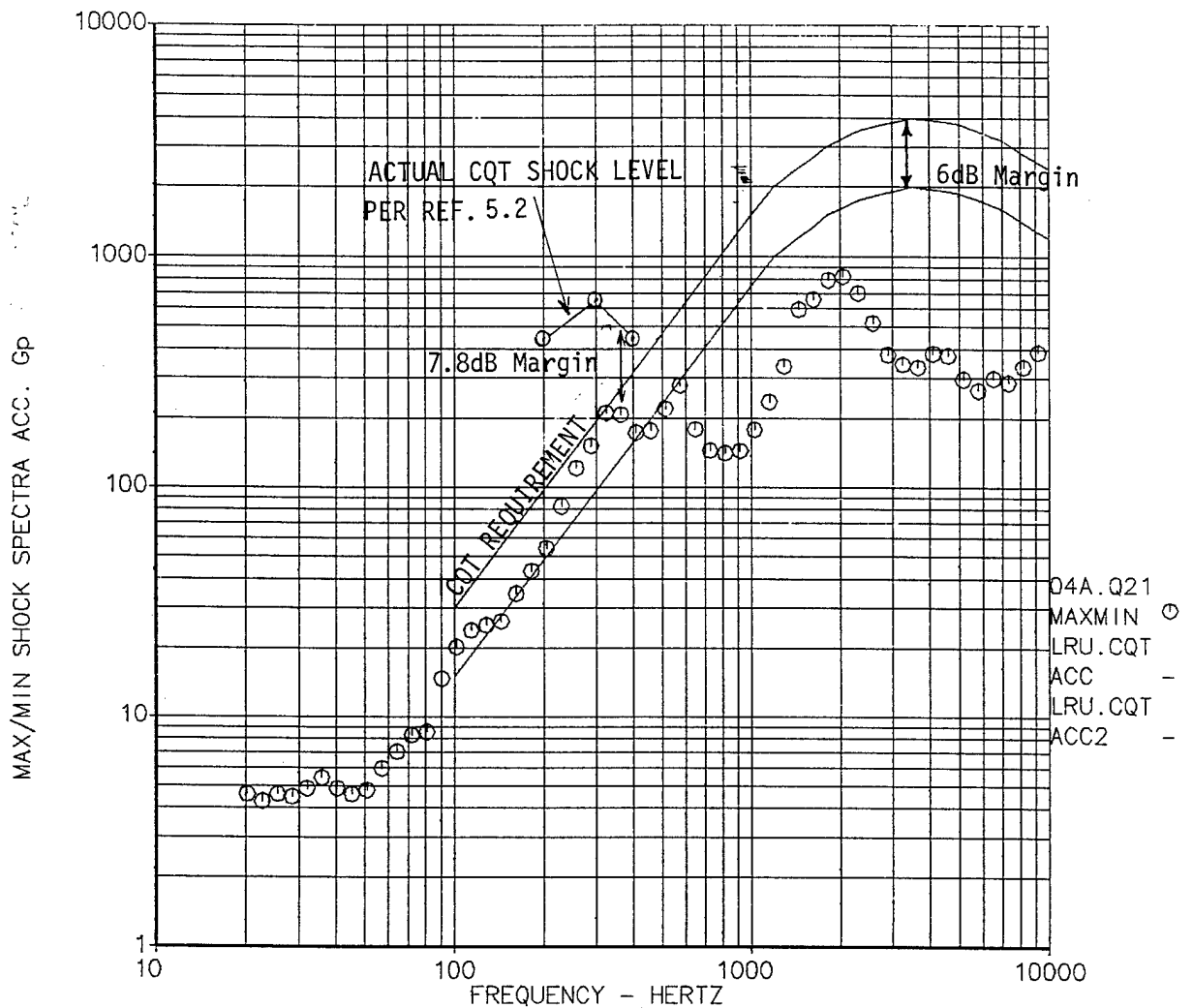


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FIGURE 2-25
SHOCK SPECTRA (Q = 10)
H04A QTV PYROSHOCK TEST 2 PULSE 1

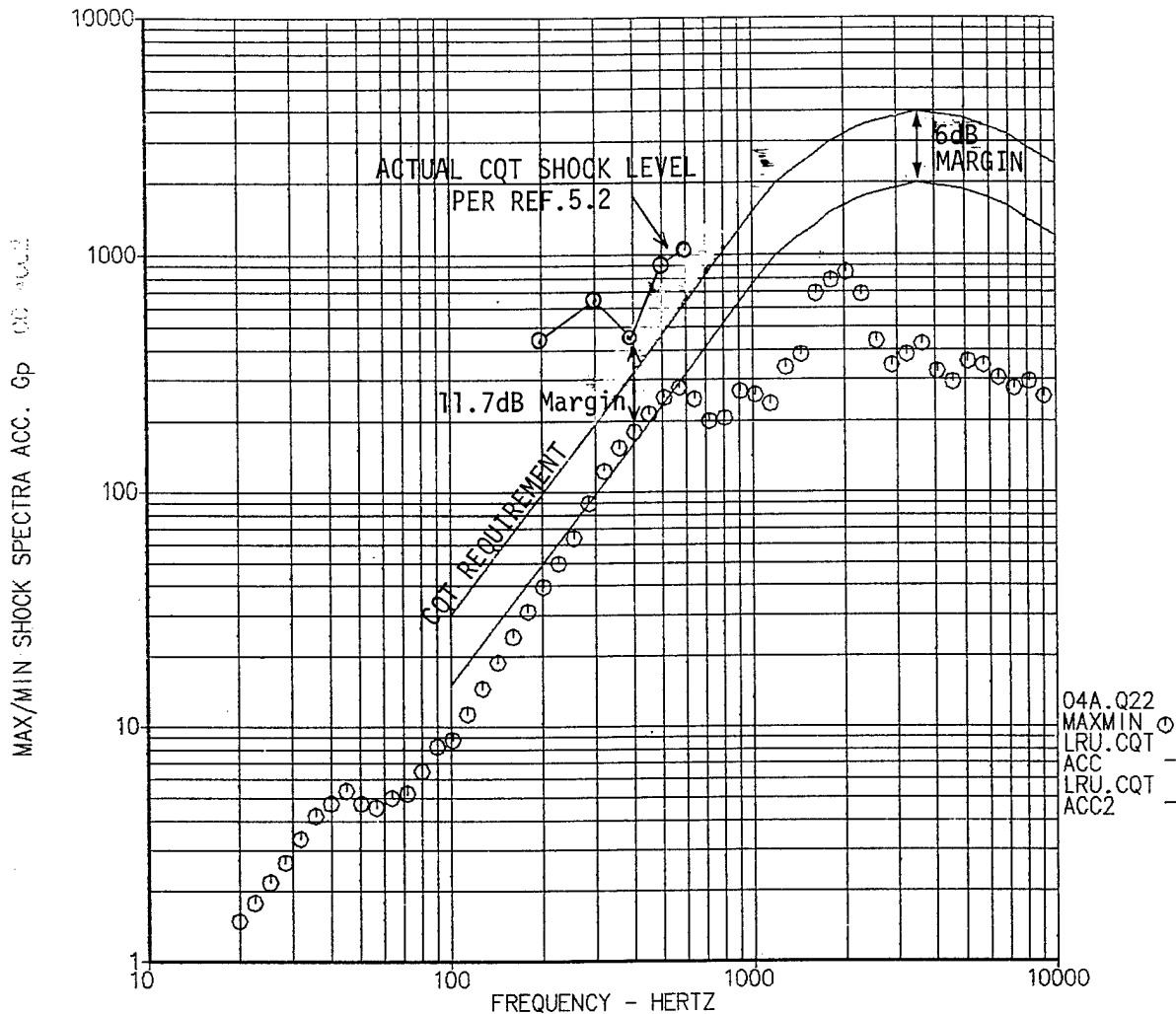


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FIGURE 2-26
SHOCK SPECTRA ($Q = 10$)
H04A QTV PYROSHOCK TEST 2 PULSE 2

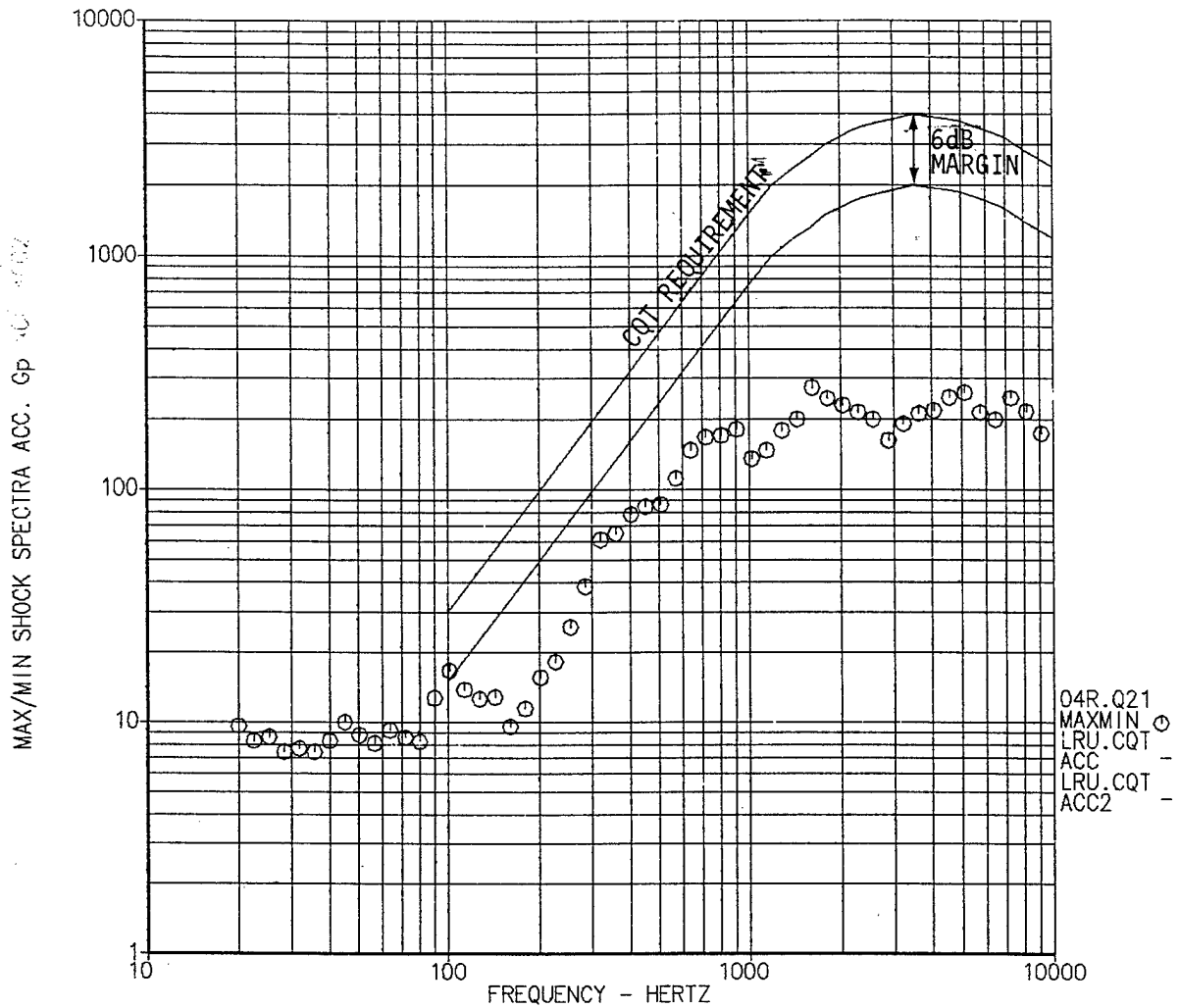


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FIGURE 2-27
SHOCK SPECTRA (Q = 10)
H04R QTV PYROSHOCK TEST 2 PULSE 1

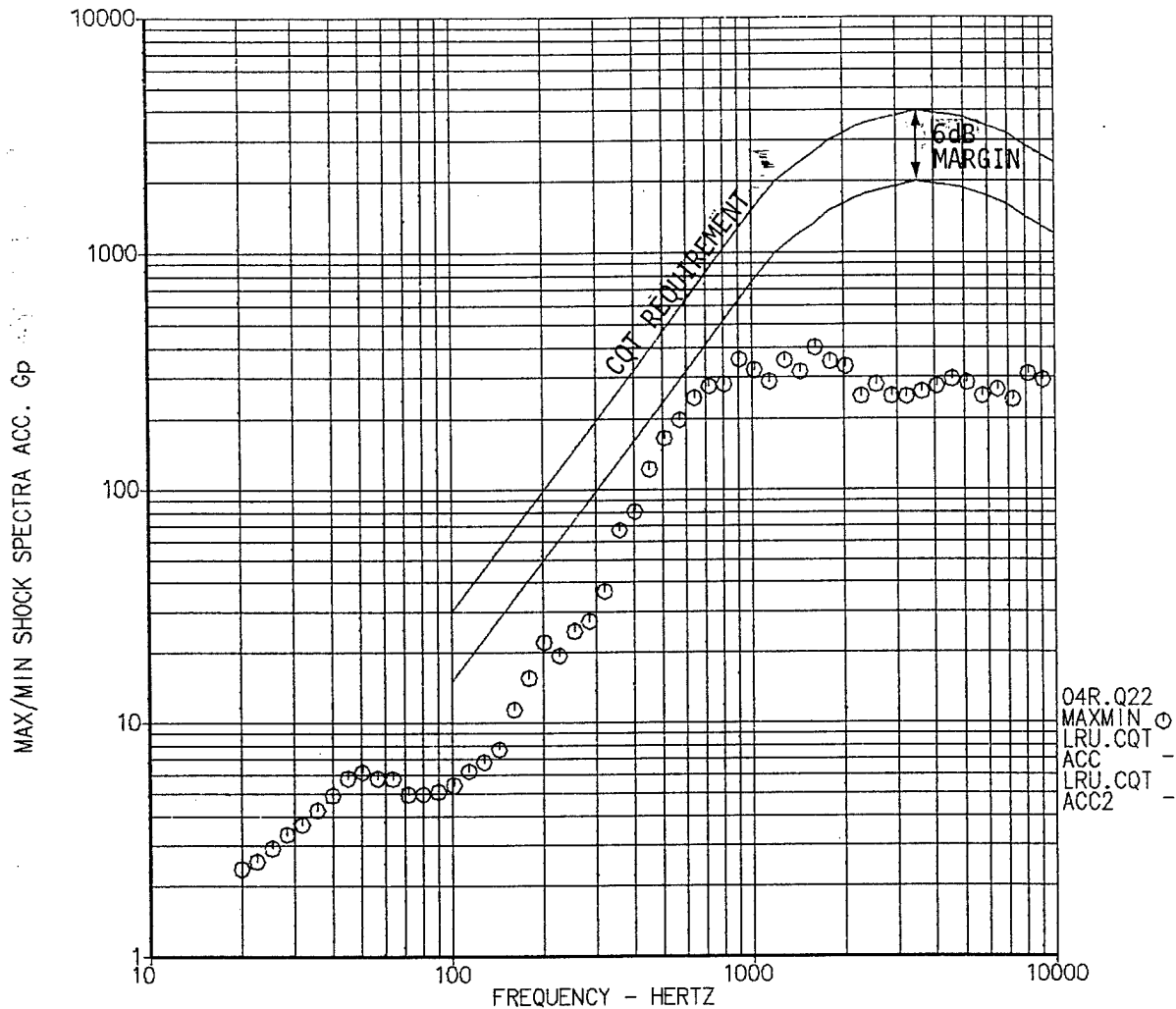


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FIGURE 2-28
SHOCK SPECTRA ($Q = 10$)
H04R QTV PYROSHOCK TEST 2 PULSE 2

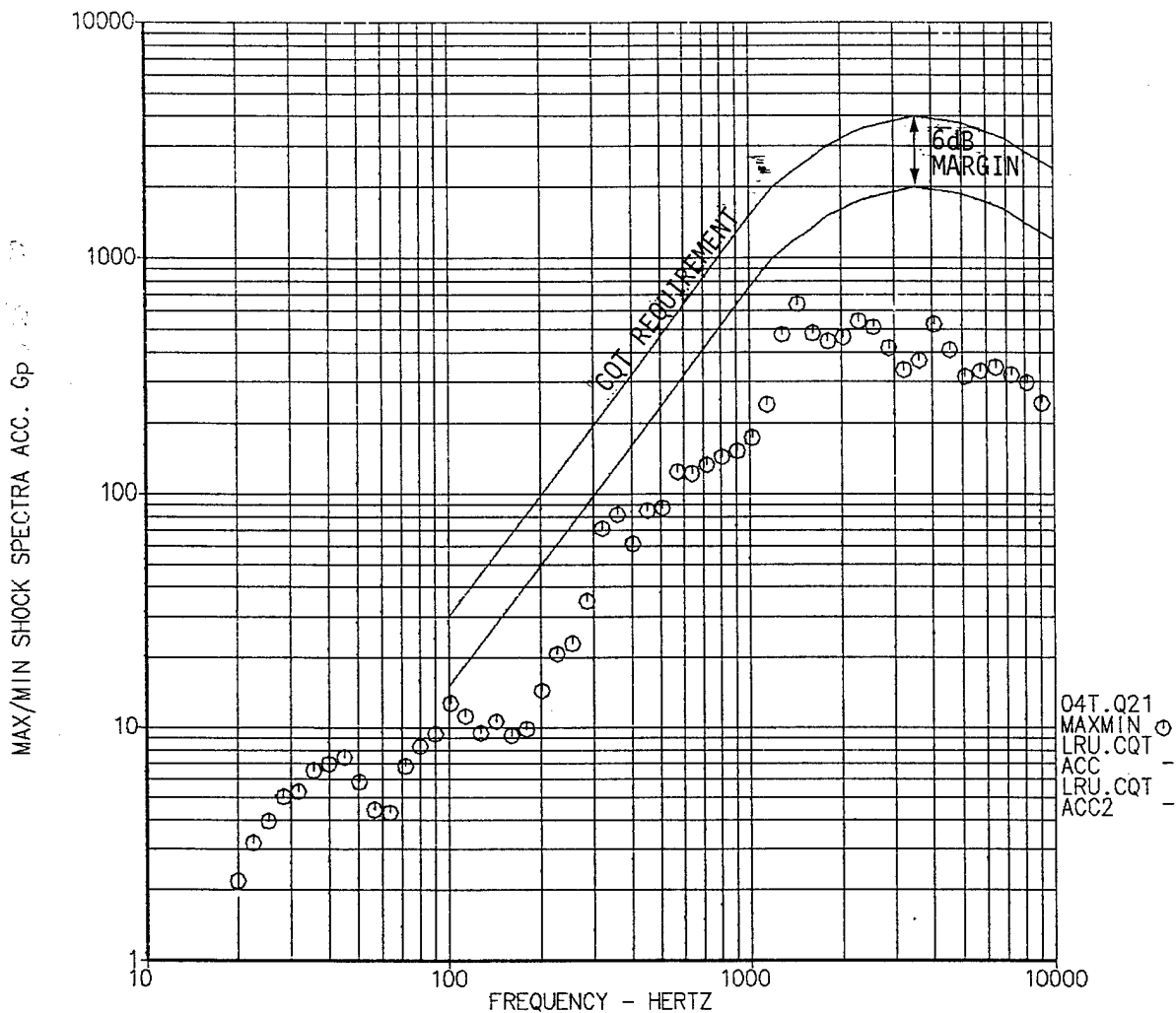


27-MAY-82 17:30:29

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FIGURE 2-29
SHOCK SPECTRA (Q = 10)
H04T QTV PYROSHOCK TEST 2 PULSE 1

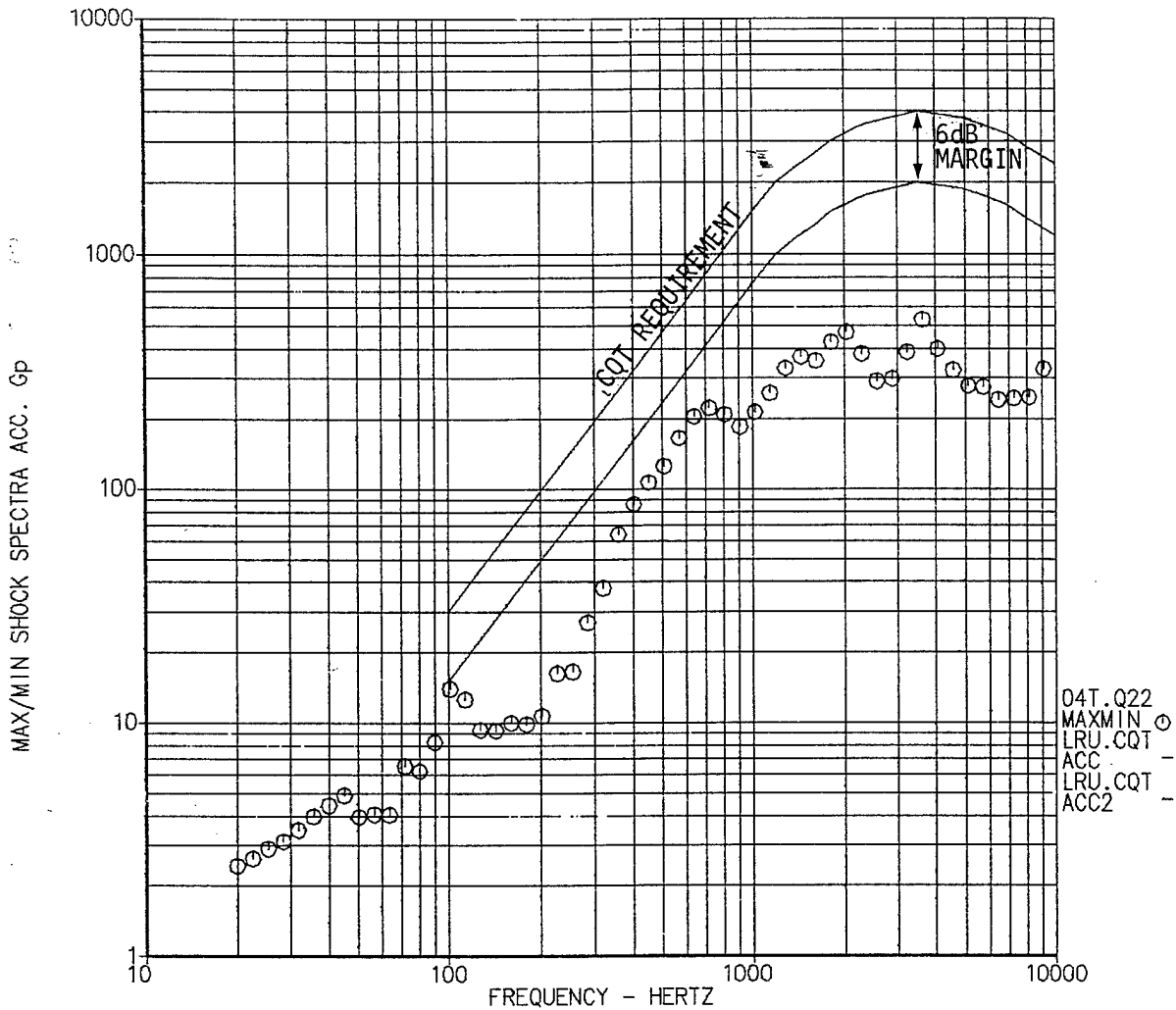


27-MAY-82 17:22:42

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FIGURE 2-30
SHOCK SPECTRA ($Q = 10$)
H04T QTV PYROSHOCK TEST 2 PULSE 2

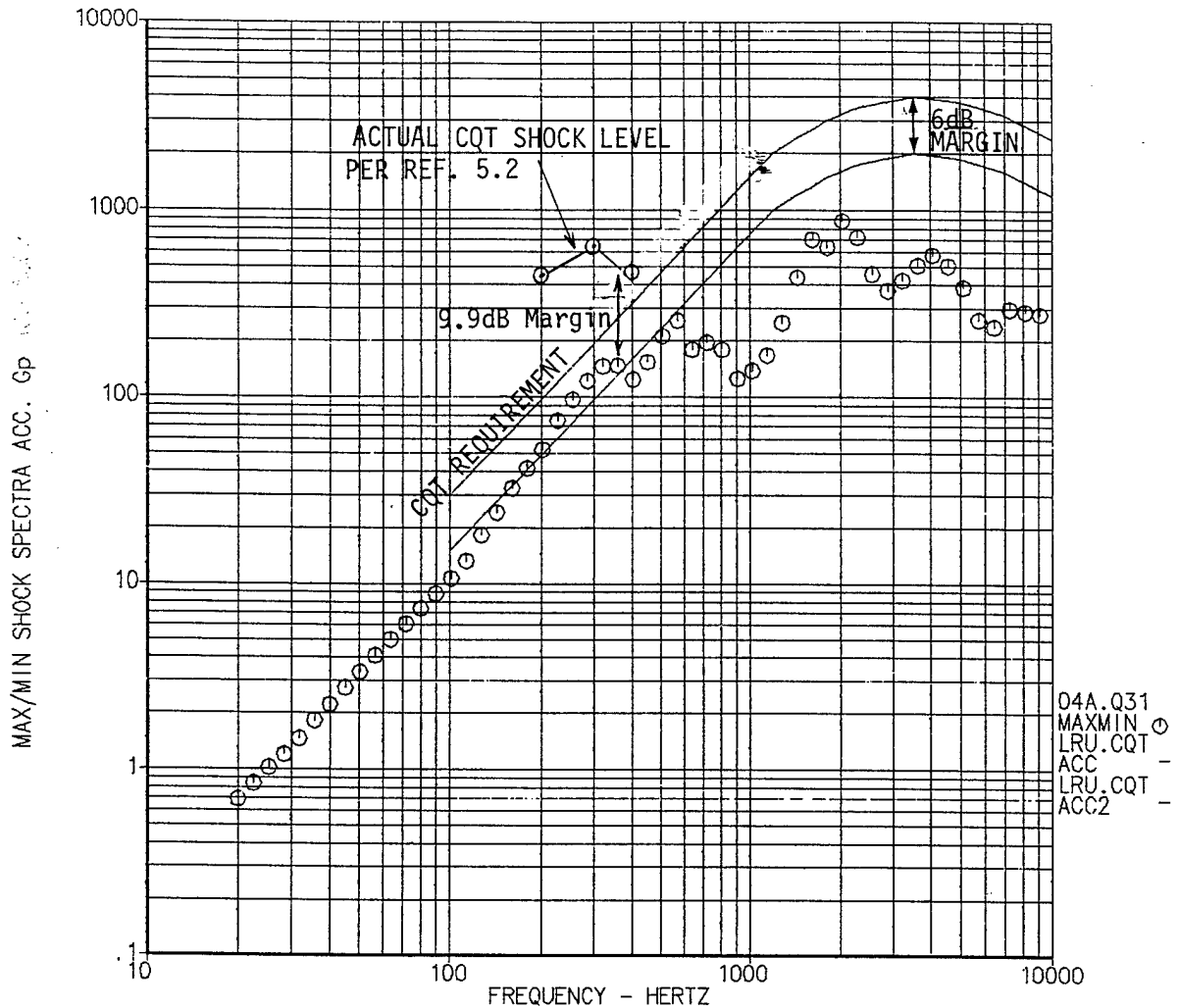


27-MAY-82 17:23:46

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FIGURE 2-31
SHOCK SPECTRA ($Q = 10$)
H04A QTV PYROSHOCK TEST 3 PULSE 1

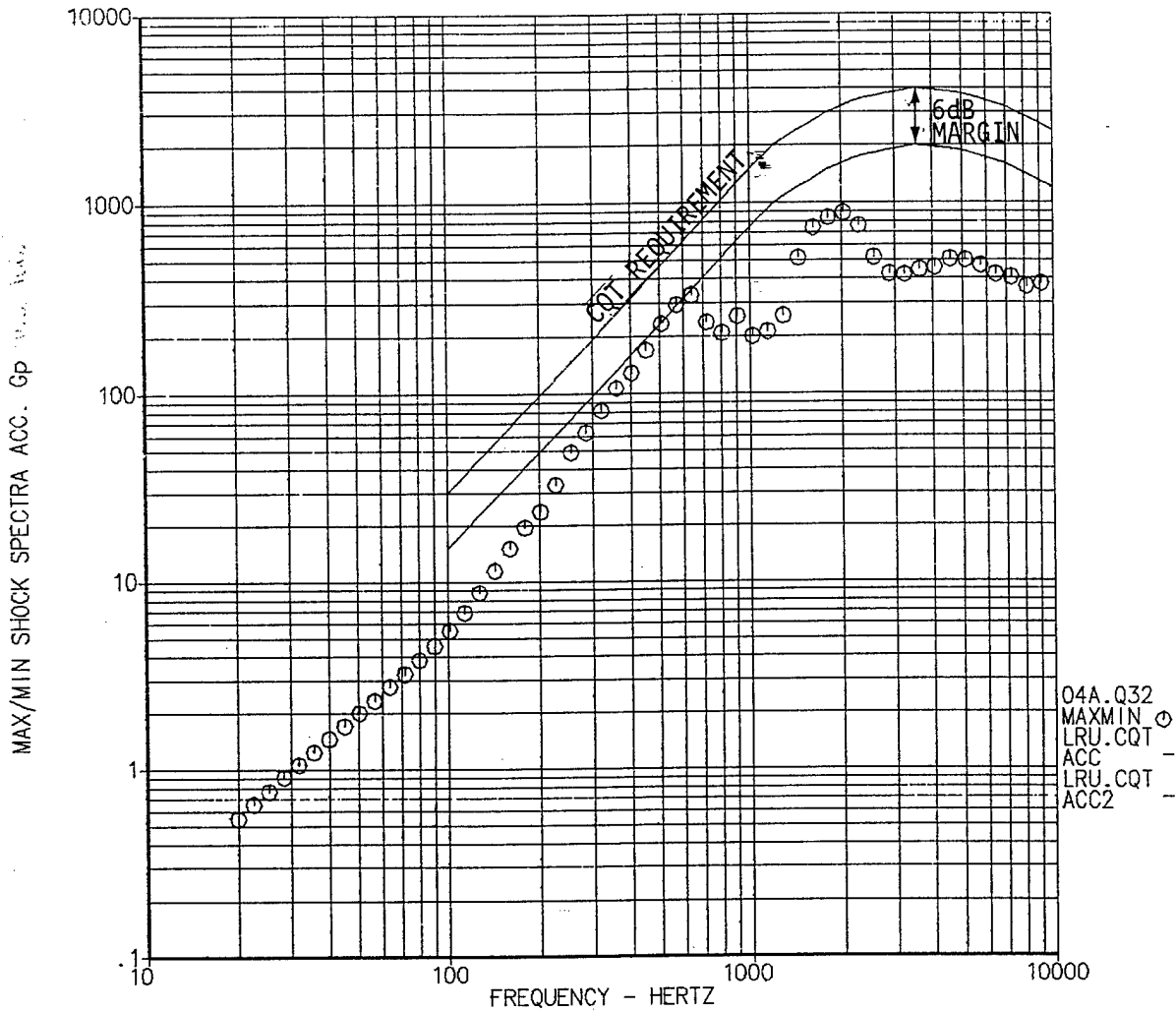


27-MAY-82 17:17:05

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 4A
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FIGURE 2-32
SHOCK SPECTRA ($Q = 10$)
H04A QTV PYROSHOCK TEST 3 PULSE 2

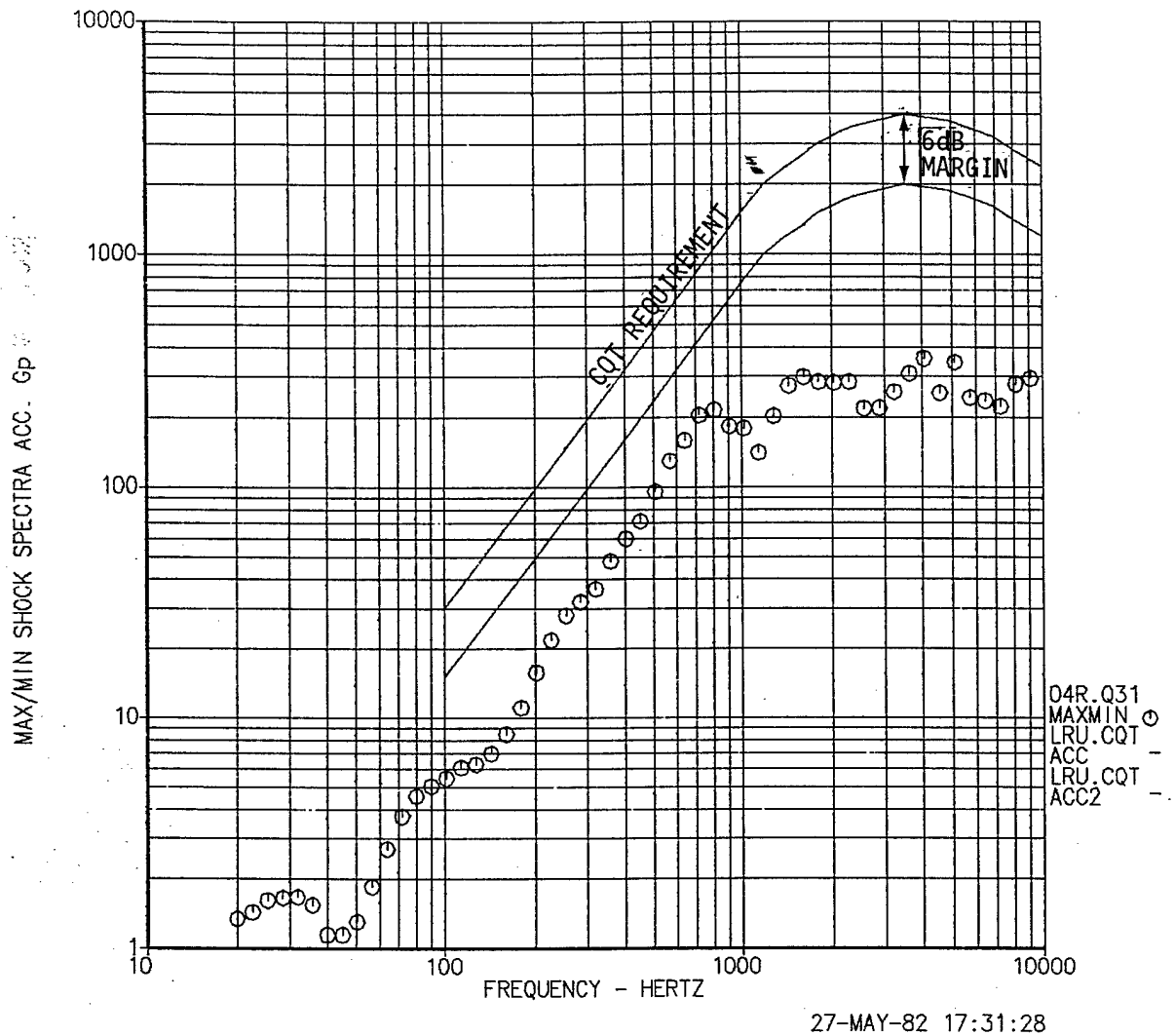


27-MAY-82 17:18:12

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement THE BOEING COMPANY	Acc 4A
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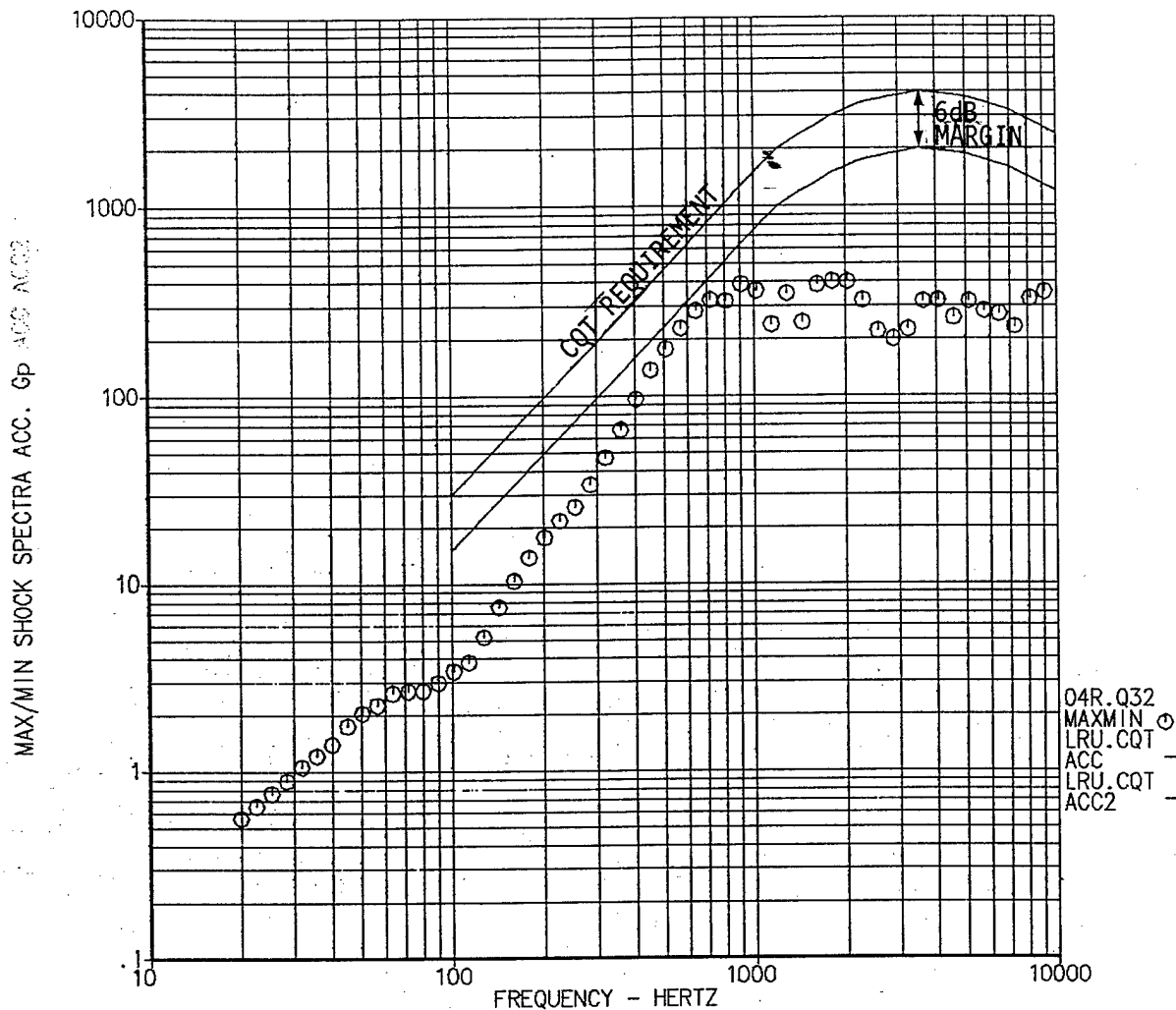
FIGURE 2-33
SHOCK SPECTRA ($Q = 10$)
H04R QTV PYROSHOCK TEST 3 PULSE 1



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FIGURE 2-34
SHOCK SPECTRA ($Q = 10$)
H04R QTV PYROSHOCK TEST 3 PULSE 2

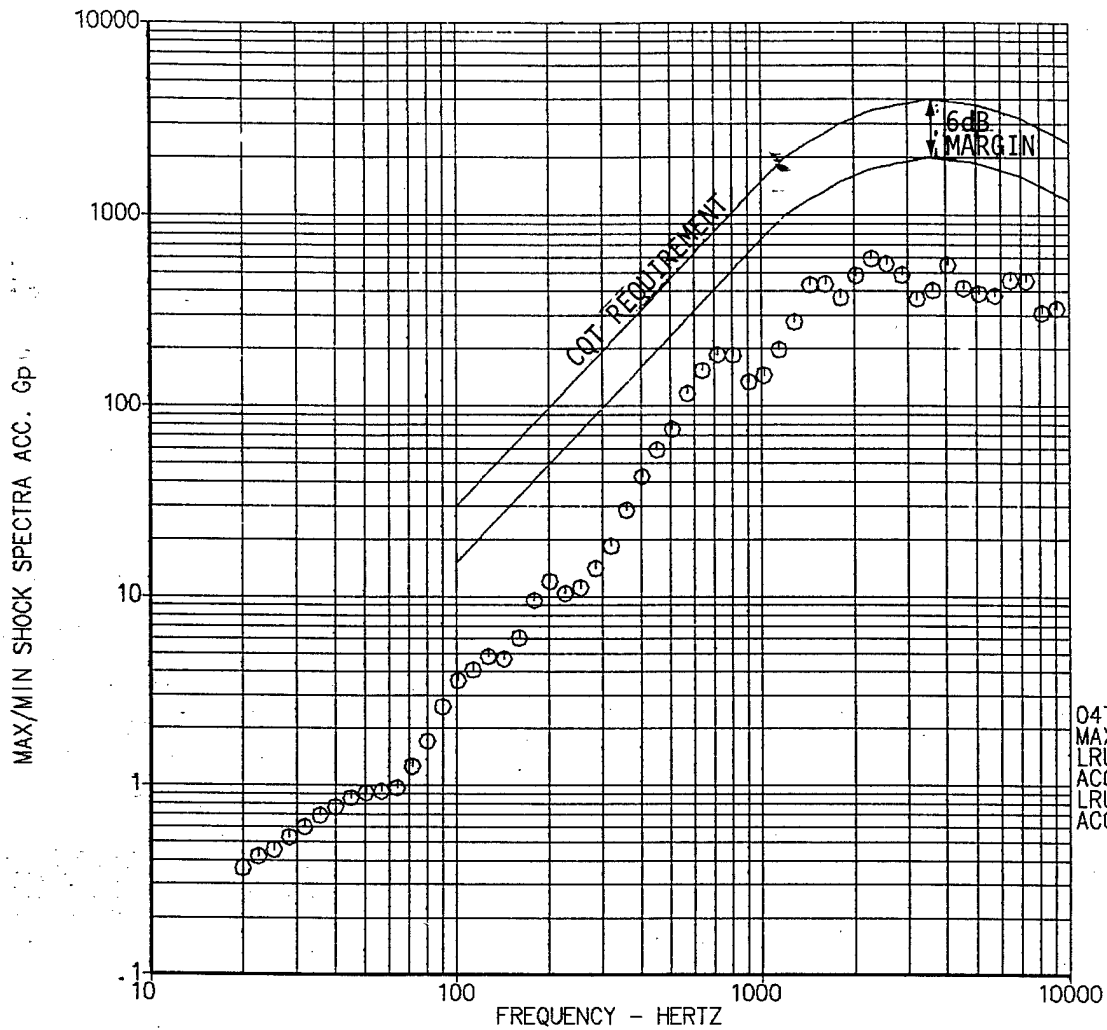


27-MAY-82 17:32:29

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 4R
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FIGURE 2-35
SHOCK SPECTRA (Q = 10)
H04T QTV PYROSHOCK TEST 3 PULSE 1

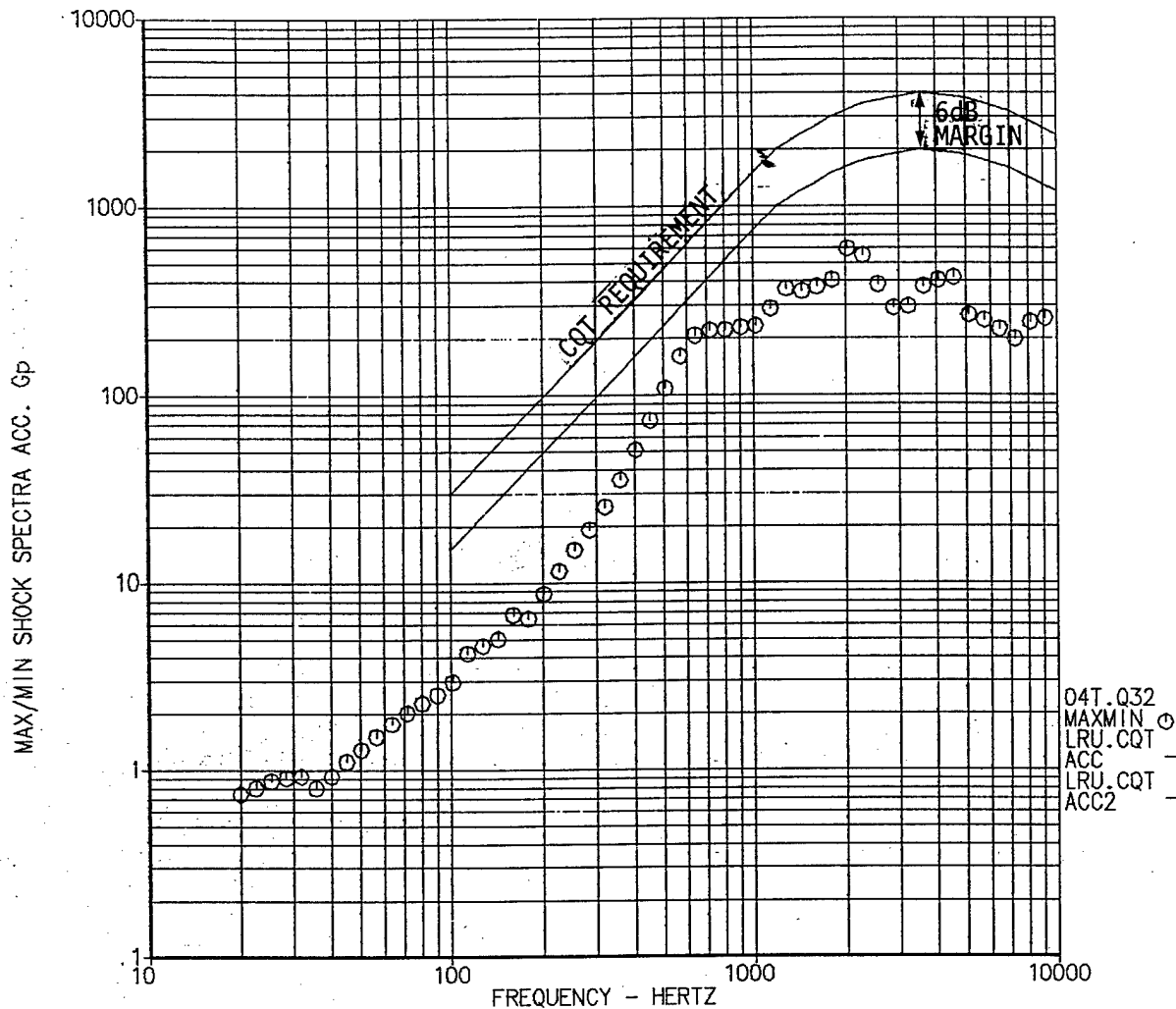


27-MAY-82 17:24:51

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 4T
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FIGURE 2-36
SHOCK SPECTRA ($Q = 10$)
H04T QTV PYROSHOCK TEST 3 PULSE 2

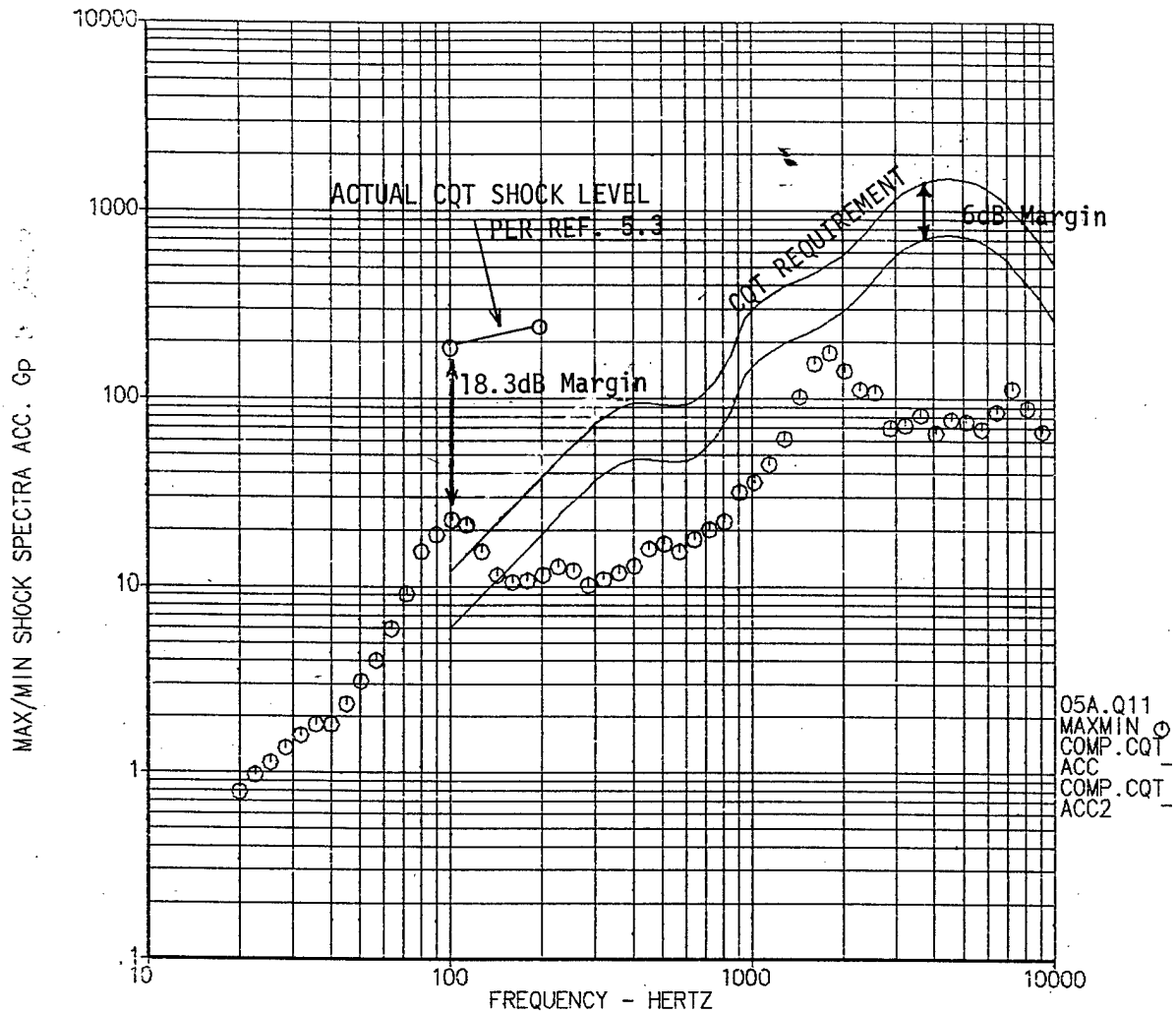


27-MAY-82 17:26:03

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 4T
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FIGURE 2-37
SHOCK SPECTRA (Q = 10)
H05A QTV PYROSHOCK TEST 1 PULSE 1

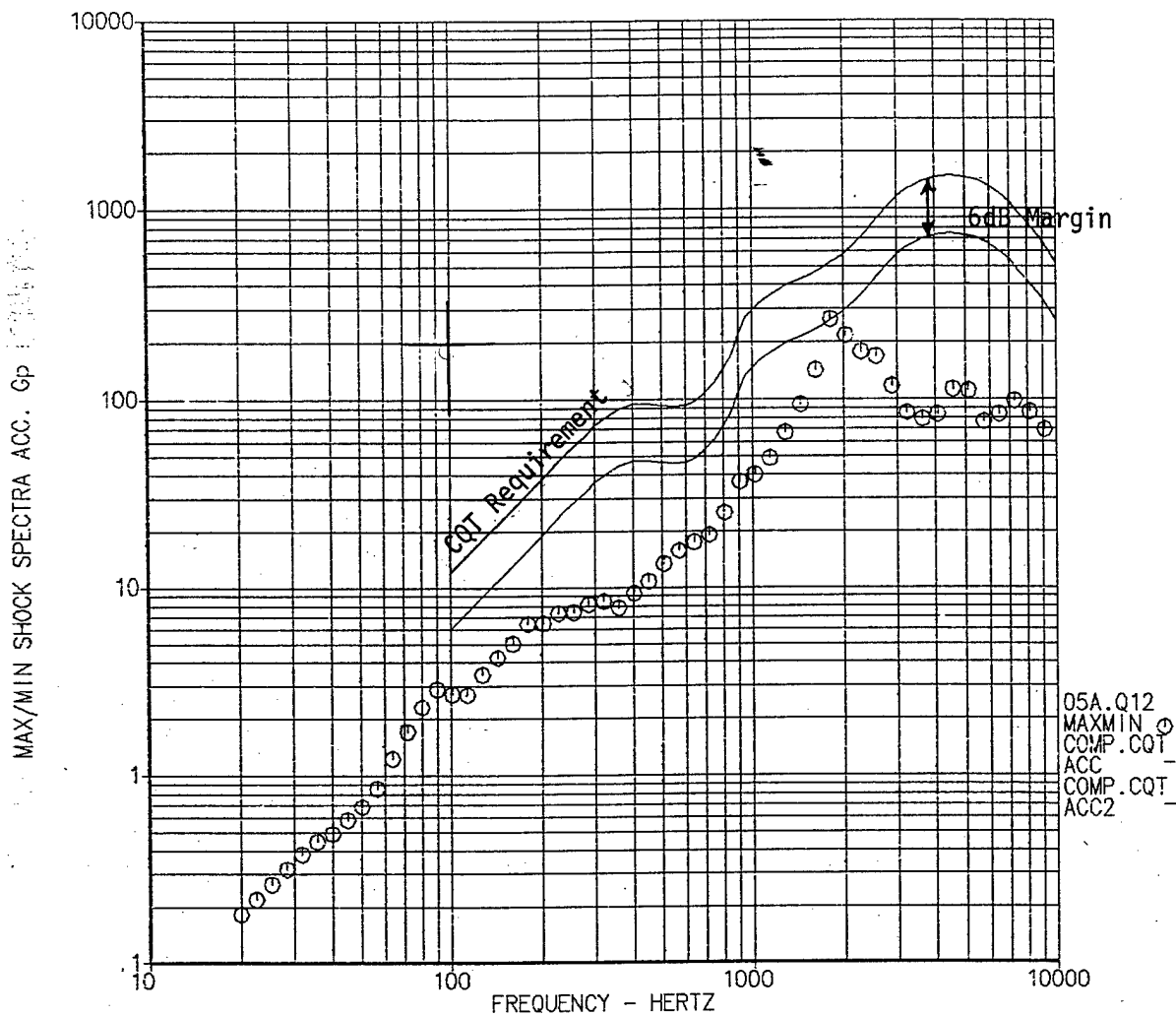


7-JUN-82 08:16:29

COMPUTER

CALC	7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 5A
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FIGURE 2-38
SHOCK SPECTRA ($Q = 10$)
H05A QTV PYROSHOCK TEST 1 PULSE 2



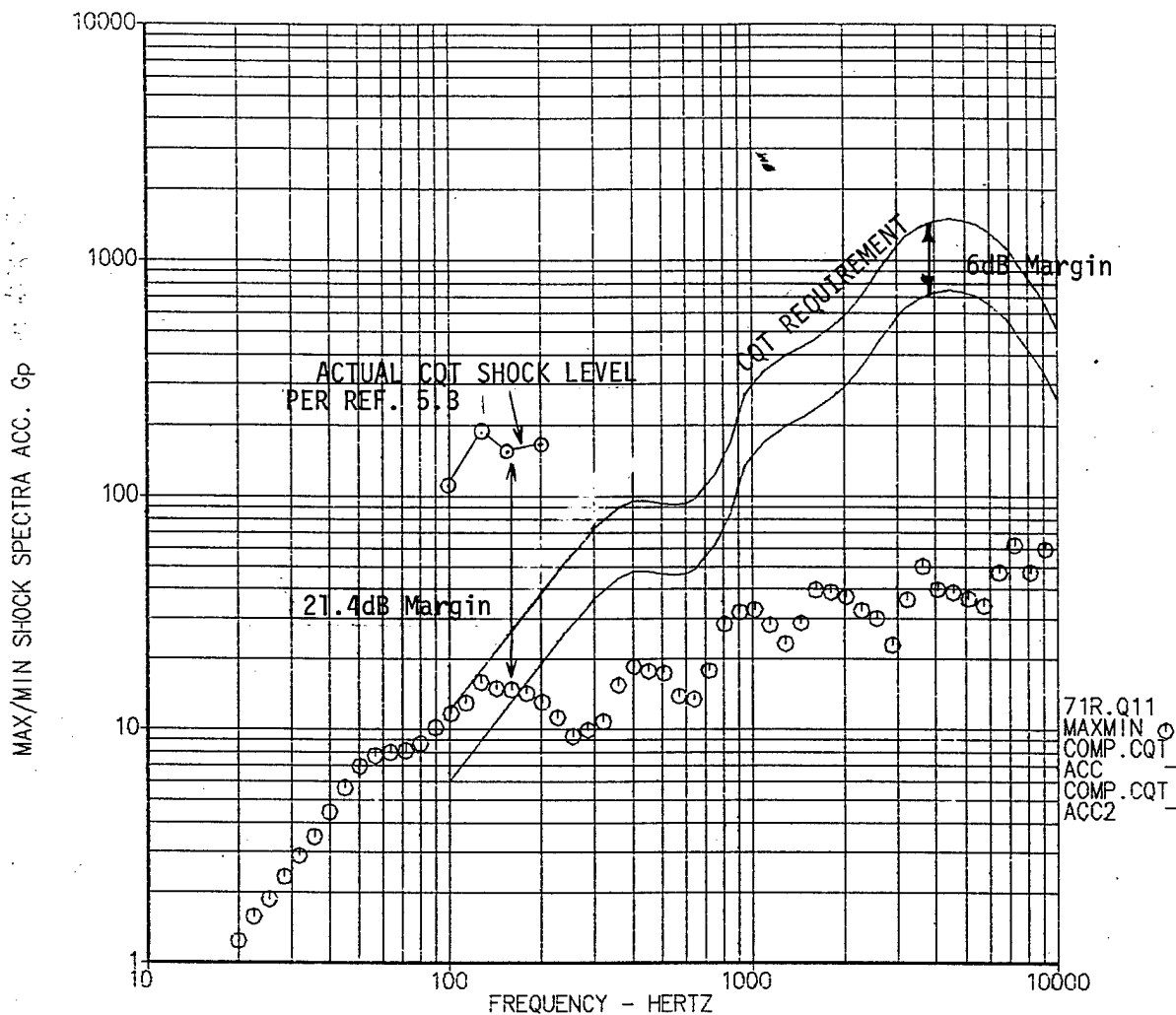
7-JUN-82 08:17:57

COMPUTER

CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 5A
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FIGURE 2-39
SHOCK SPECTRA (Q = 10)
H71R QTV PYROSHOCK TEST 1 PULSE 1

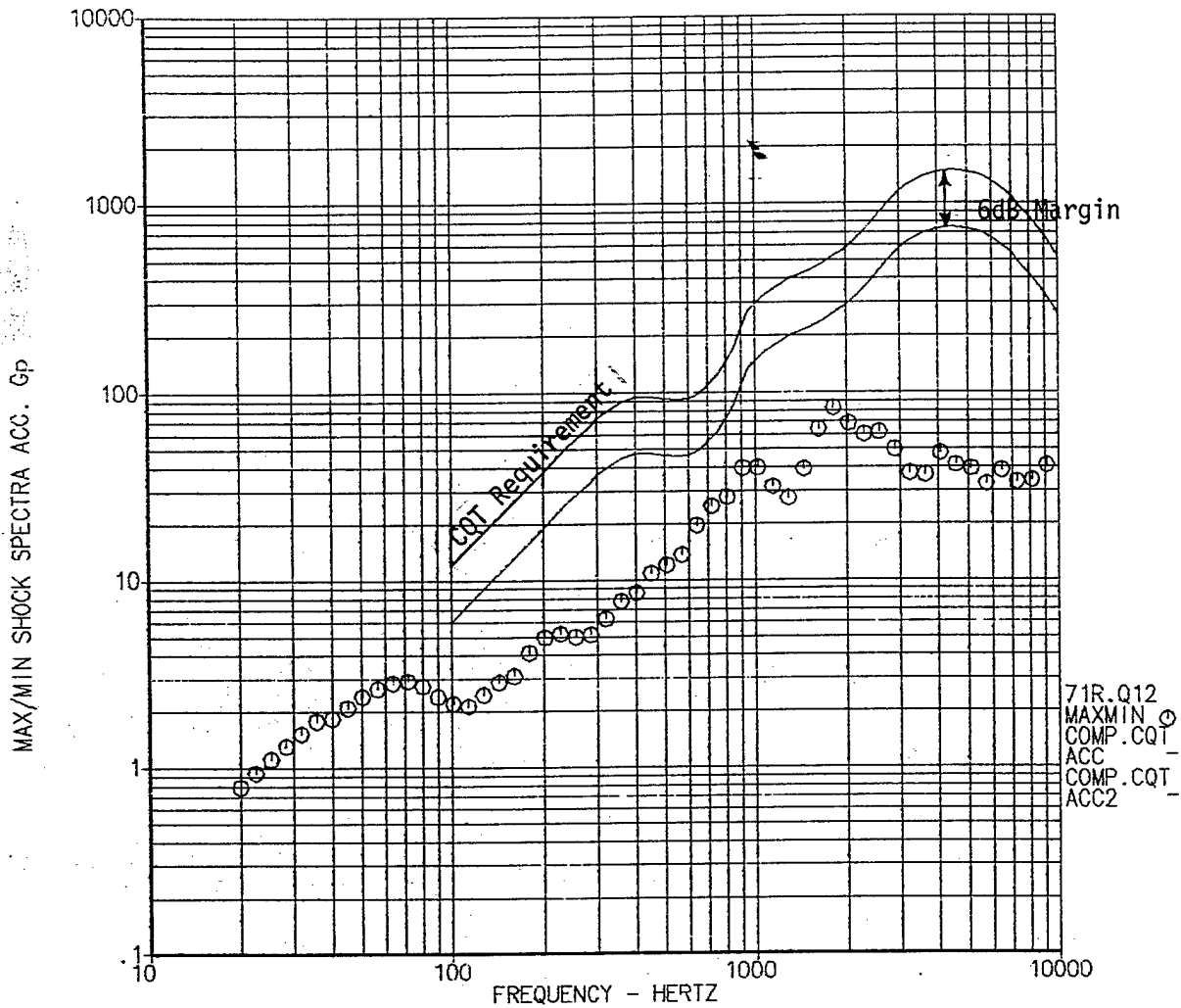


7-JUN-82 08:27:02

COMPUTER

CALC	7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-40
SHOCK SPECTRA (Q = 10)
H71R QTV PYROSHOCK TEST 1 PULSE 2

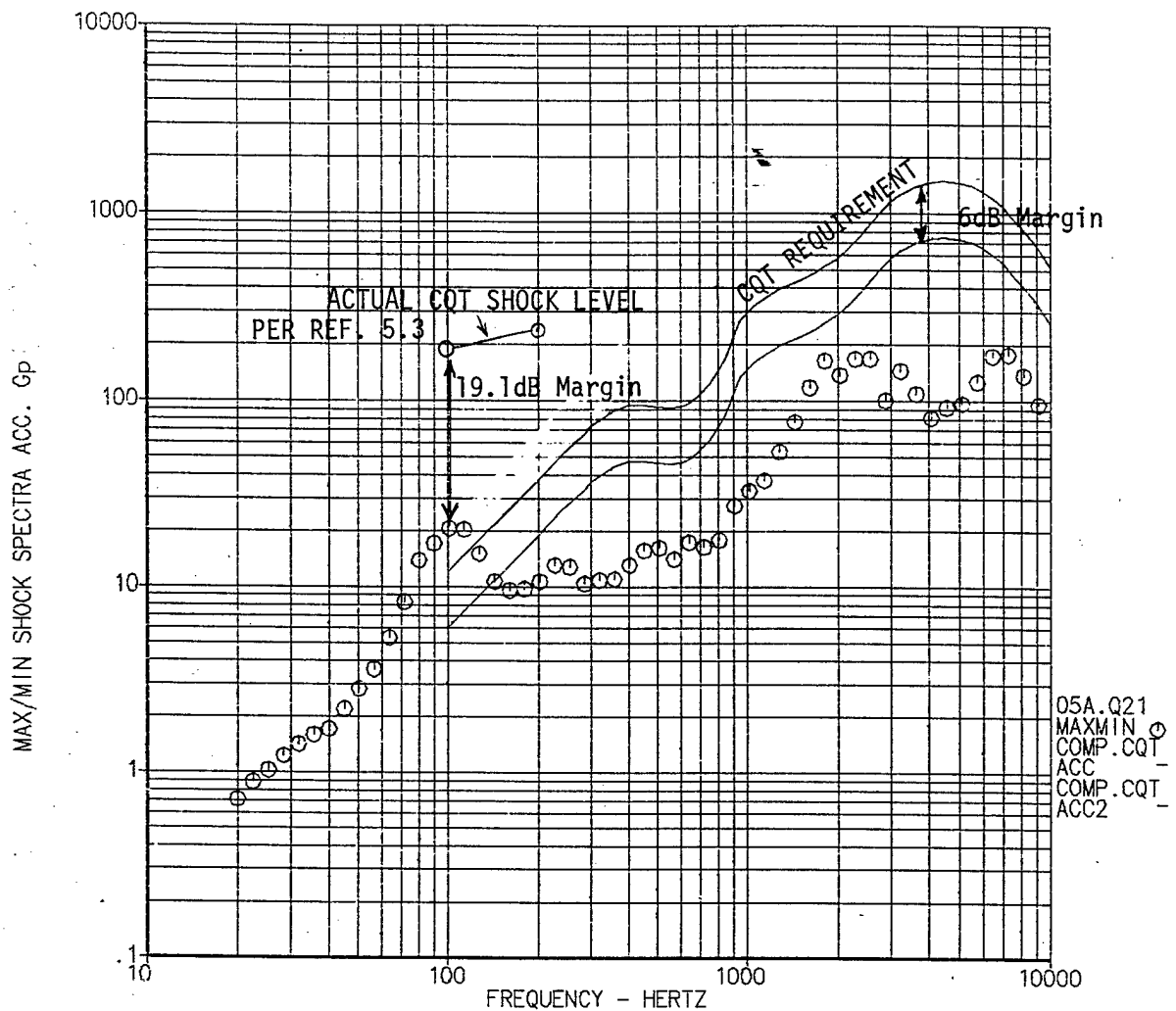


7-JUN-82 09:04:30

COMPUTER

CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-41
SHOCK SPECTRA (Q = 10)
H05A QTV PYROSHOCK TEST 2 PULSE 1

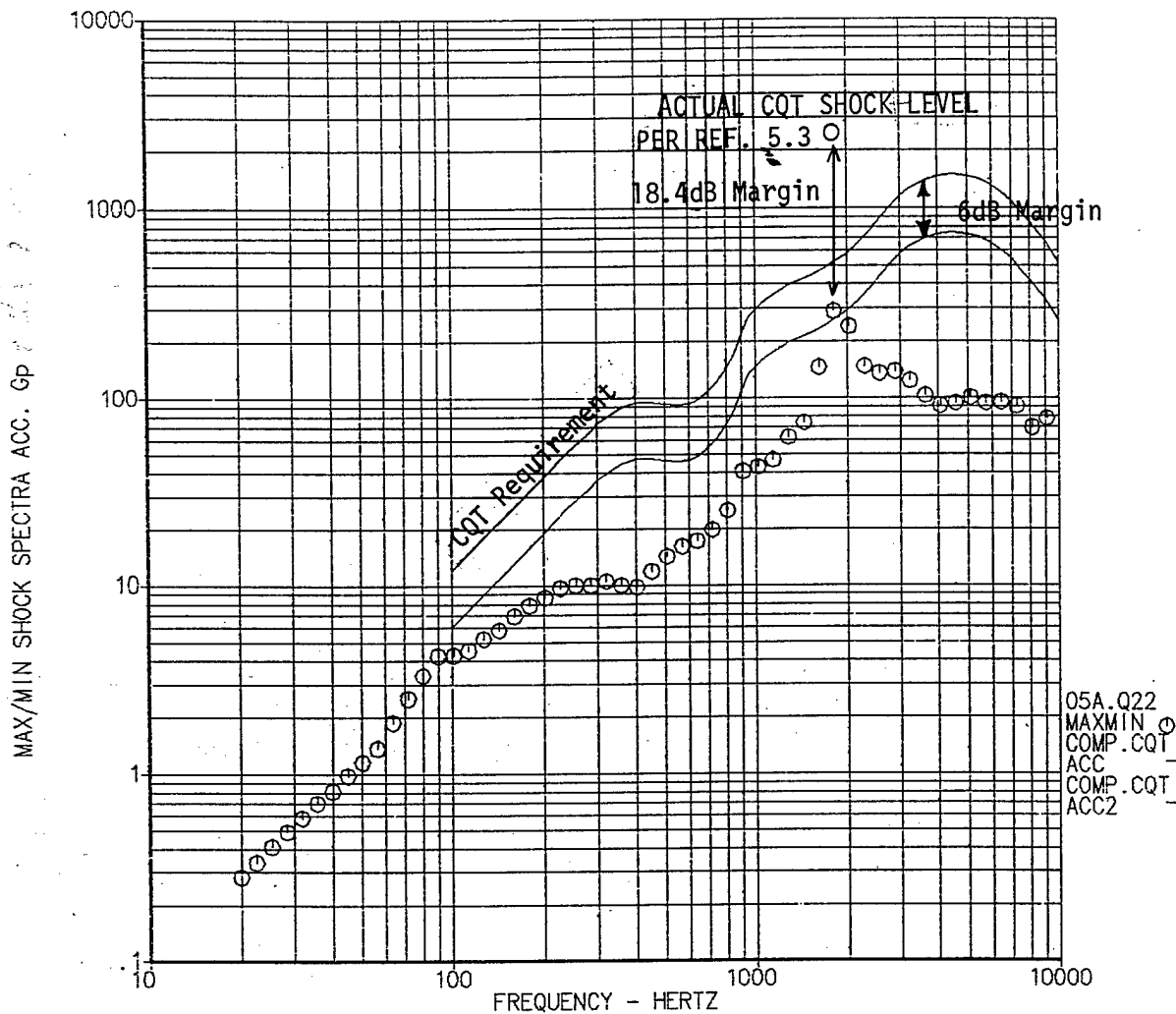


7-JUN-82 08:19:24

COMPUTER

CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 5A
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FIGURE 2-42
SHOCK SPECTRA (Q = 10)
H05A QTV PYROSHOCK TEST 2 PULSE 2

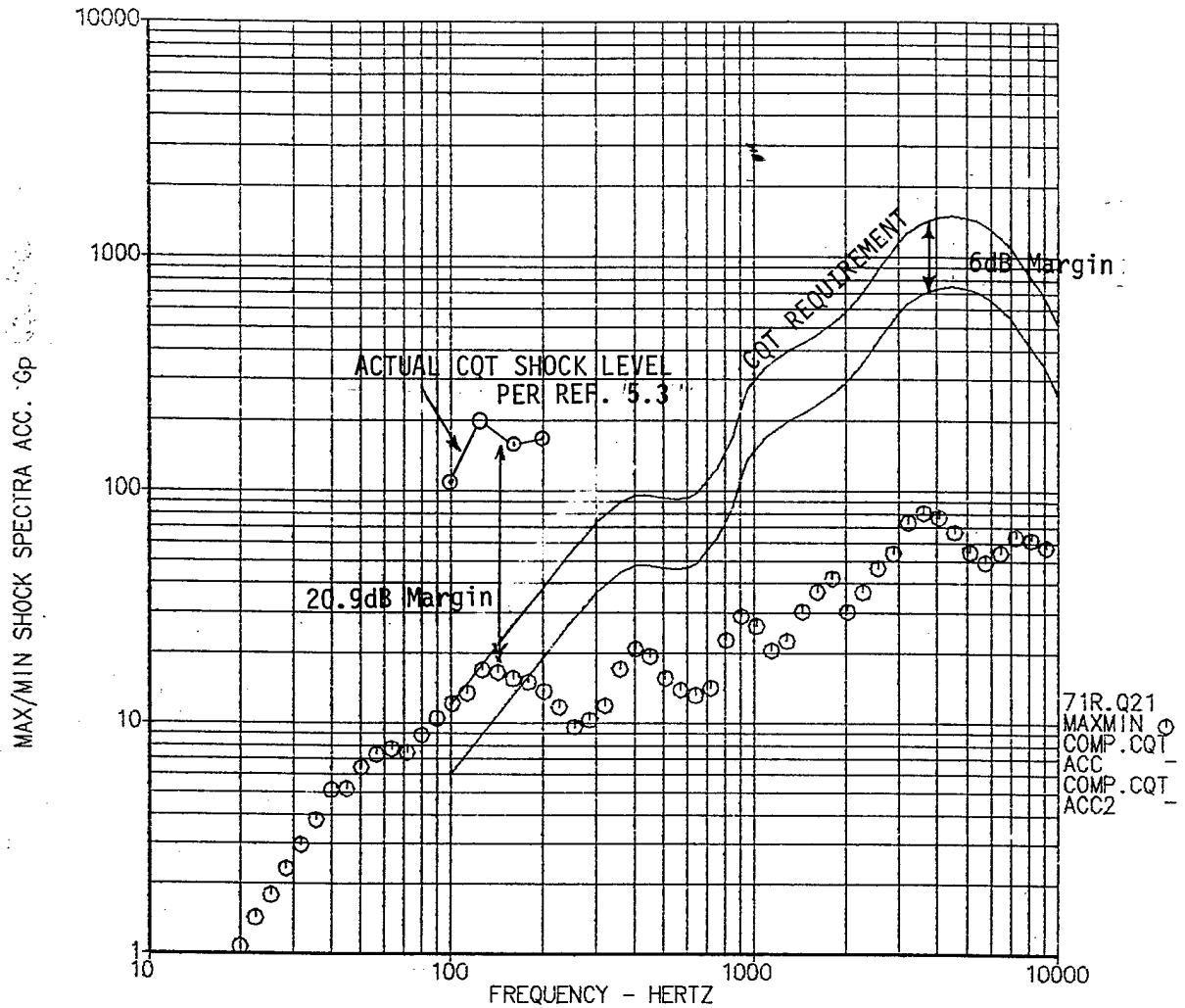


7-JUN-82 08:20:53

COMPUTER

CALC	7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 5A
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FIGURE 2-43
SHOCK SPECTRA (Q = 10)
H71R QTV PYROSHOCK TEST 2 PULSE 1



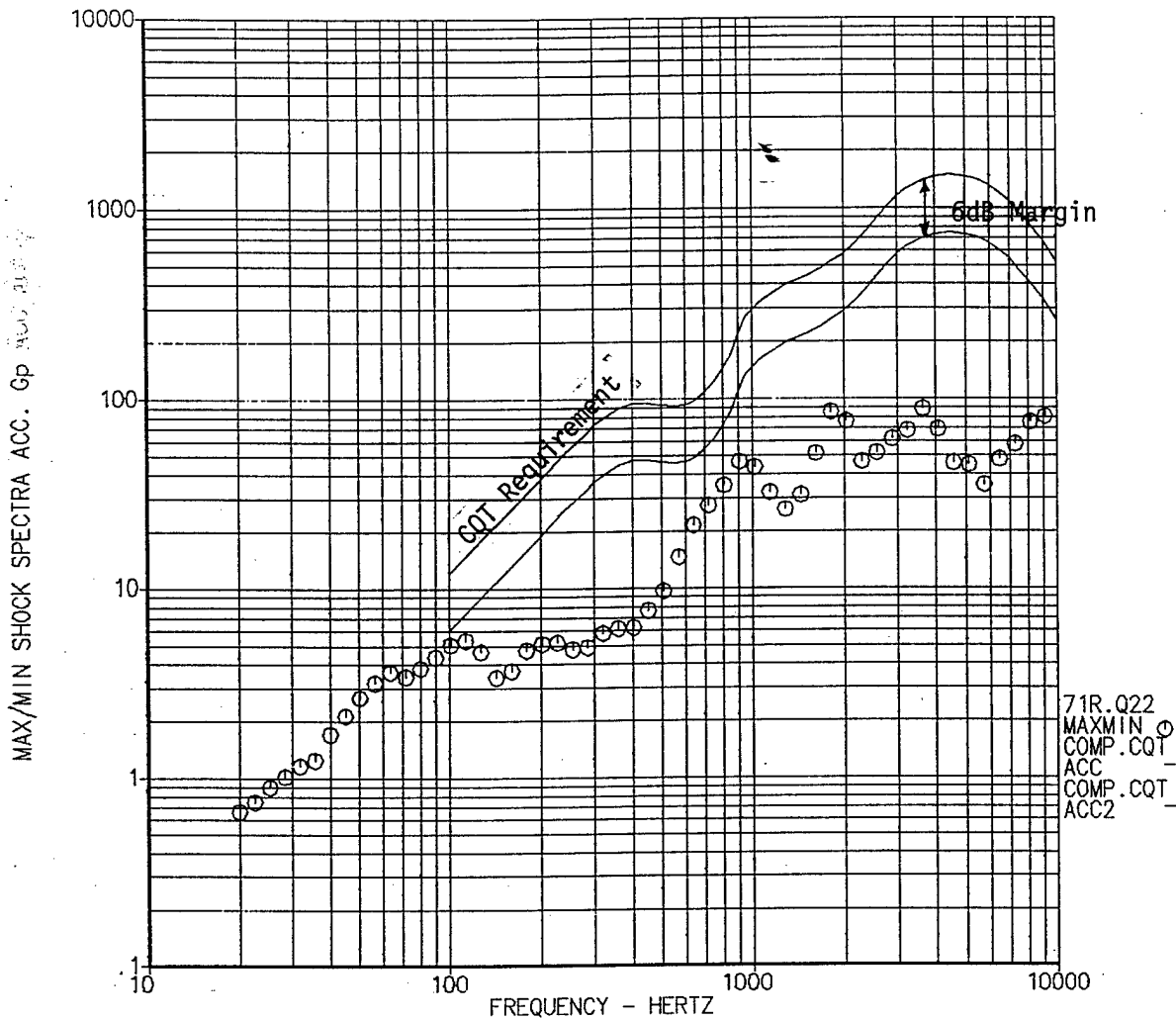
7-JUN-82 09:07:54

COMPUTER

CALC	7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-44
SHOCK SPECTRA (Q = 10)
H71R QTV PYROSHOCK TEST 2 PULSE 2

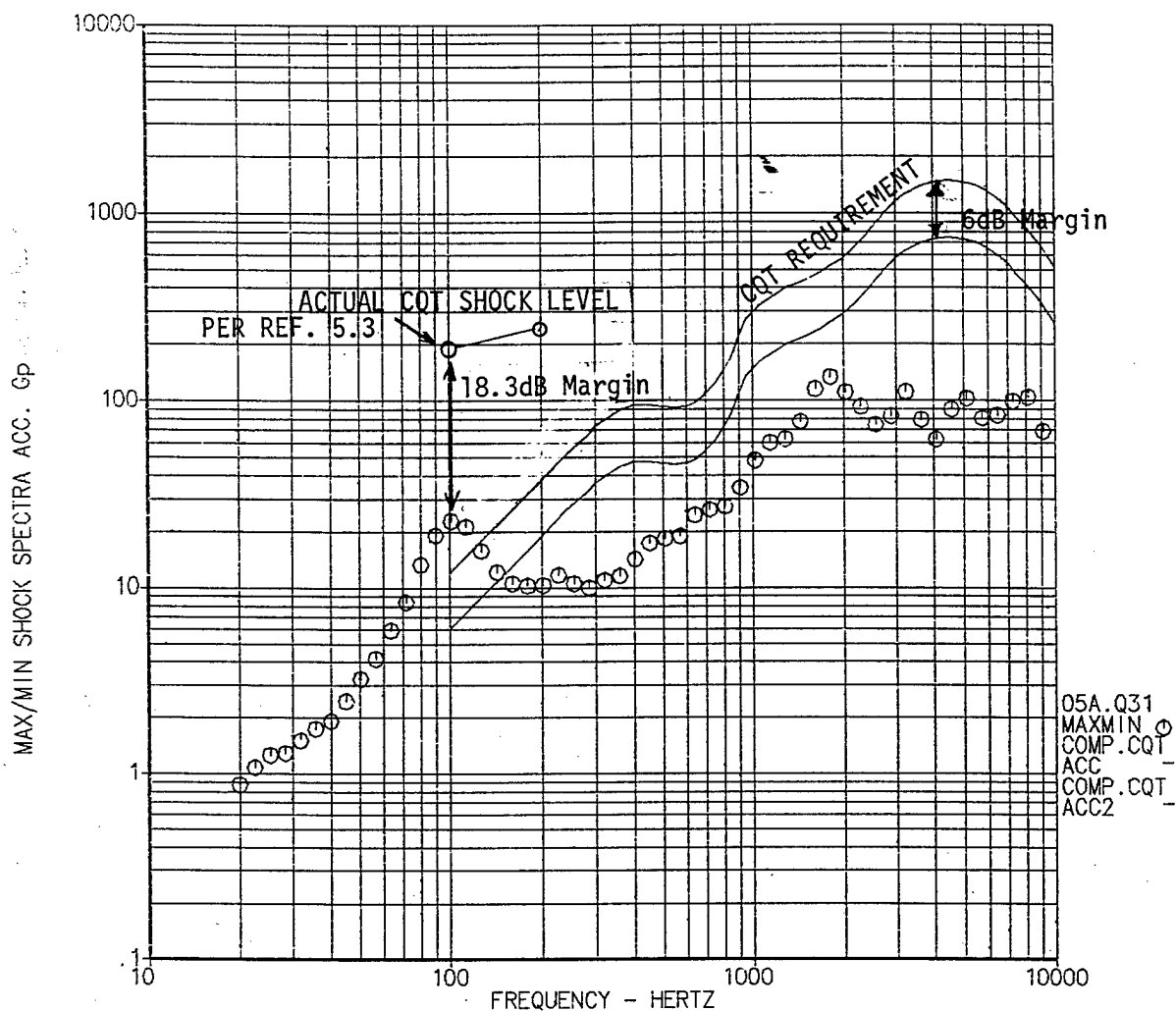


8-JUN-82 17:37:27

COMPUTER

CALC	8JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-45
SHOCK SPECTRA (Q = 10)
H05A QTV PYROSHOCK TEST 3 PULSE 1



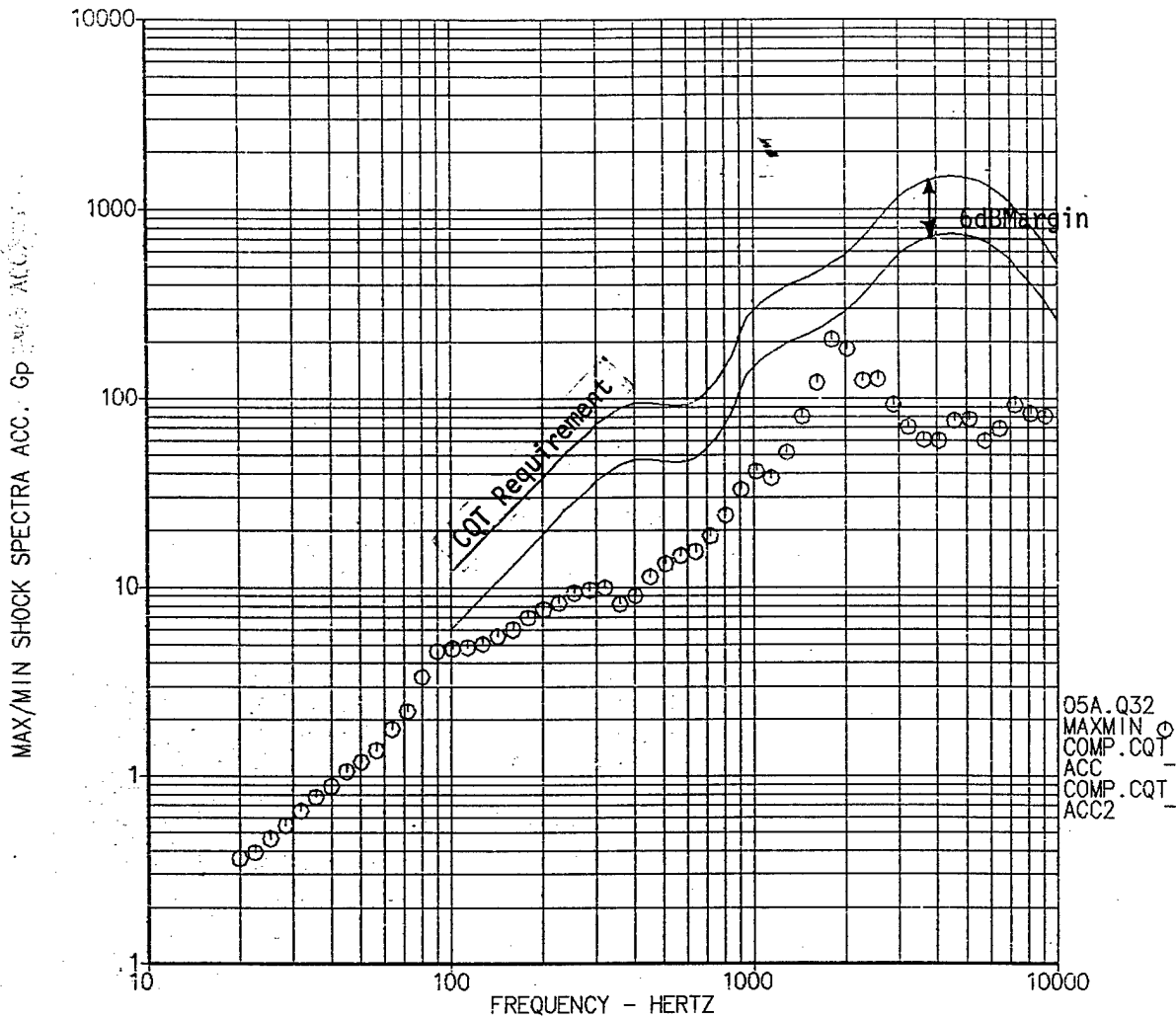
7-JUN-82 08:22:21

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component test requirement	Acc 5A
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FIGURE 2-46
SHOCK SPECTRA (Q = 10)
H05A QTV PYROSHOCK TEST 3 PULSE 2

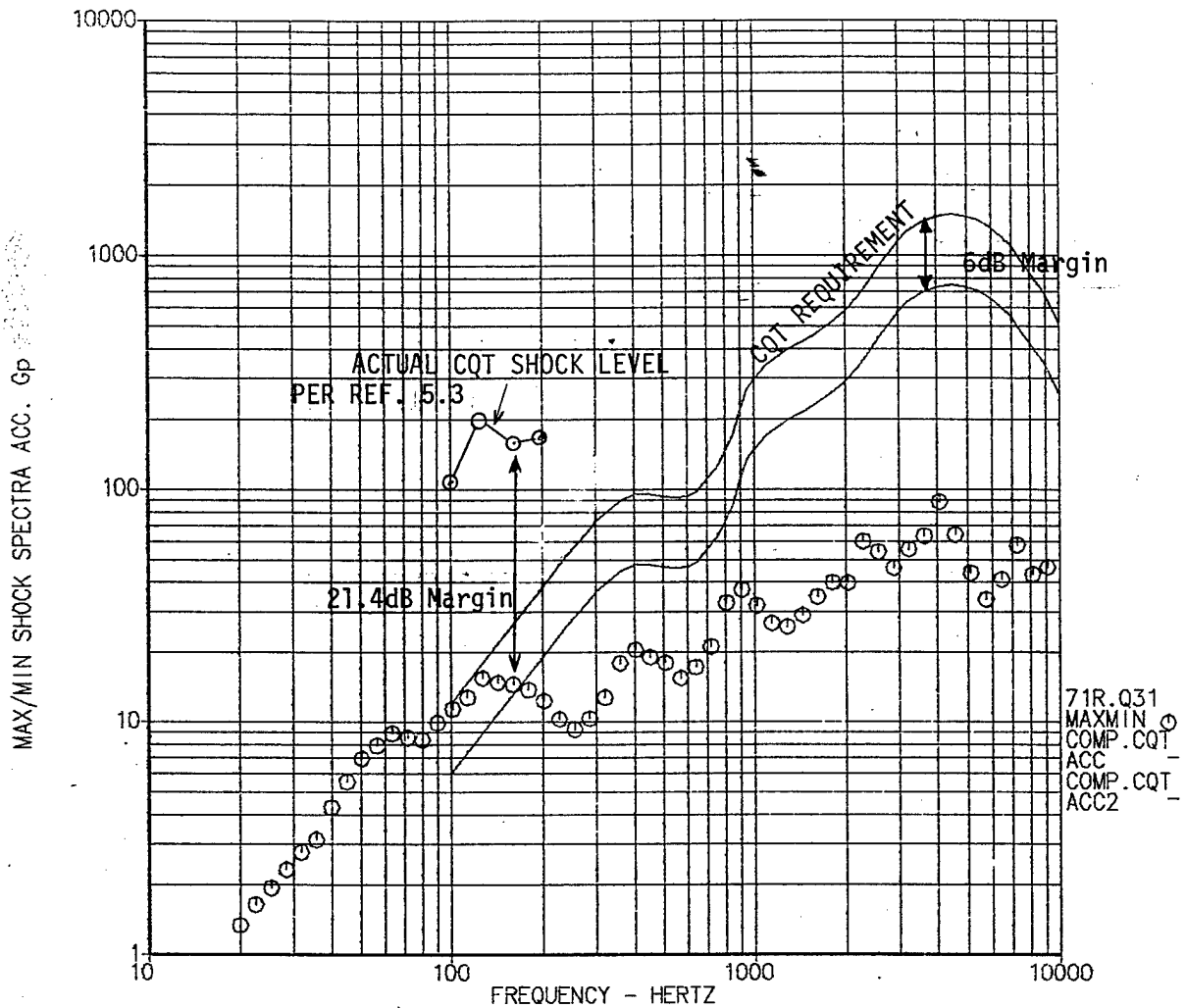


7-JUN-82 08:24:08

COMPUTER

CALC	7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 5A
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FIGURE 2-47
SHOCK SPECTRA (Q = 10)
H71R QTV PYROSHOCK TEST 3 PULSE 1

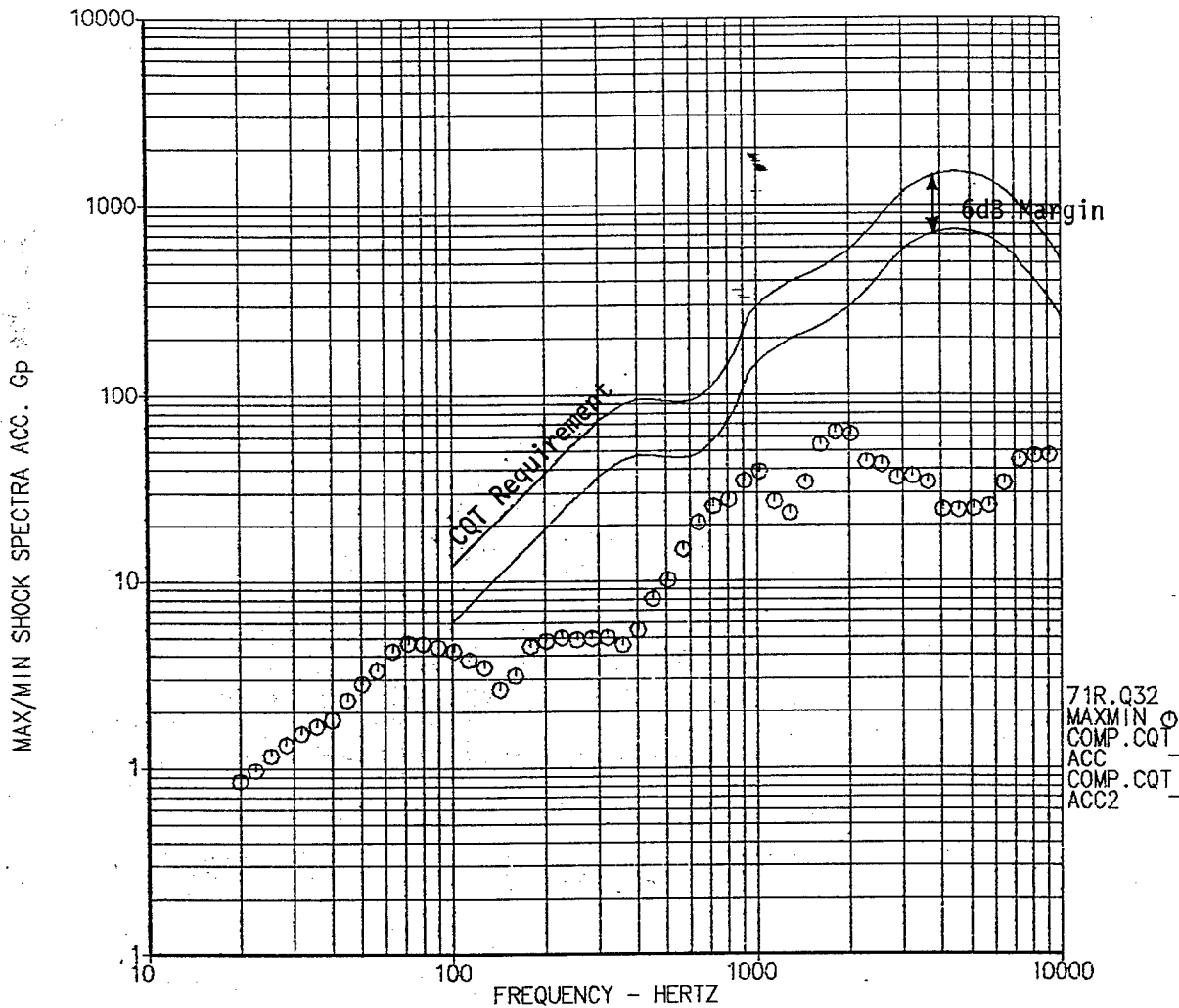


7-JUN-82 09:15:19

COMPUTER

CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-48
SHOCK SPECTRA ($Q = 10$)
H71R QTV PYROSHOCK TEST 3 PULSE 2

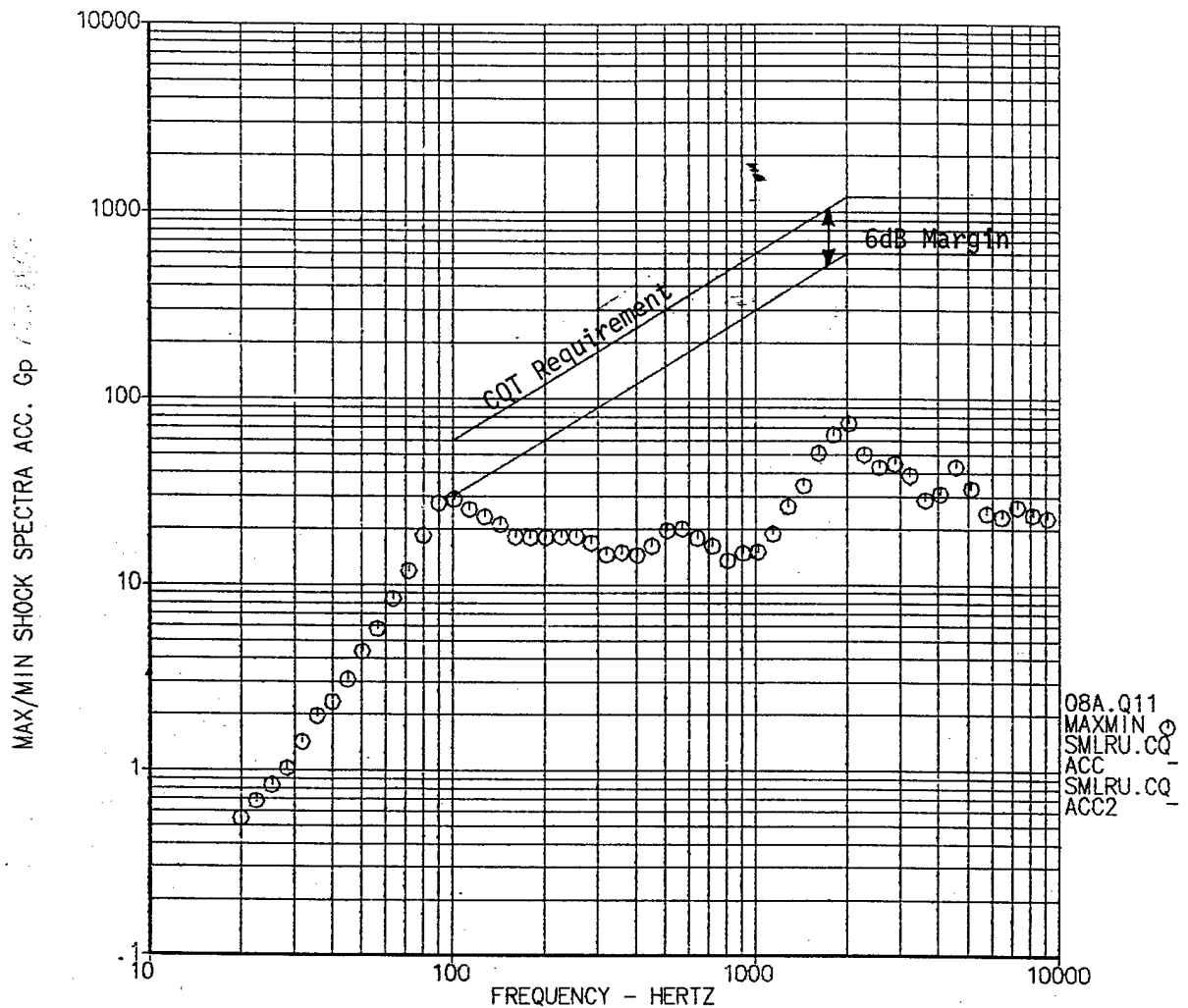


7-JUN-82 09:18:25

COMPUTER

CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 71R
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FIGURE 2-49
SHOCK SPECTRA (Q = 10)
H08A QTV PYROSHOCK TEST 1 PULSE 1



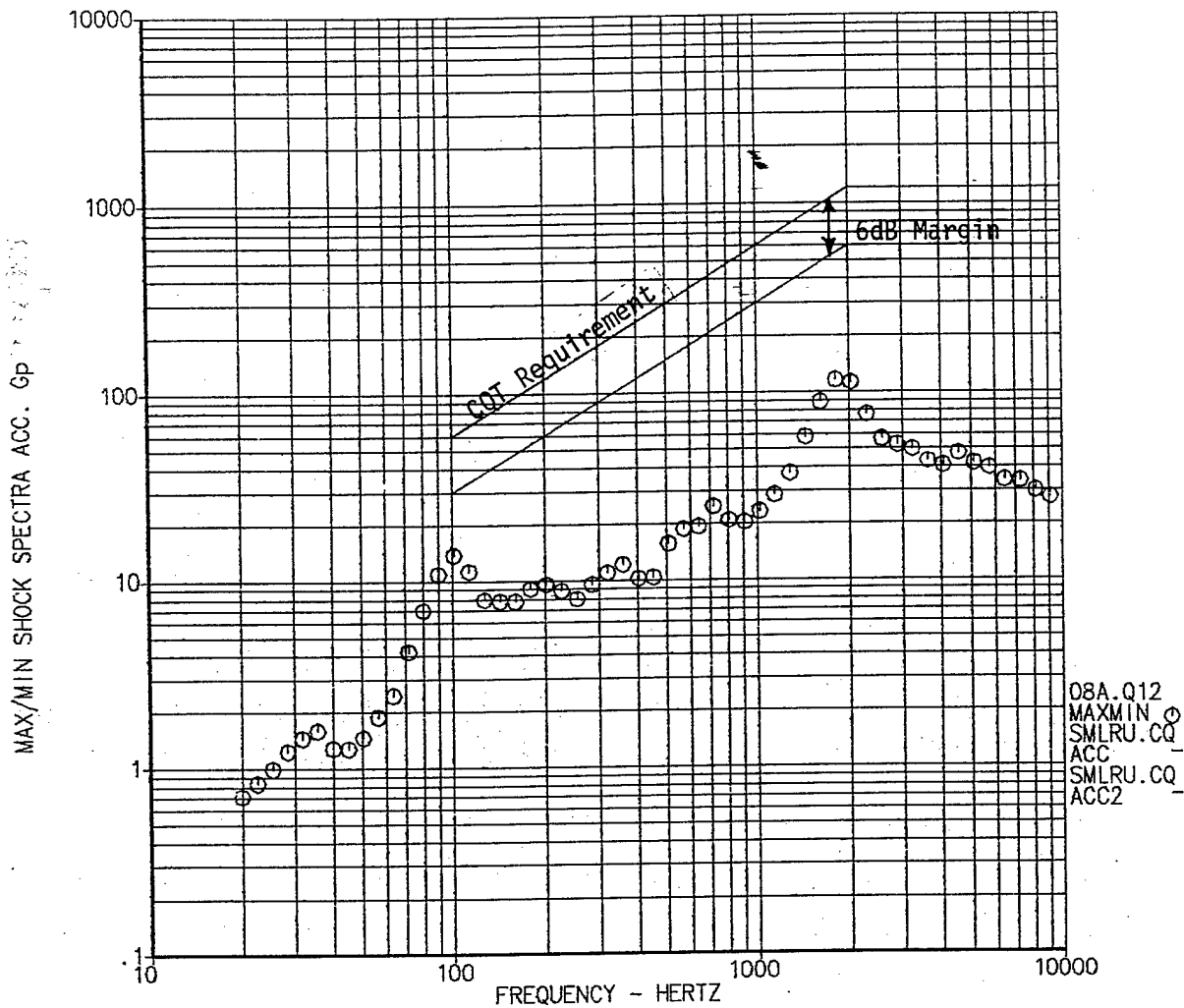
7-JUN-82 09:20:29

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FIGURE 2-50
SHOCK SPECTRA ($Q = 10$)
H08A QTV PYROSHOCK TEST 1 PULSE 2

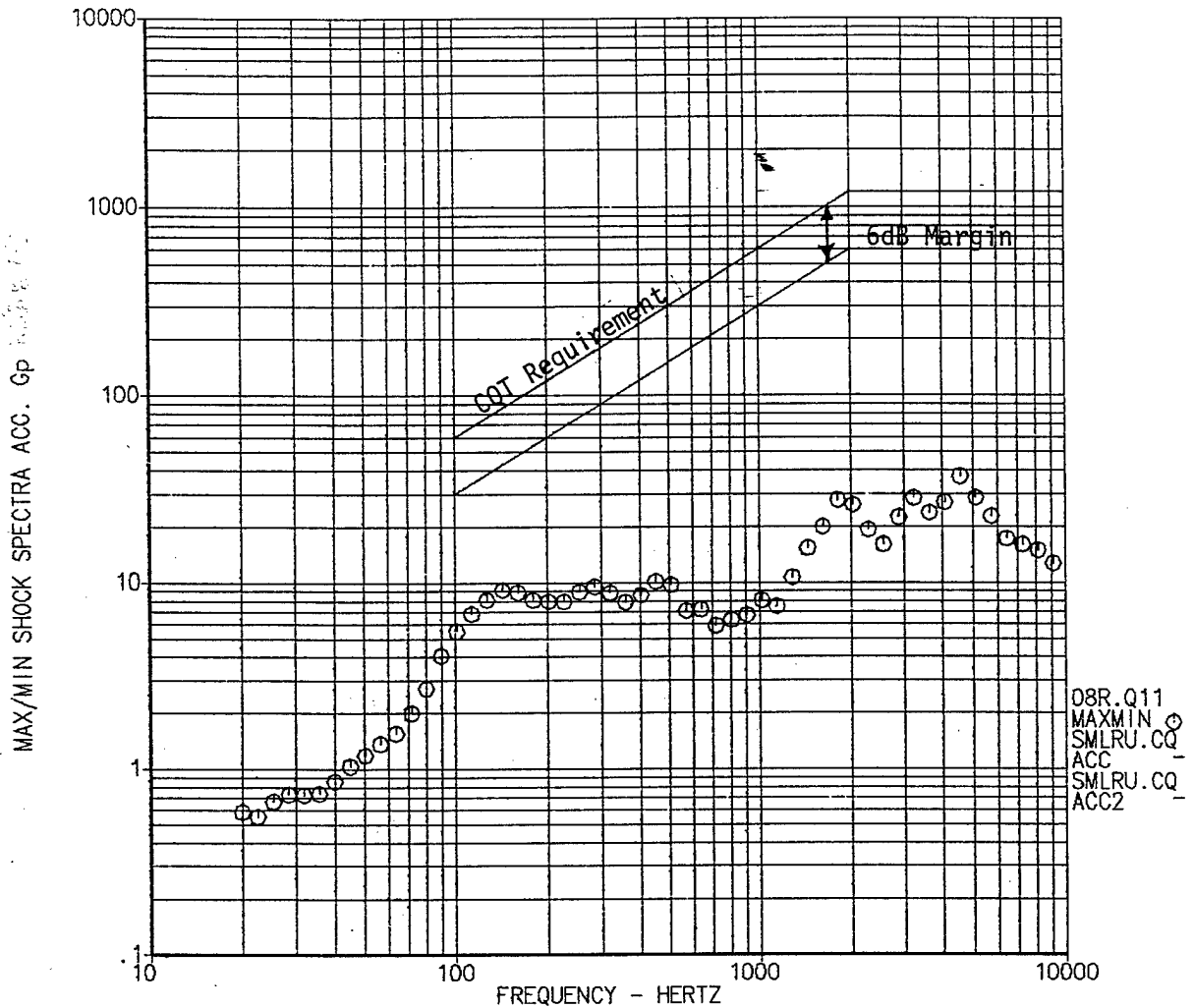


7-JUN-82 09:22:12

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FIGURE 2-51
SHOCK SPECTRA (Q = 10)
H08R QTV PYROSHOCK TEST 1 PULSE 1

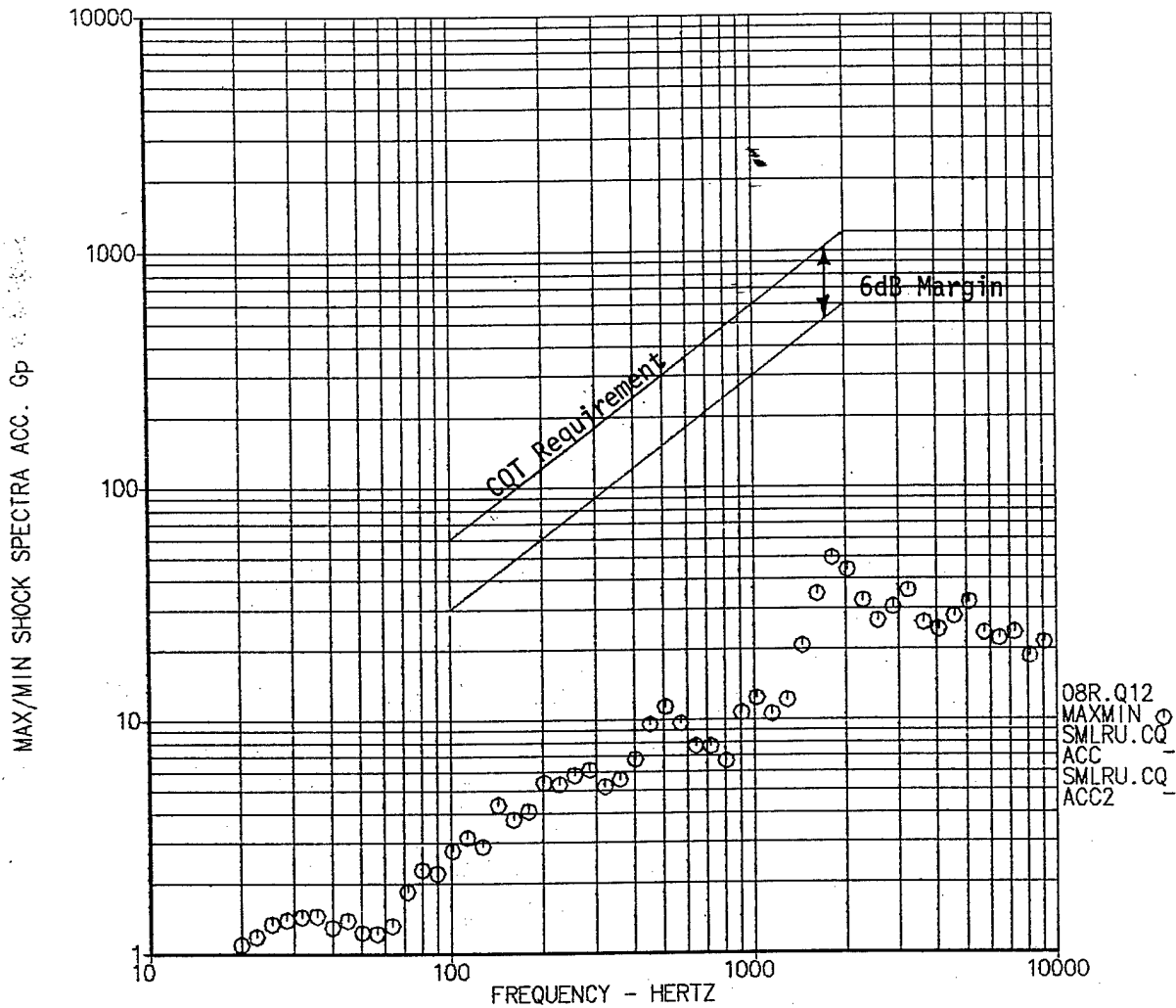


7-JUN-82 09:33:41

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 8R
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FIGURE 2-52
SHOCK SPECTRA (Q = 10)
H08R QTV PYROSHOCK TEST 1 PULSE 2

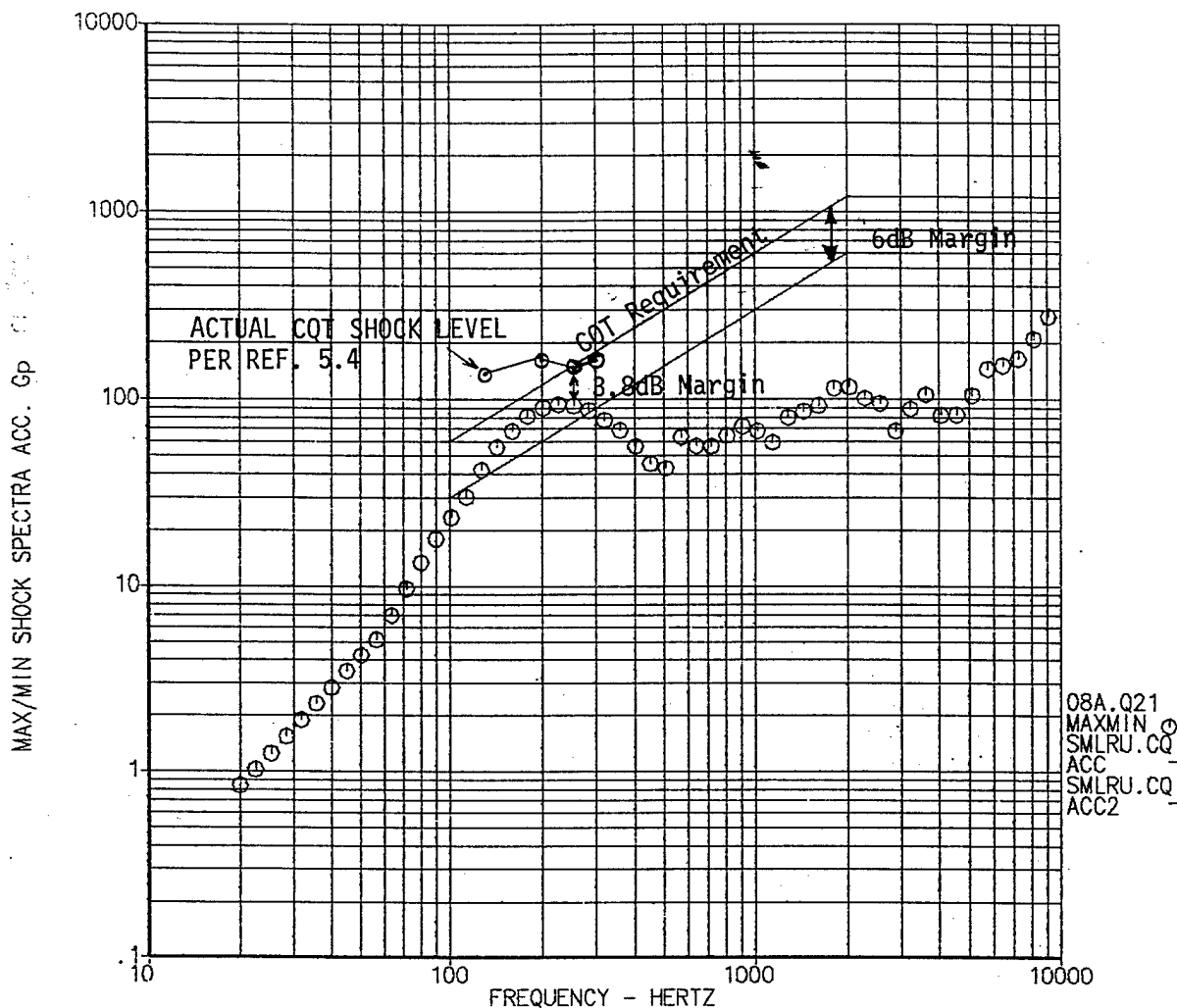


7-JUN-82 09:36:58

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FIGURE 2-53
SHOCK SPECTRA (Q = 10)
H08A QTV PYROSHOCK TEST 2 PULSE 1



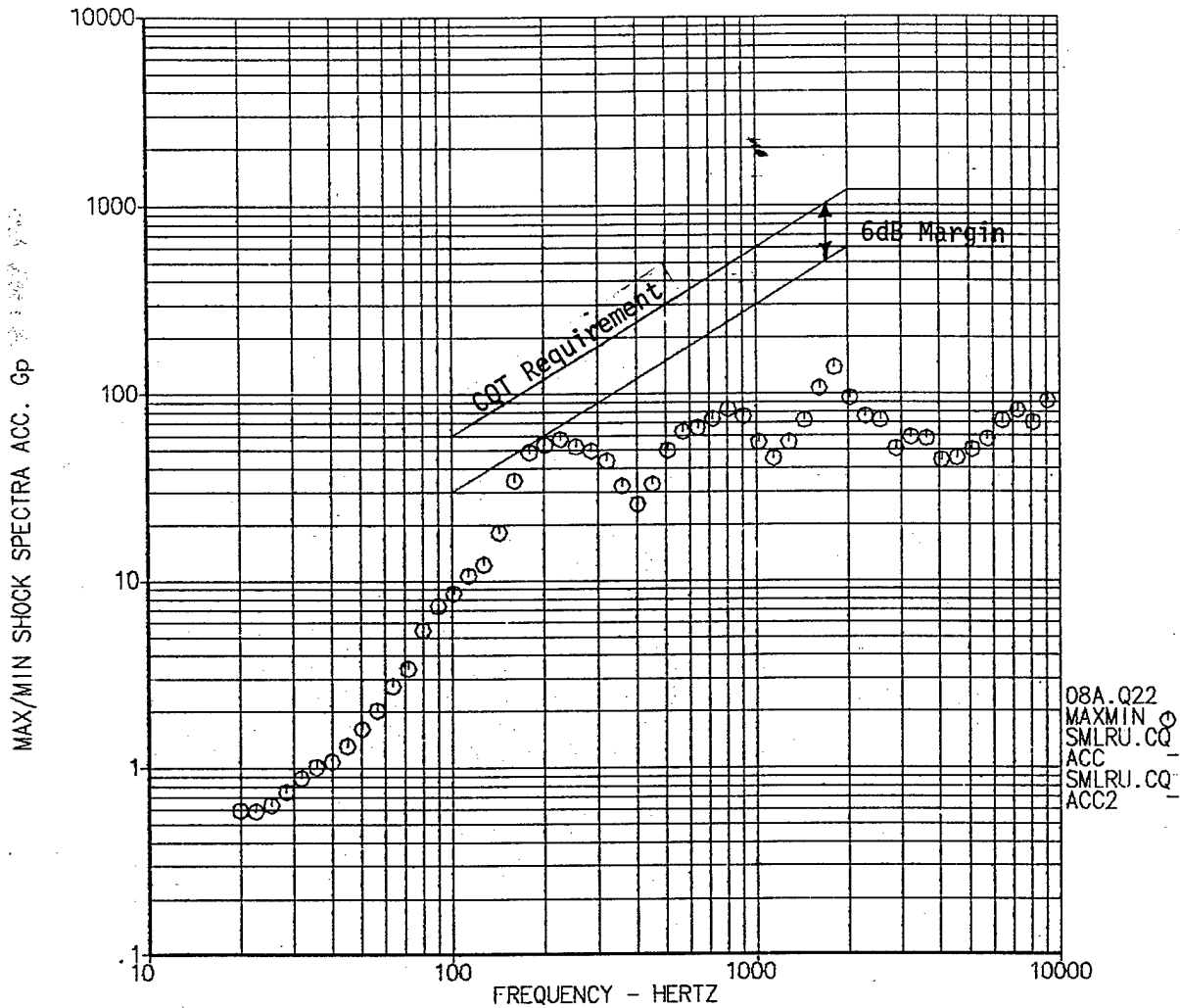
7-JUN-82 09:23:51

Note: 3.8dB margin between Actual CQT level and maximum expected environment is greater than the 3.0dB minimum margin required to comply with intent of MIL-STD-1540A.

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FIGURE 2-54
SHOCK SPECTRA ($Q = 10$)
H08A QTV PYROSHOCK TEST 2 PULSE 2

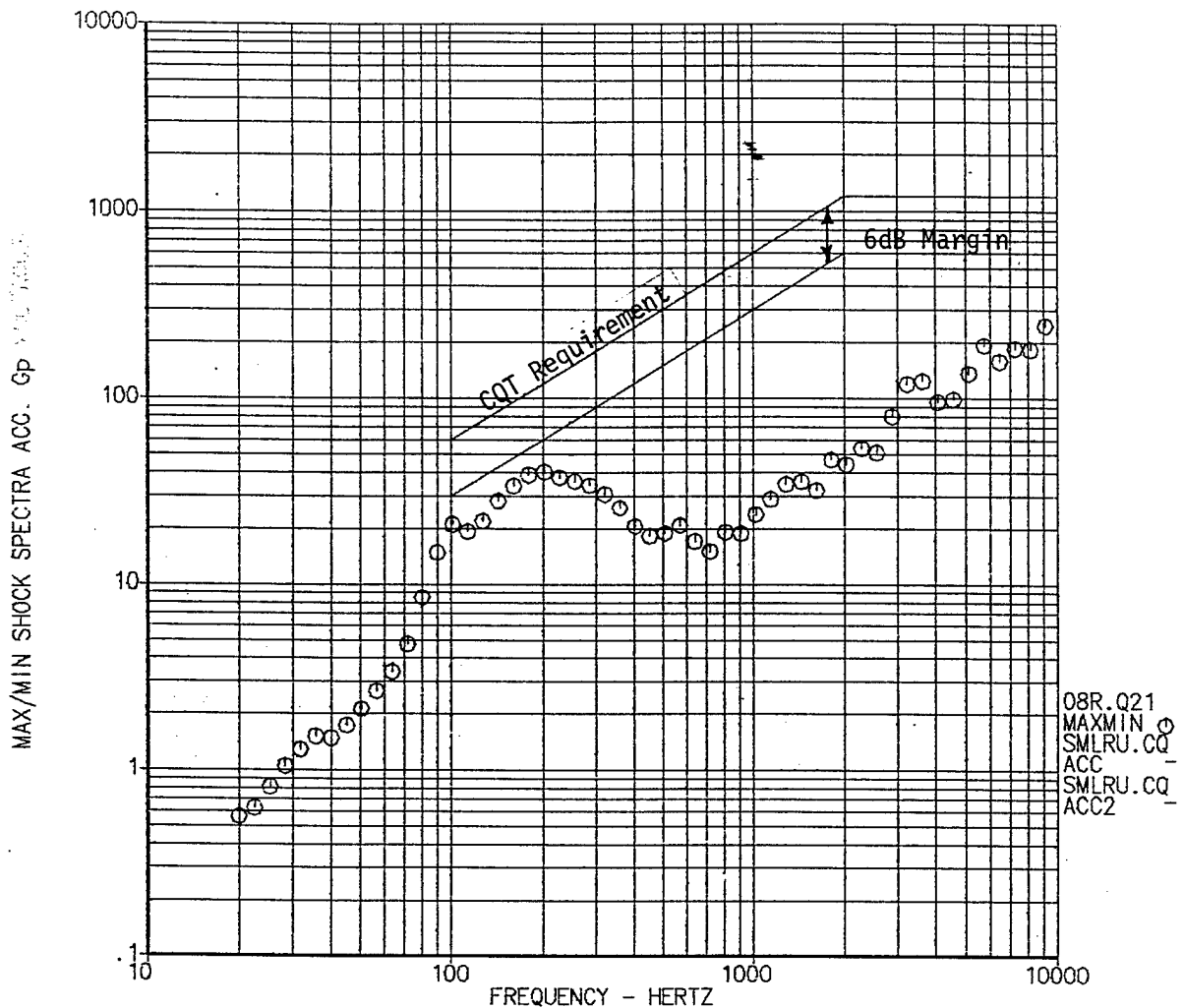


7-JUN-82 09:25:39

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 8A
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FIGURE 2-55
SHOCK SPECTRA ($Q = 10$)
H08R QTV PYROSHOCK TEST 2 PULSE 1

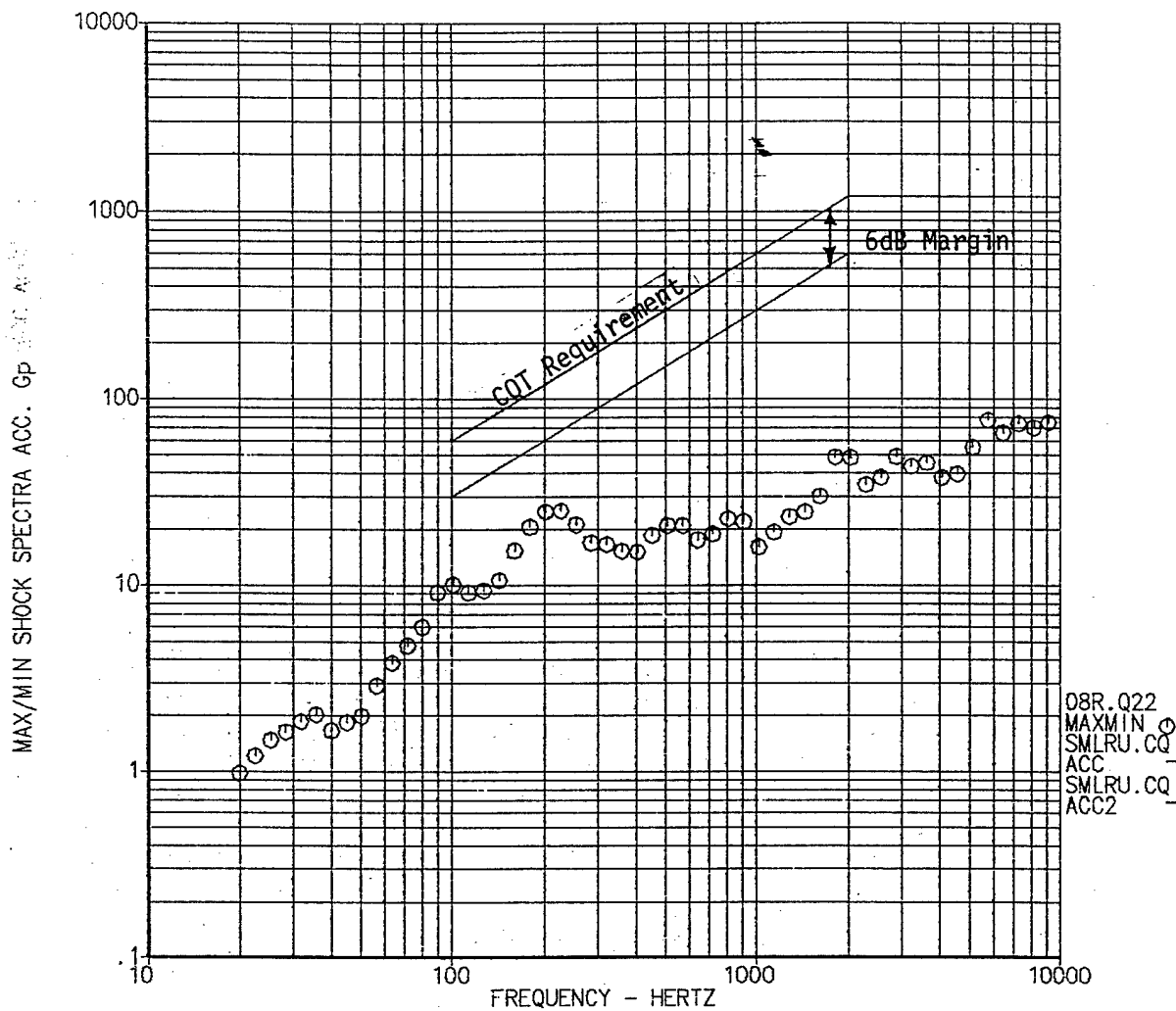


7-JUN-82 09:40:00

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FIGURE 2-56
SHOCK SPECTRA (Q = 10)
H08R QTV PYROSHOCK TEST 2 PULSE 2

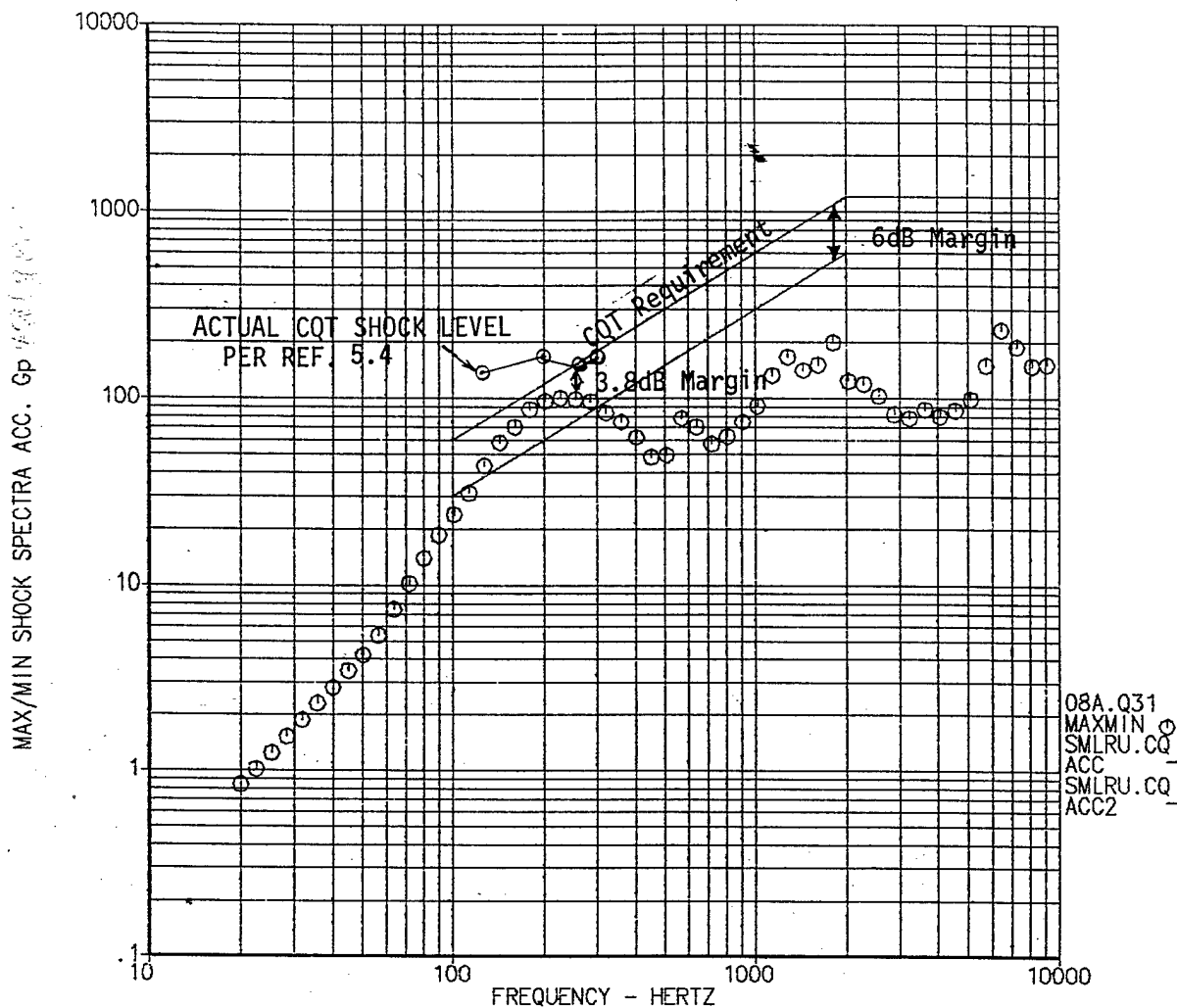


7-JUN-82 09:42:37

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FIGURE 2-57
SHOCK SPECTRA (Q = 10)
H08A QTV PYROSHOCK TEST 3 PULSE 1



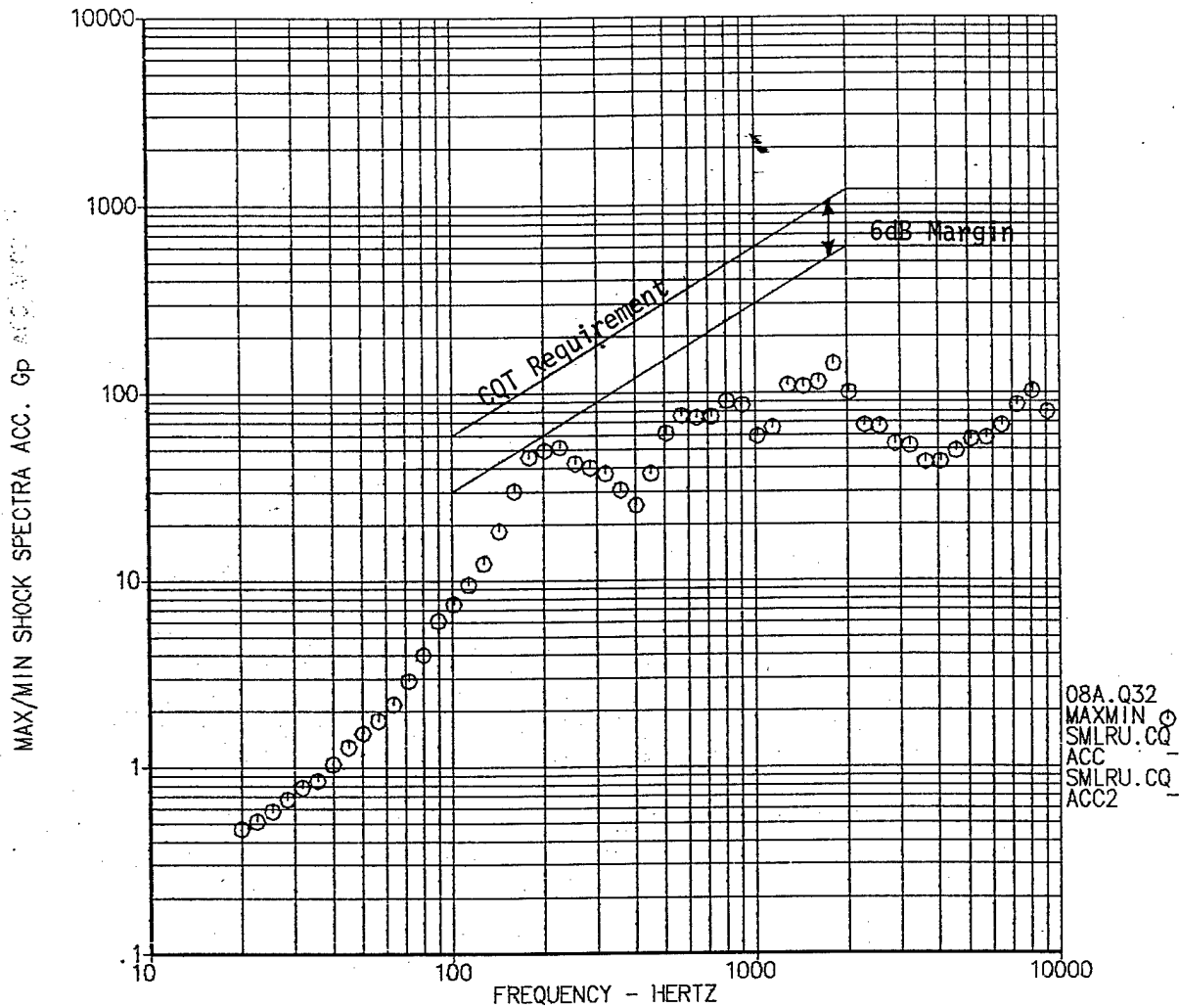
7-JUN-82 09:28:00

Note: 3.8dB margin between Actual CQT level and maximum expected environment is greater than the 3.0dB minimum margin required to comply with intent of MIL-STD-1540A.

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FIGURE 2-58
SHOCK SPECTRA (Q = 10)
H08A QTV PYROSHOCK TEST 3 PULSE 2

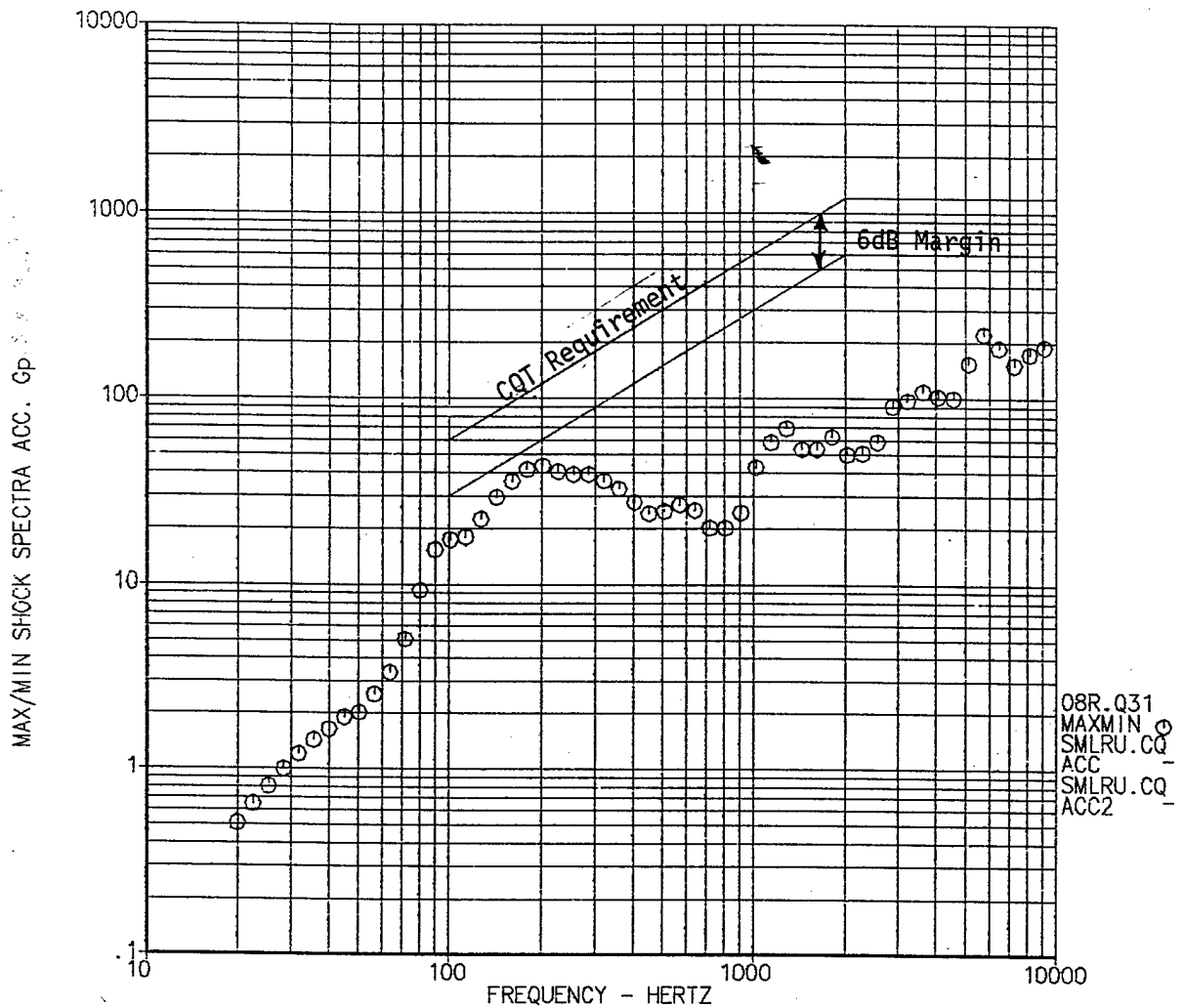


7-JUN-82 09:31:03

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 8A
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FIGURE 2-59
SHOCK SPECTRA (Q = 10)
H08R QTV PYROSHOCK TEST 3 PULSE 1

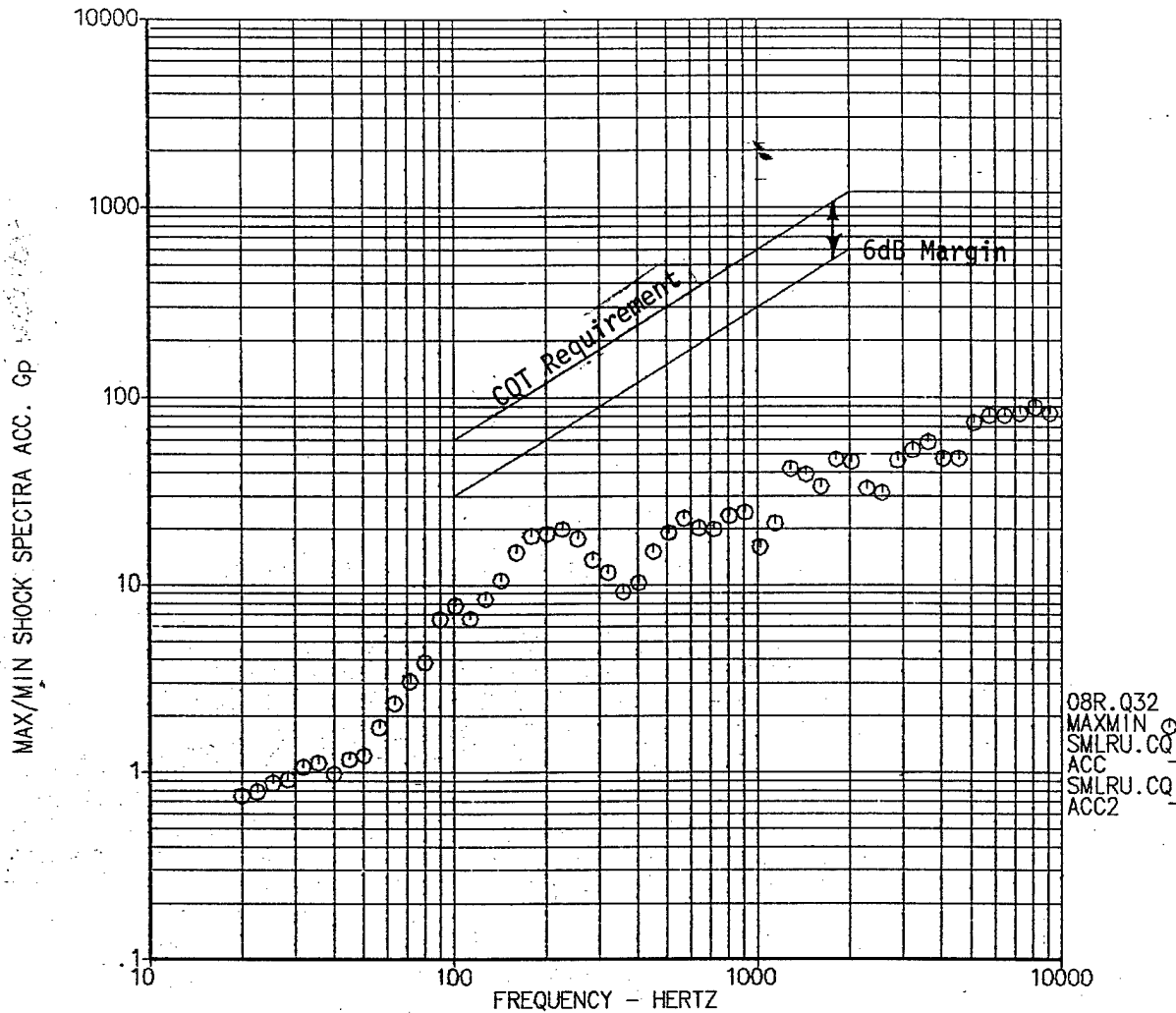


7-JUN-82 09:46:20

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 8R
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FIGURE 2-60
SHOCK SPECTRA (Q = 10)
HOBR QTV PYROSHOCK TEST 3 PULSE 2

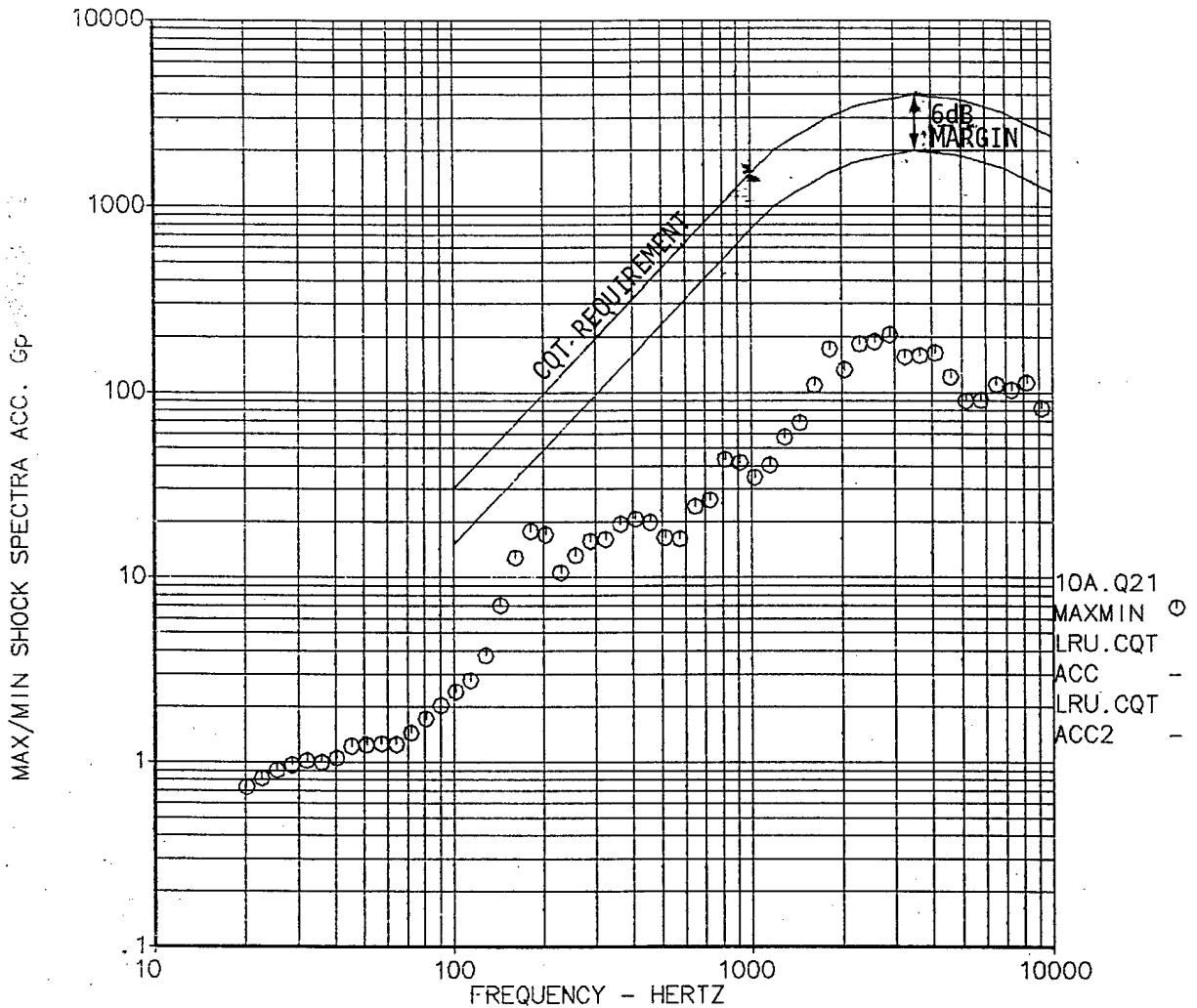


7-JUN-82 09:48:33

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CALC		7JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 8R
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FIGURE 2-61
SHOCK SPECTRA (Q = 10)
H10A QTV PYROSHOCK TEST 2 PULSE 1

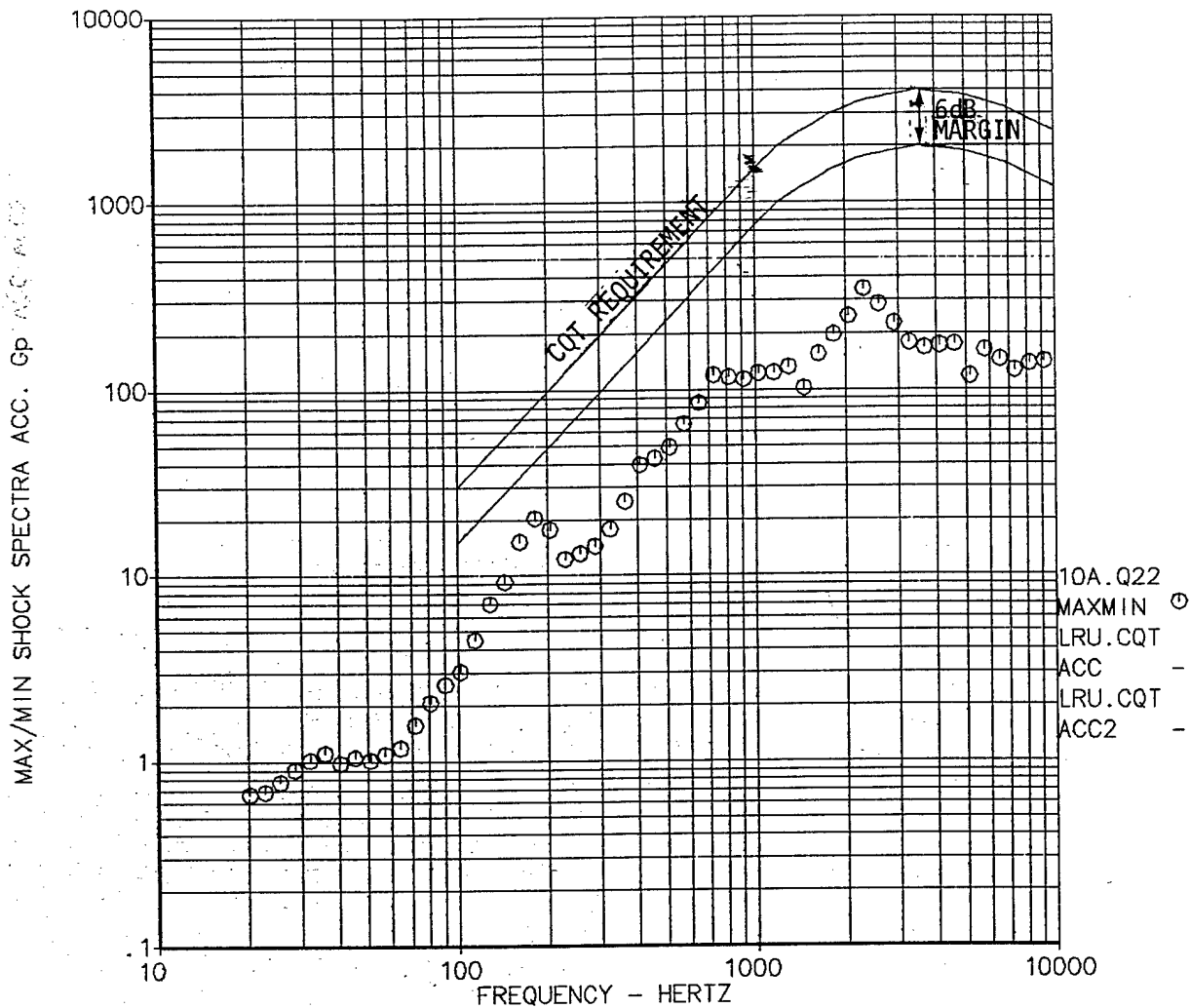


27-MAY-82 18:06:45

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FIGURE 2-62
SHOCK SPECTRA (Q = 10)
H10A QTV PYROSHOCK TEST 2 PULSE 2

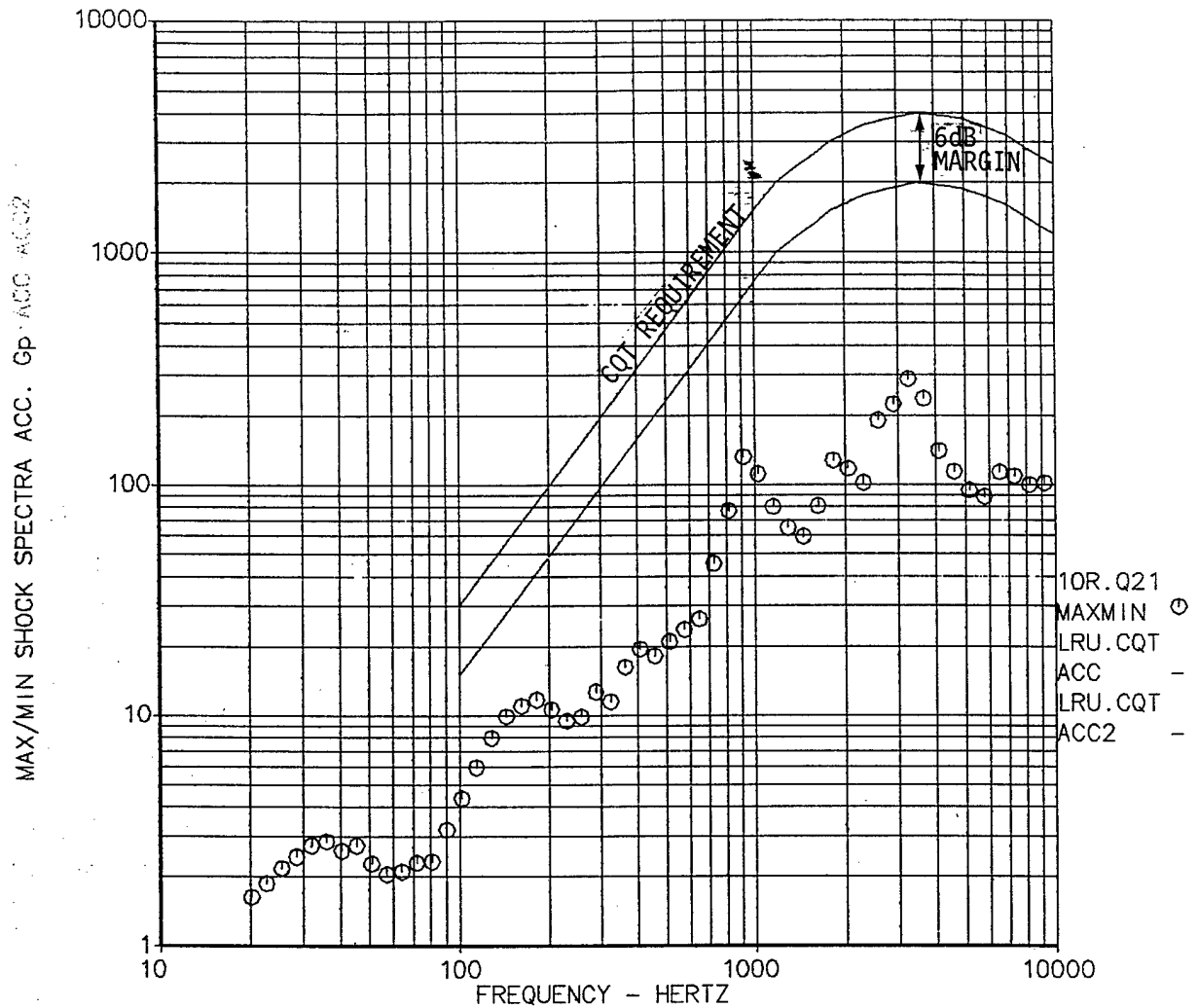


27-MAY-82 18:08:00

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FIGURE 2-63
SHOCK SPECTRA (Q = .10)
H10R QTV PYROSHOCK TEST 2 PULSE 1

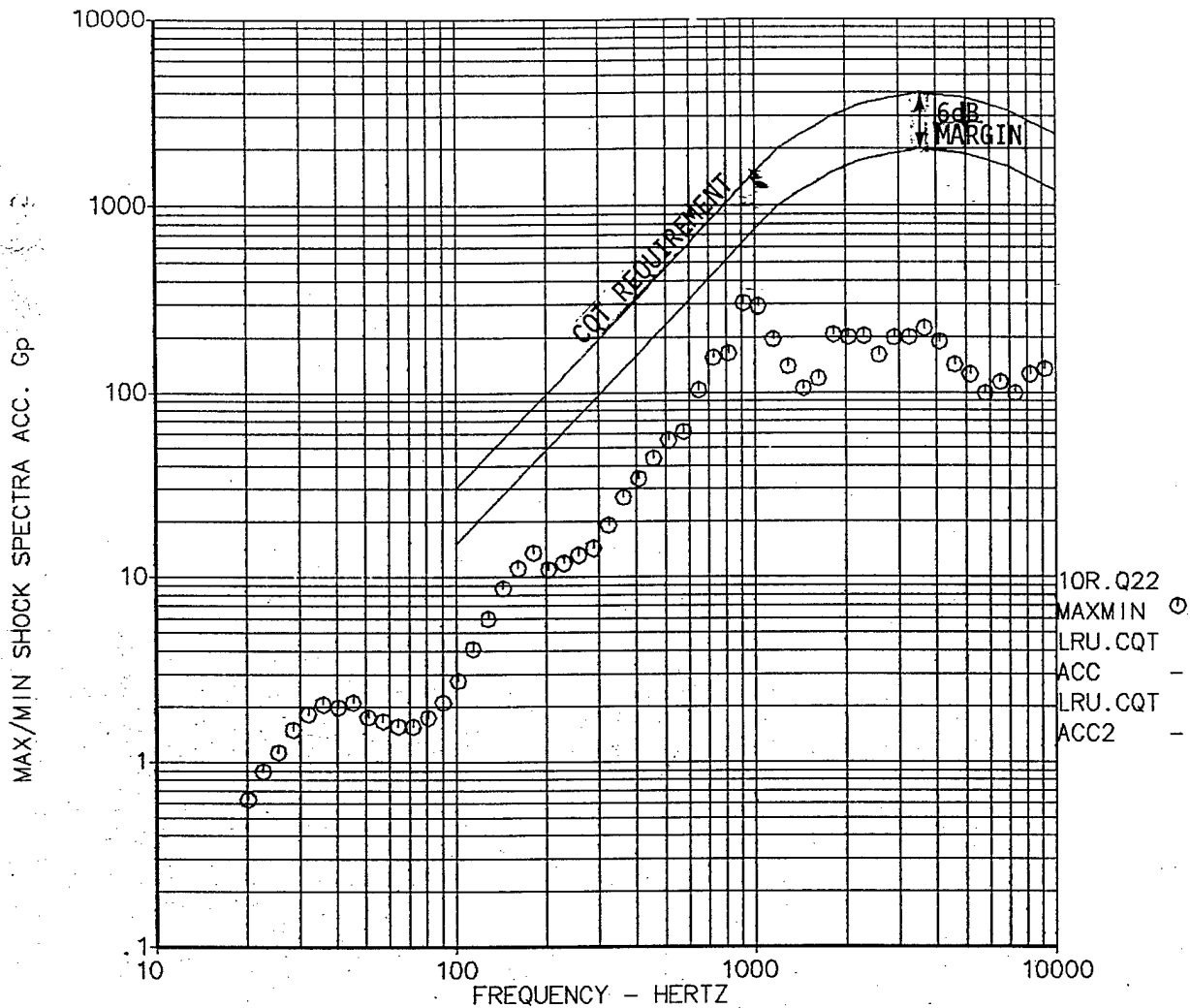


27-MAY-82 18:09:57

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FIGURE 2-64
SHOCK SPECTRA ($Q = .10$)
H10R QTV PYROSHOCK TEST 2 PULSE 2

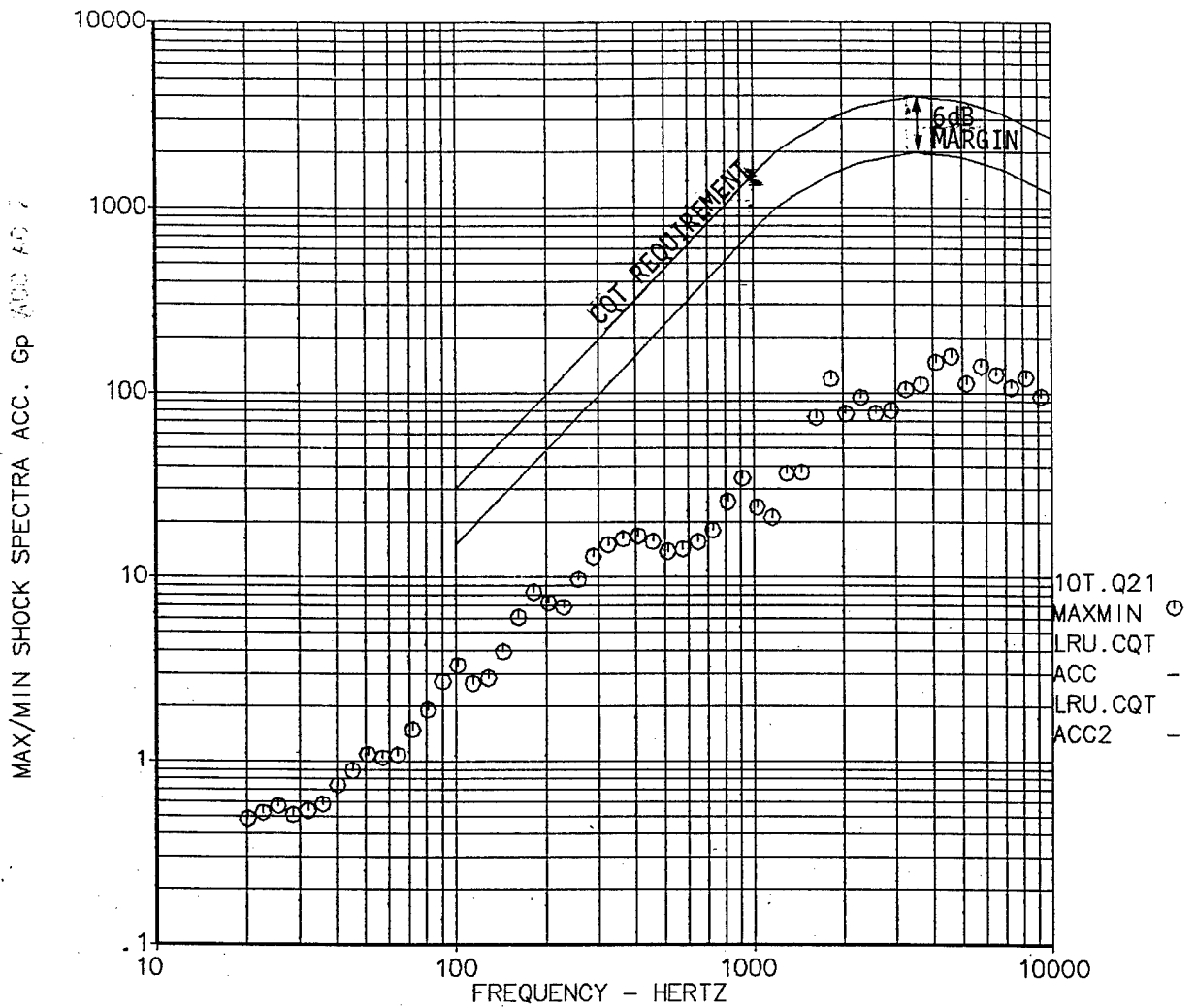


27-MAY-82 18:10:37

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc10R
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FIGURE 2-65
SHOCK SPECTRA (Q = 10)
H10T QTV PYROSHOCK TEST 2 PULSE 1

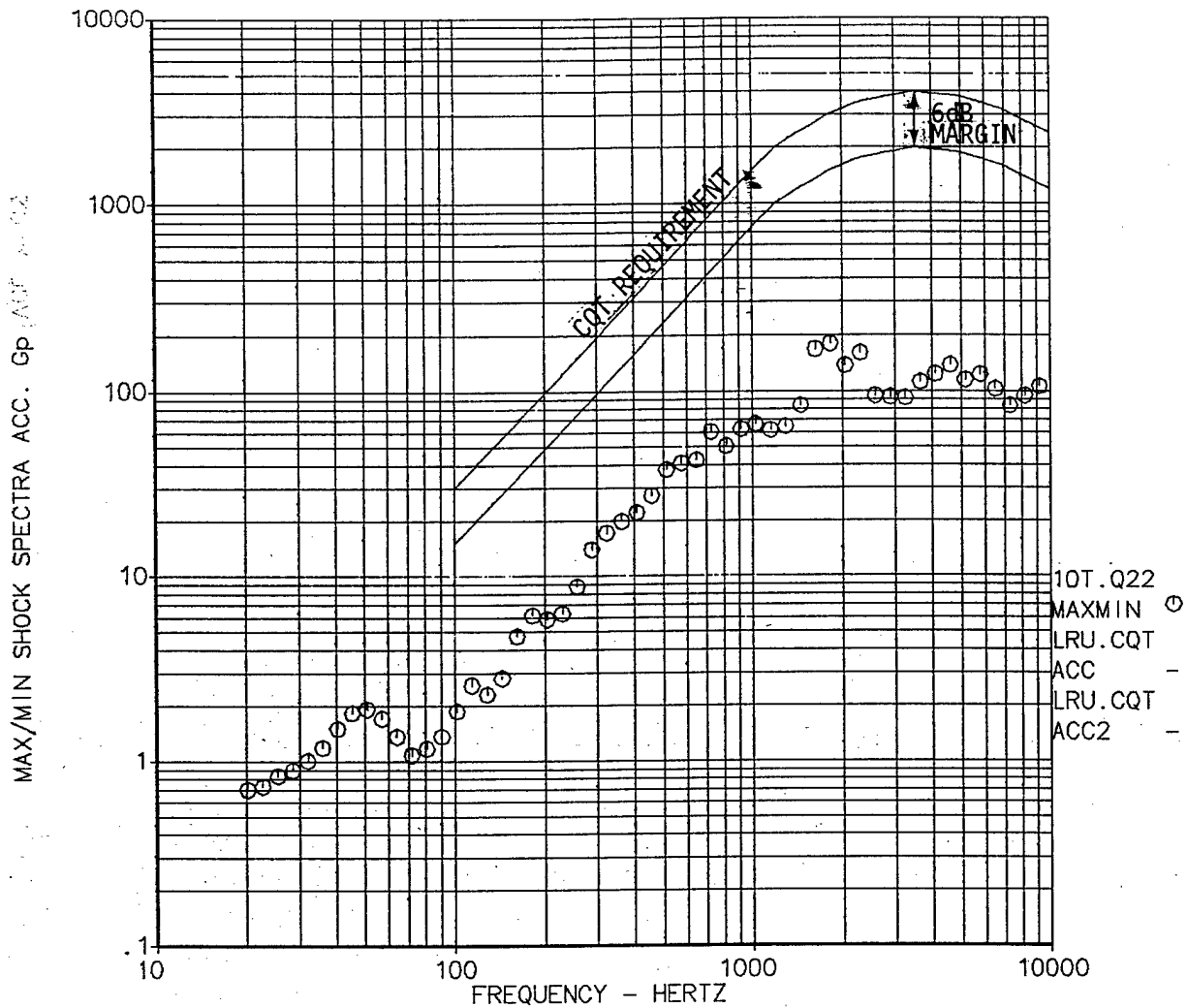


27-MAY-82 18:12:50

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 10T
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FIGURE 2-66
SHOCK SPECTRA (Q = 10)
H10T QTV PYROSHOCK TEST 2 PULSE 2

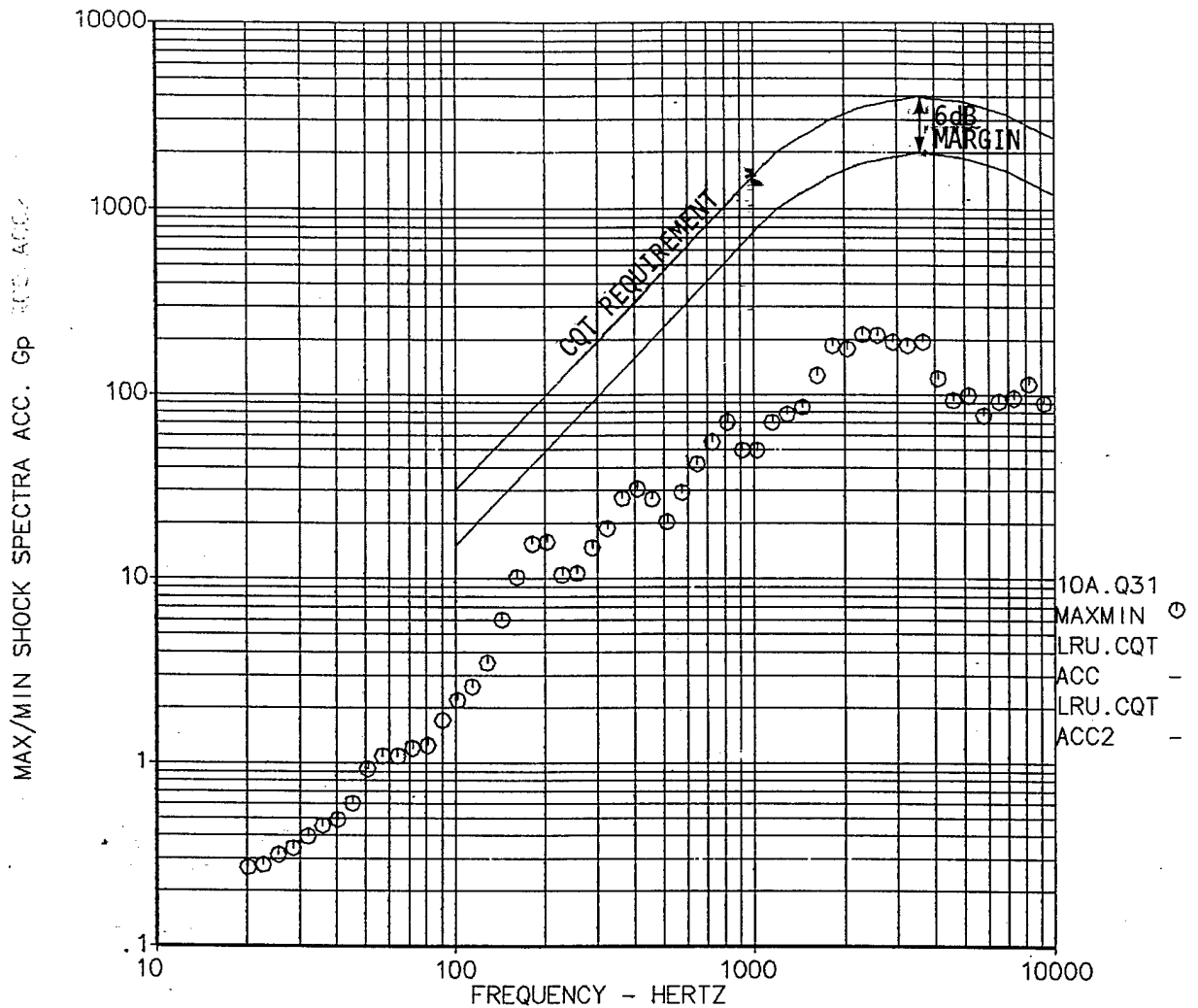


27-MAY-82 18:13:42

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 10T
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FIGURE 2-67
SHOCK SPECTRA ($Q = .10$)
H10A QTV PYROSHOCK TEST 3 PULSE 1

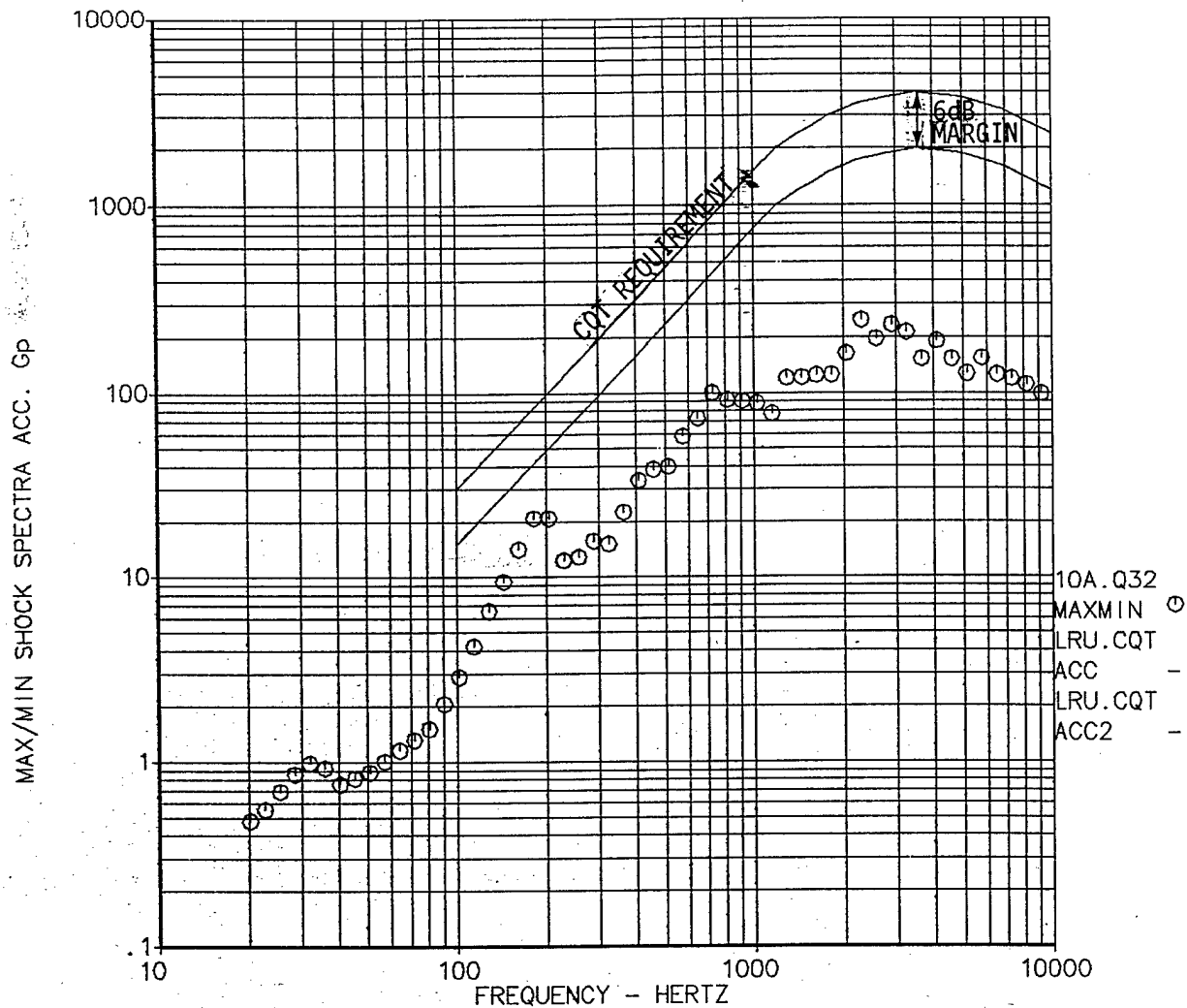


27-MAY-82 18:08:39

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CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 10A
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FIGURE 2-68
SHOCK SPECTRA (Q = 10)
H10A QTV PYROSHOCK TEST 3 PULSE 2

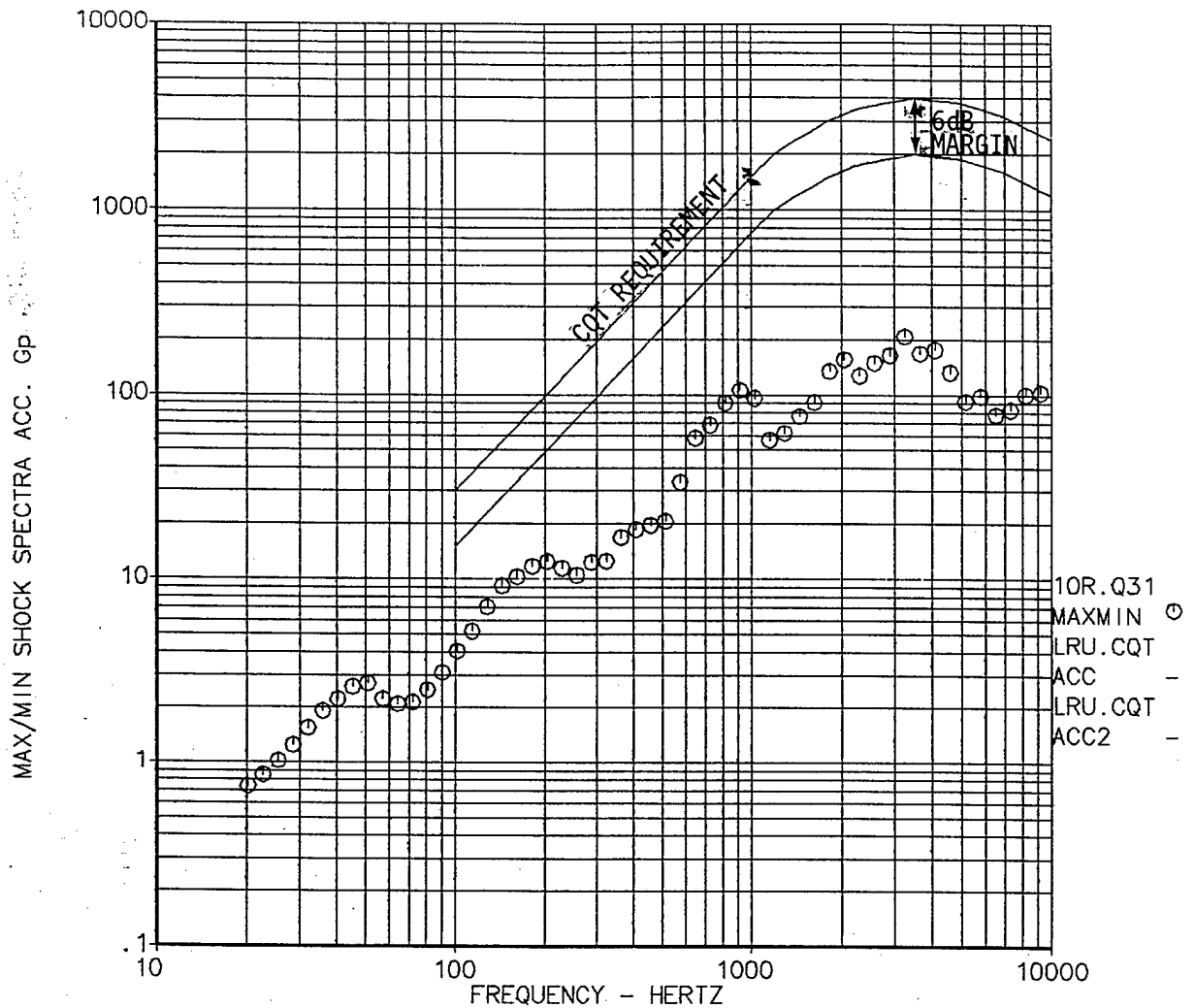


27-MAY-82 18:09:17

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FIGURE 2-69
SHOCK SPECTRA ($Q = 10$)
H10R QTV PYROSHOCK TEST 3 PULSE 1

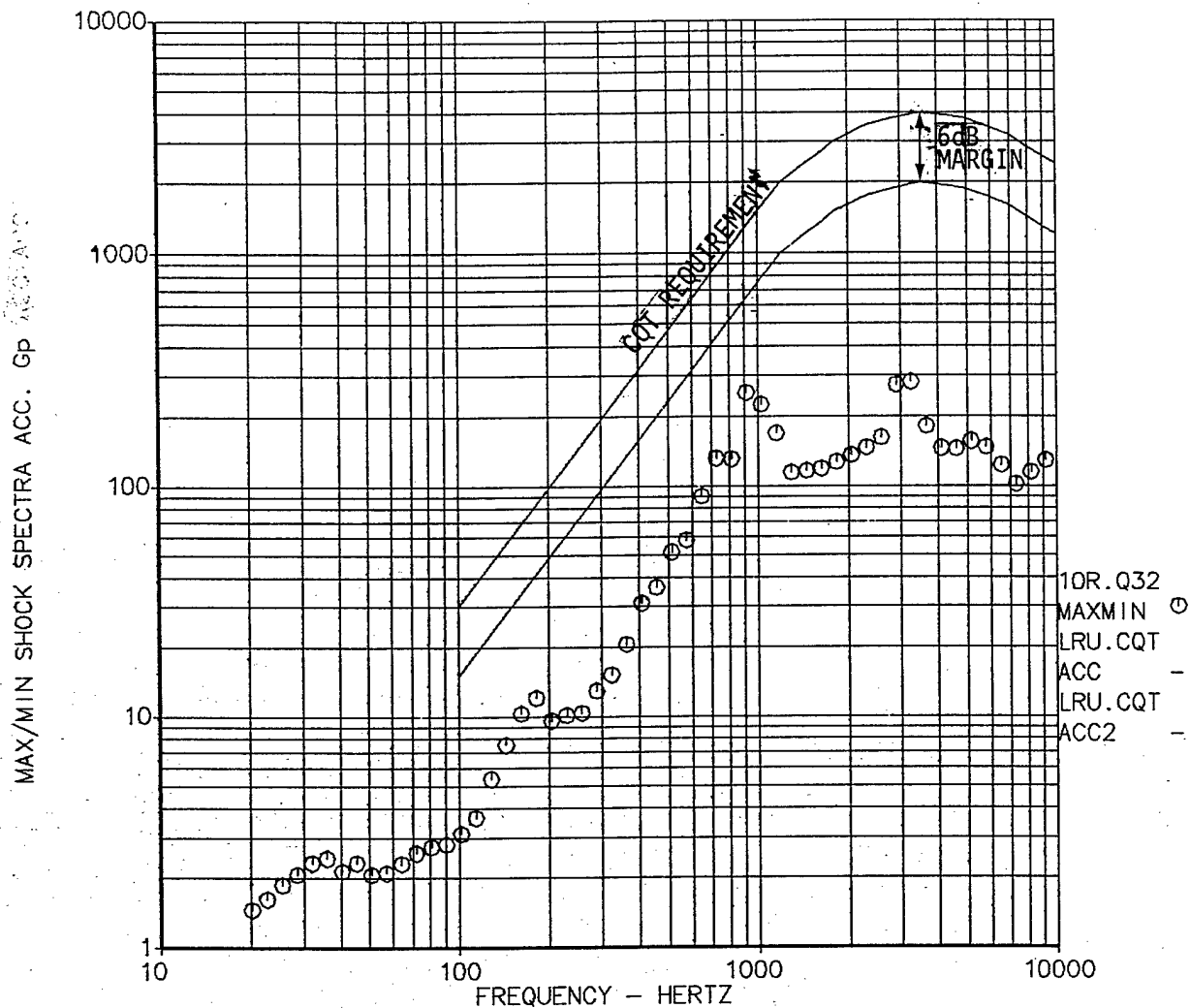


27-MAY-82 18:11:14

TRANSPONDER B

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FIGURE 2-70
SHOCK SPECTRA (Q = .10)
H10R QTV PYROSHOCK TEST 3 PULSE 2



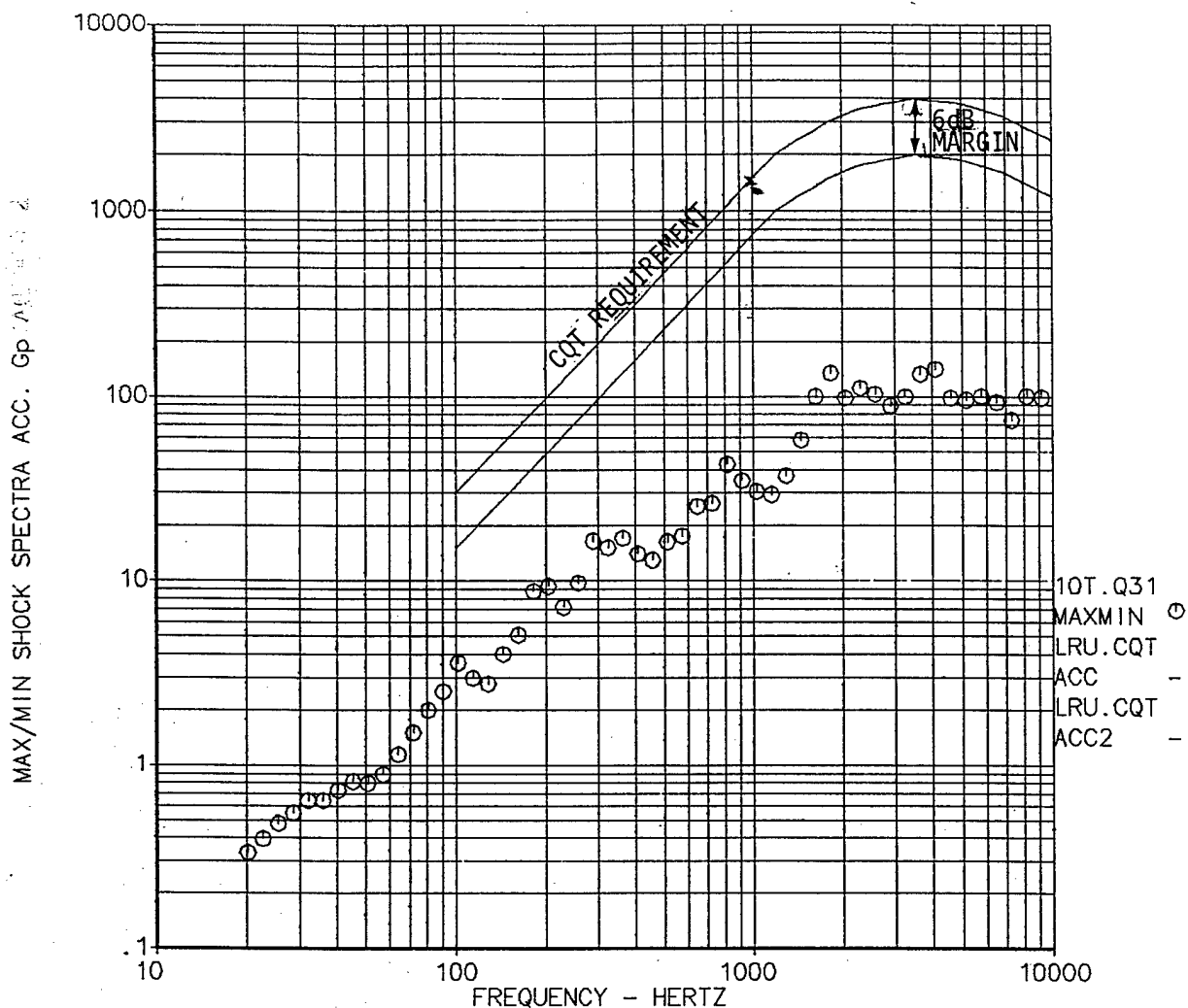
27-MAY-82 18:12:00

TRANSPONDER B

CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 10R
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FIGURE 2-71
SHOCK SPECTRA (Q = 10)
H10T QTV PYROSHOCK TEST 3 PULSE 1



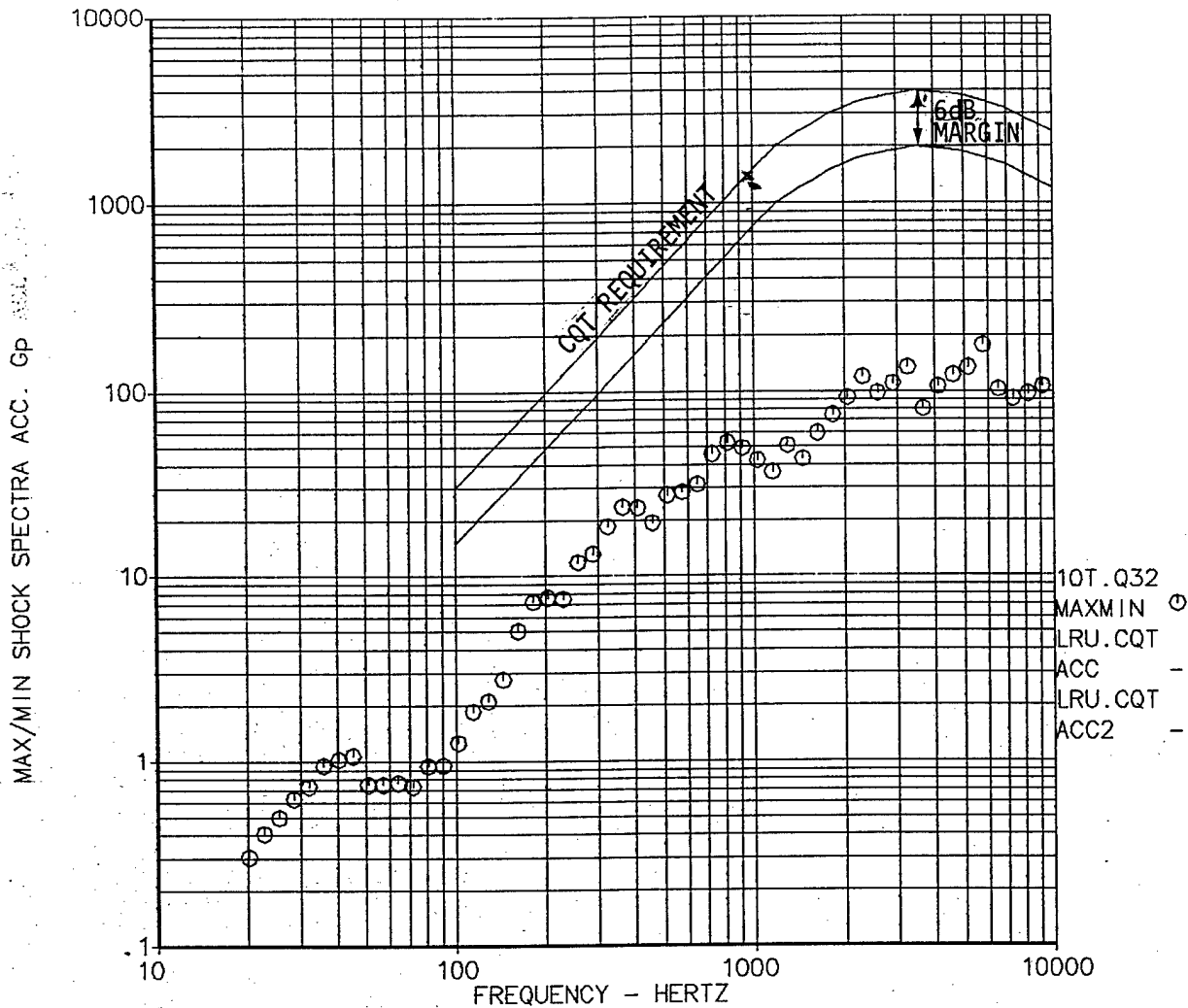
27-MAY-82 18:14:23

TRANSPONDER B

CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 10T
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FIGURE 2-72
SHOCK SPECTRA (Q = 10)
H10T QTV PYROSHOCK TEST 3 PULSE 2



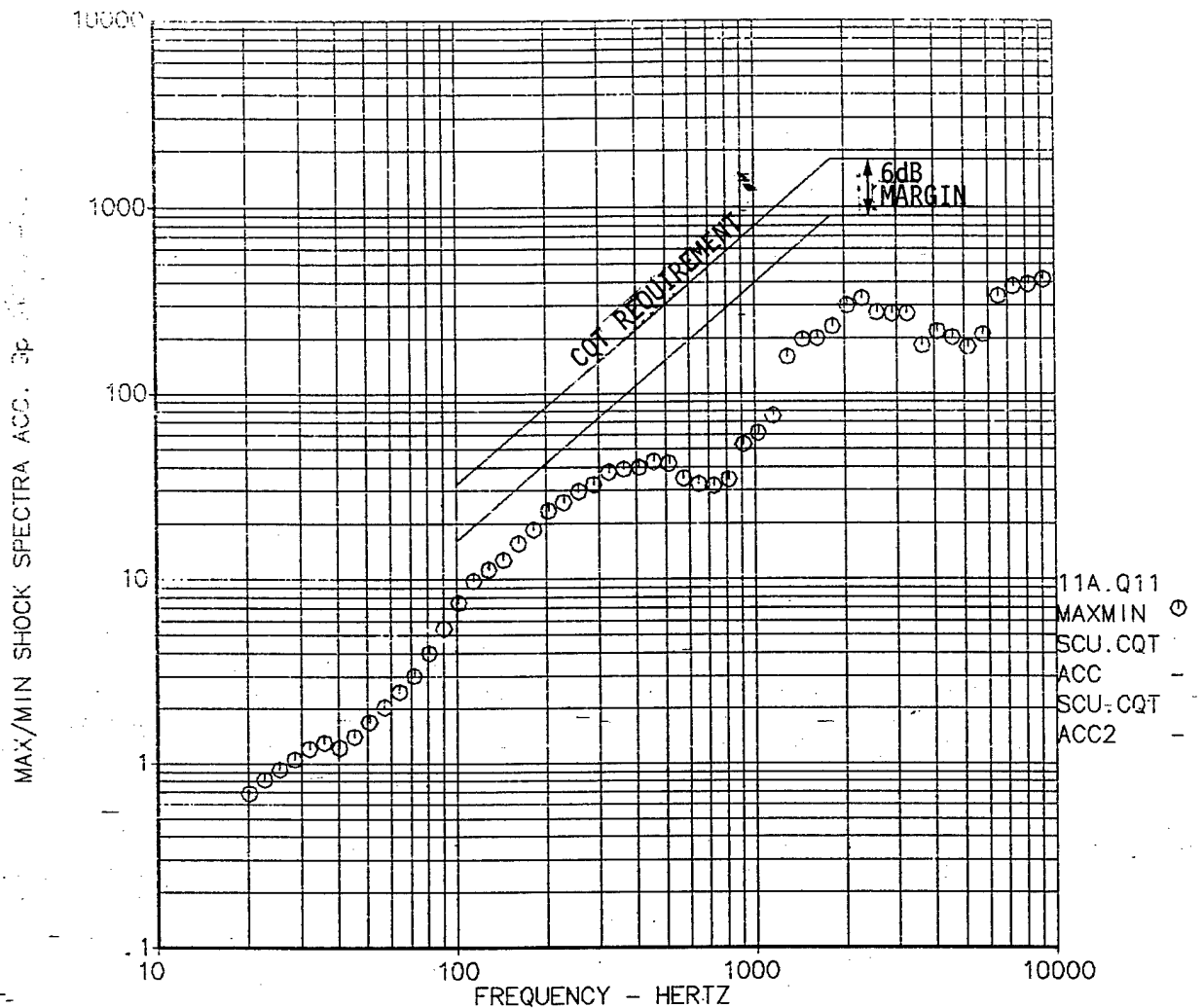
27-MAY-82 18:14:58

TRANSPONDER B

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 10T
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FIGURE 2-73
SHOCK SPECTRA ($Q = 10$)
H11A QTV PYROSHOCK TEST 1 PULSE 1



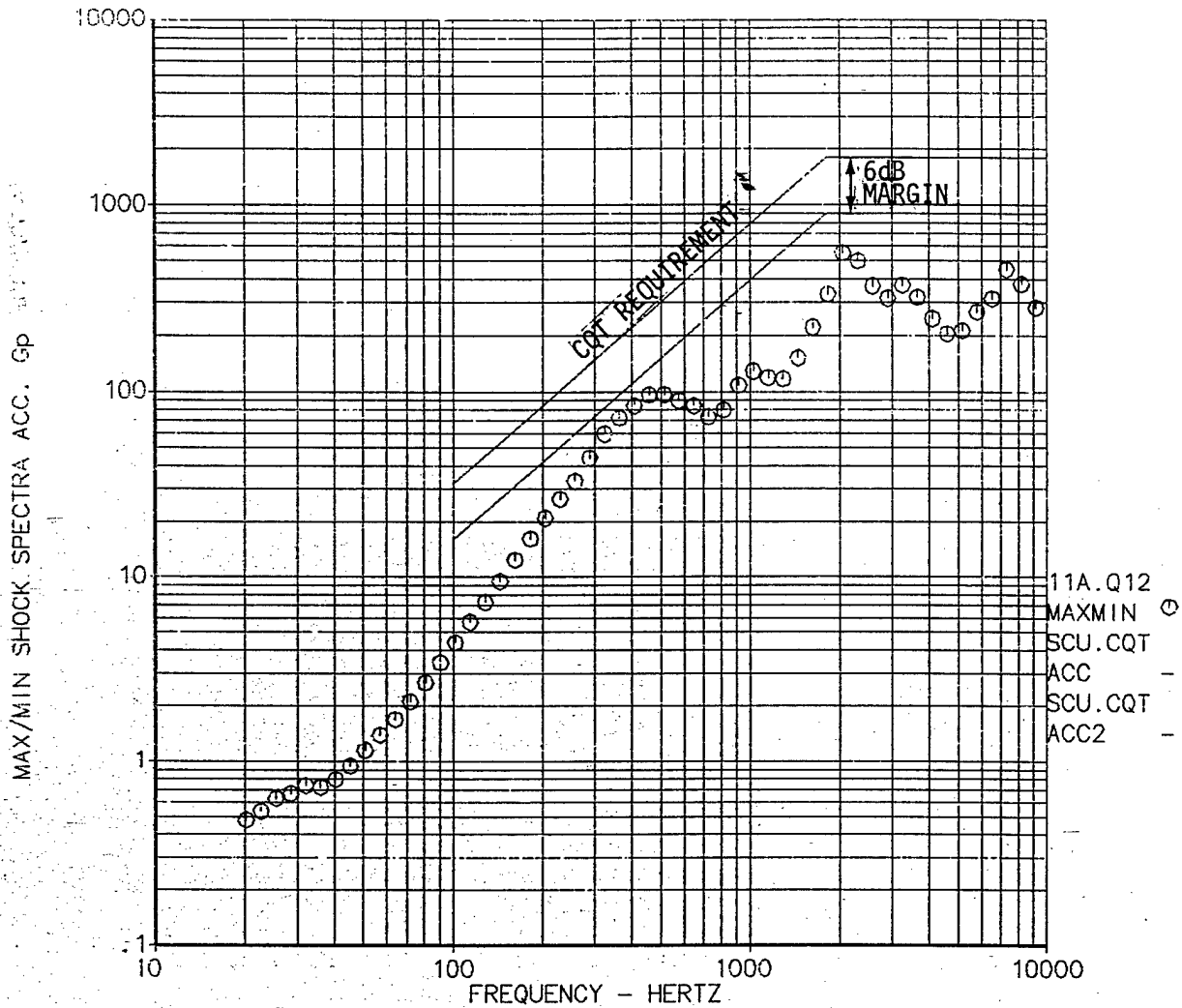
27-MAY-82 13:17:00

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FIGURE 2-74
SHOCK SPECTRA (Q = 10)
H11A QTV PYROSHOCK TEST 1 PULSE 2

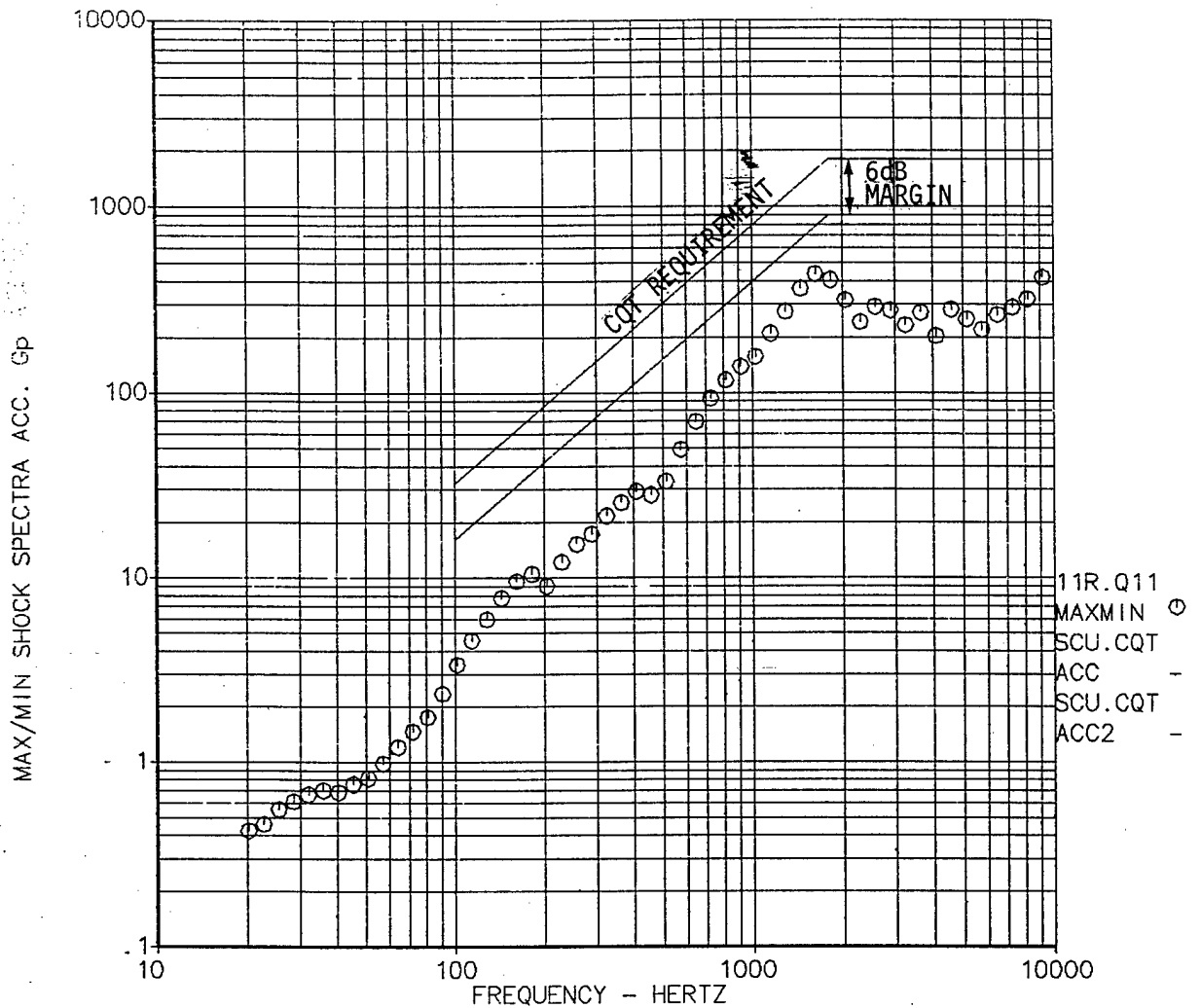


27-MAY-82 13:19:16

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11A
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FIGURE 2-75
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 1 PULSE 1

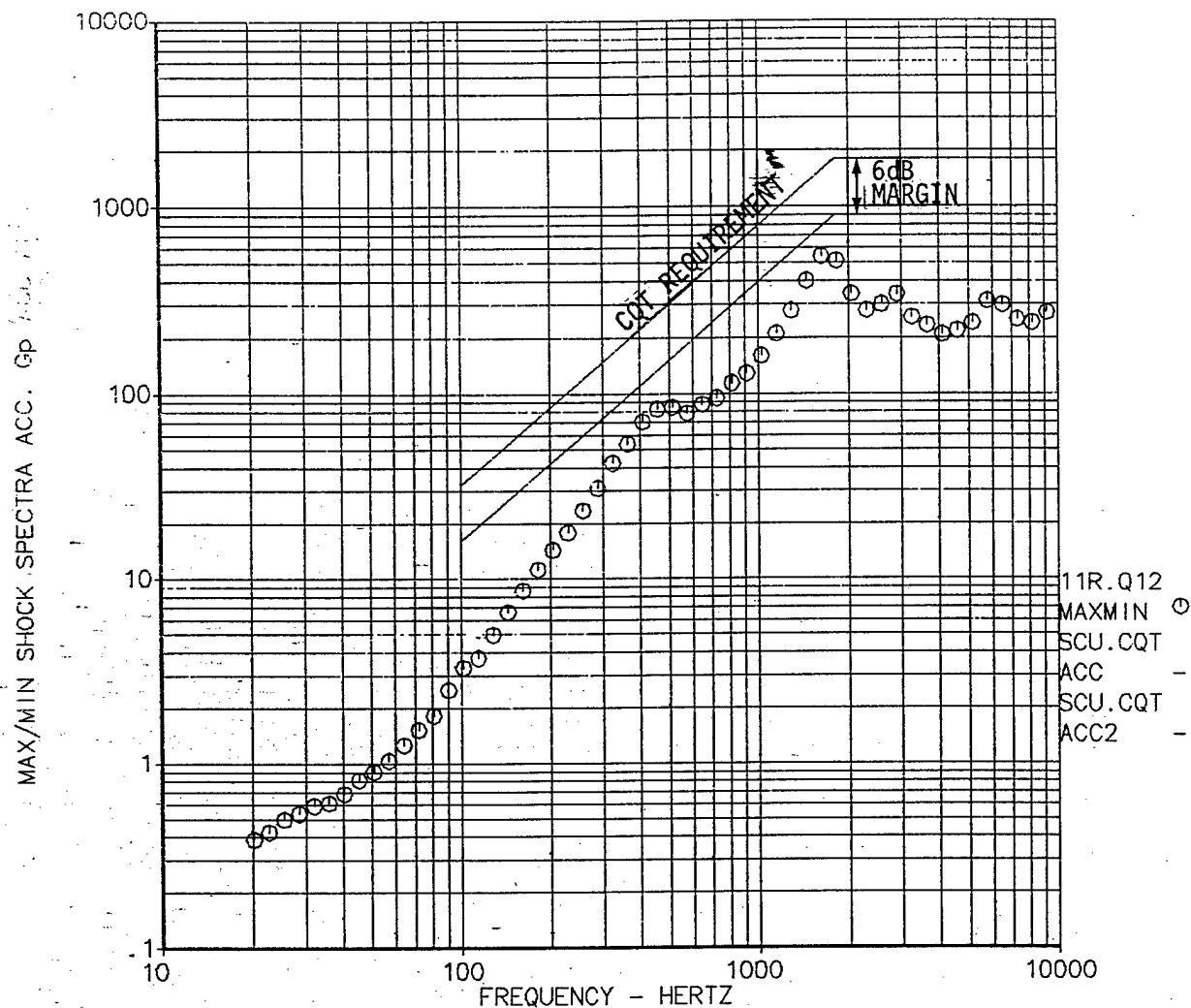


27-MAY-82 13:37:42

SCU

CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 11R
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FIGURE 2-76
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 1 PULSE 2

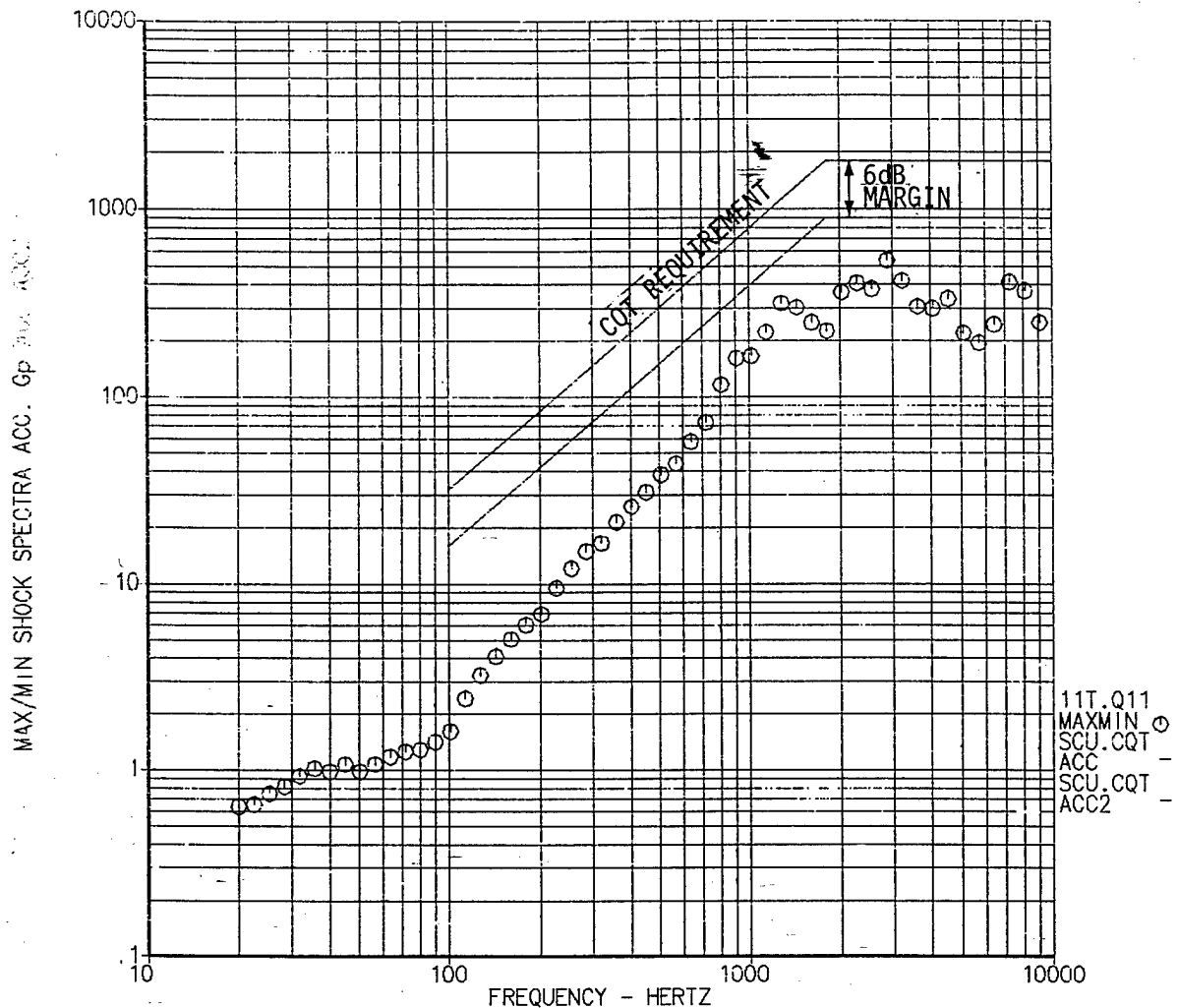


27-MAY-82 13:39:35

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 11R
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FIGURE 2-77
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 1 PULSE 1

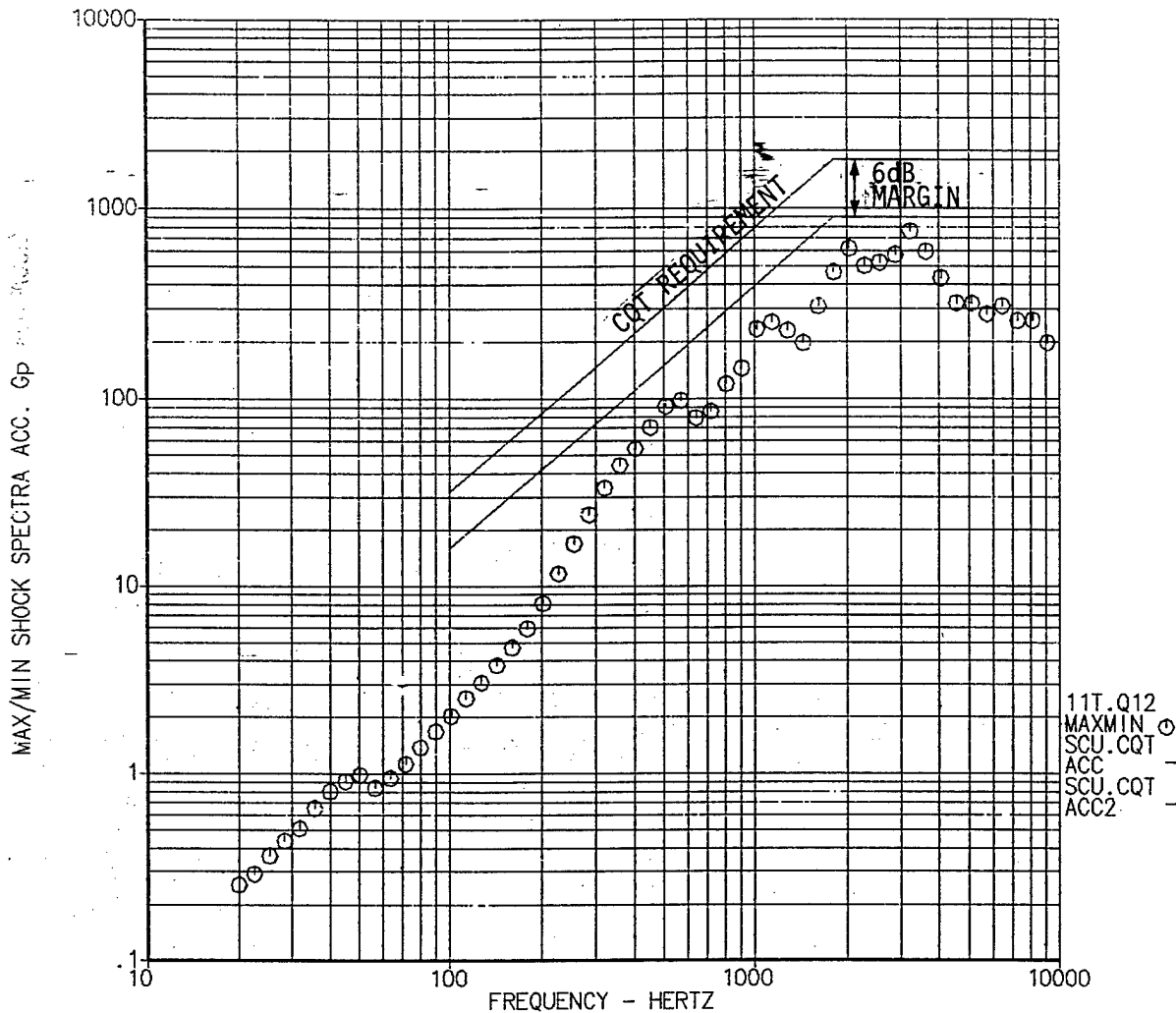


27-MAY-82 14:34:56

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11T
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FIGURE 2-78
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 1 PULSE 2



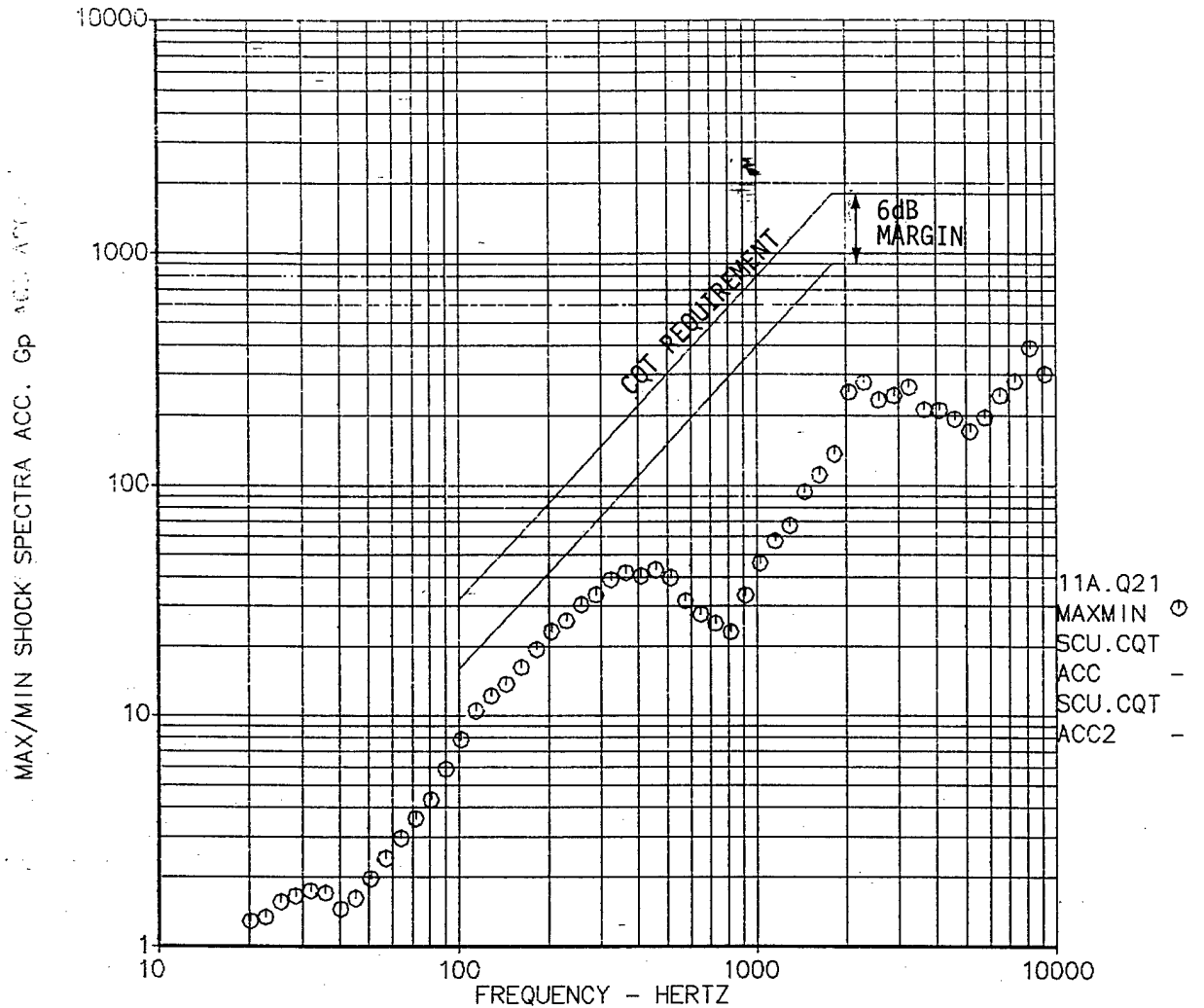
27-MAY-82 14:37:30

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11T
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FIGURE 2-79
SHOCK SPECTRA (Q = 10)
H11A QTV PYROSHOCK TEST 2 PULSE 1

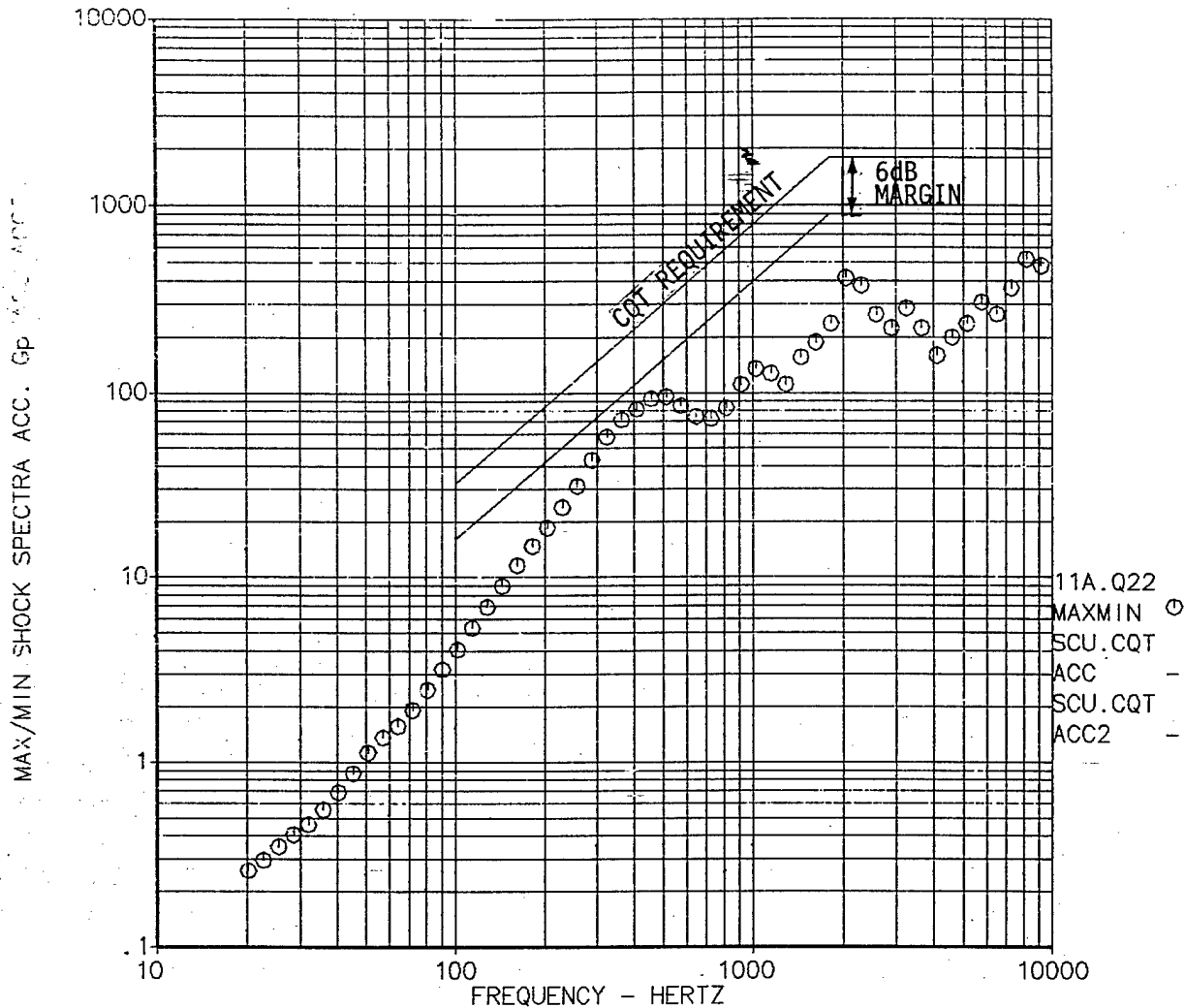


27-MAY-82 13:21:20

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 11A
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FIGURE 2-80
SHOCK SPECTRA (Q = 10)
H11A QTV PYROSHOCK TEST 2 PULSE 2

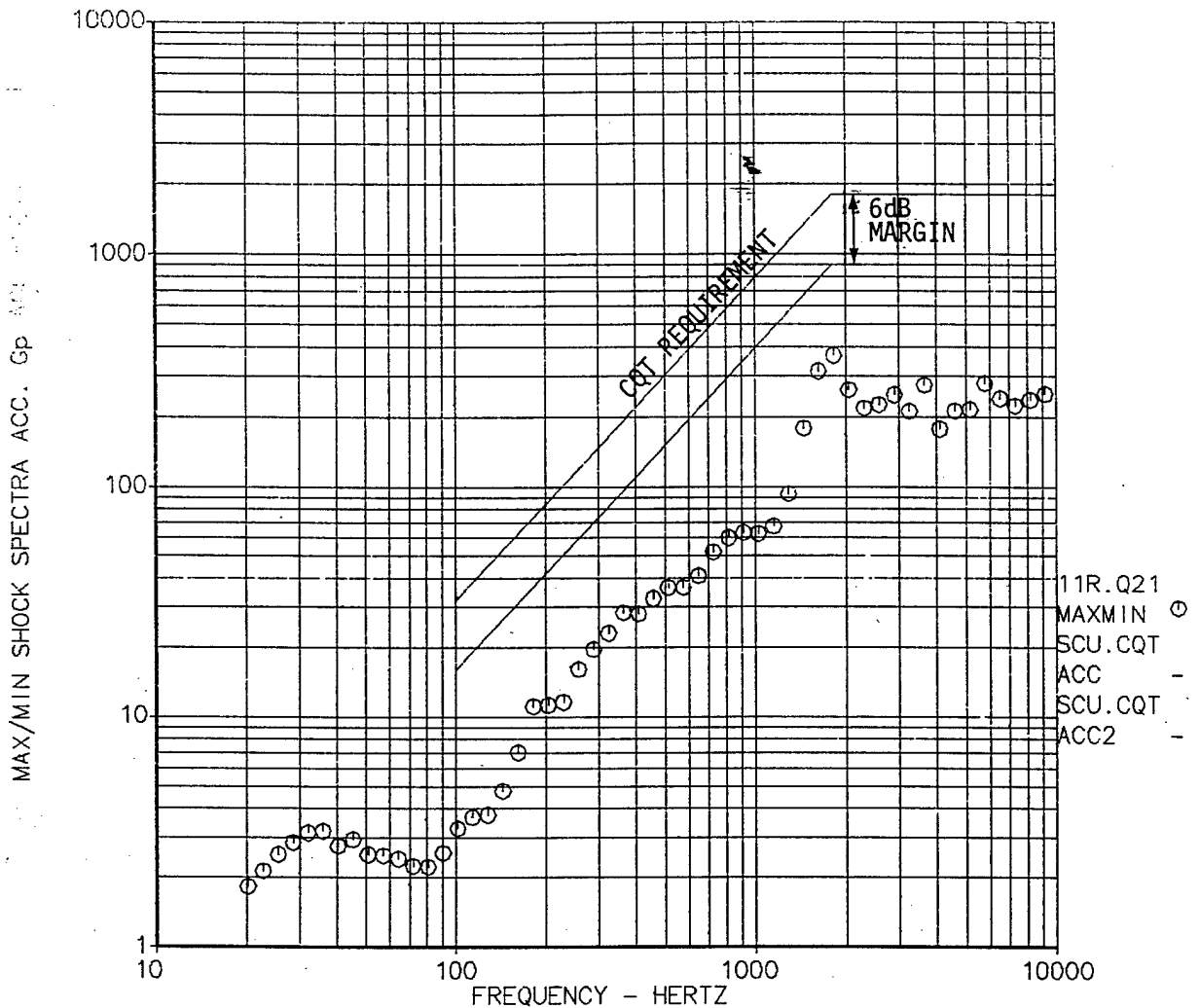


27-MAY-82 13:23:16

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11A
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FIGURE 2-81
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 2 PULSE 1



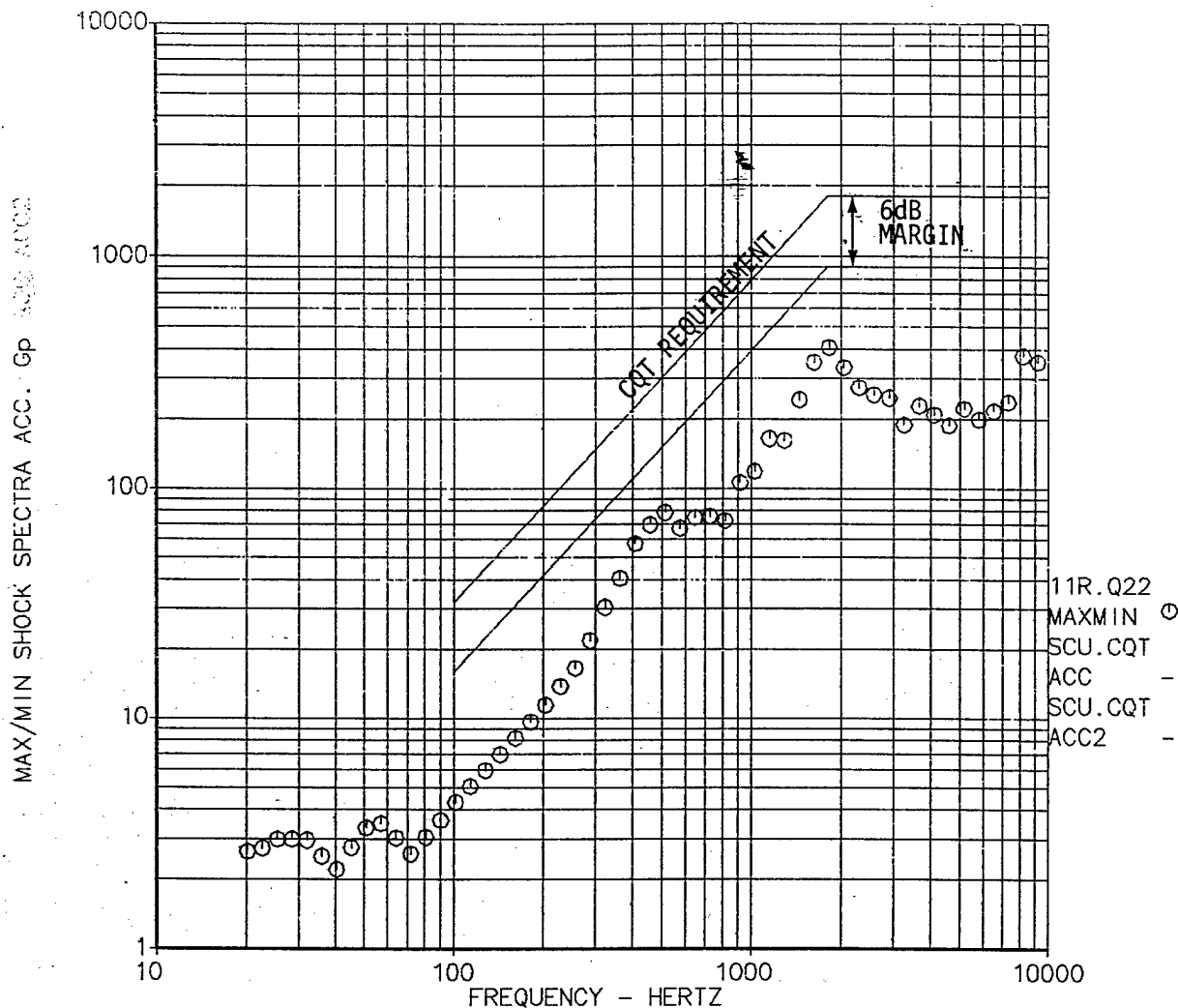
27-MAY-82 13:41:38

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11R
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FIGURE 2-82
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 2 PULSE 2

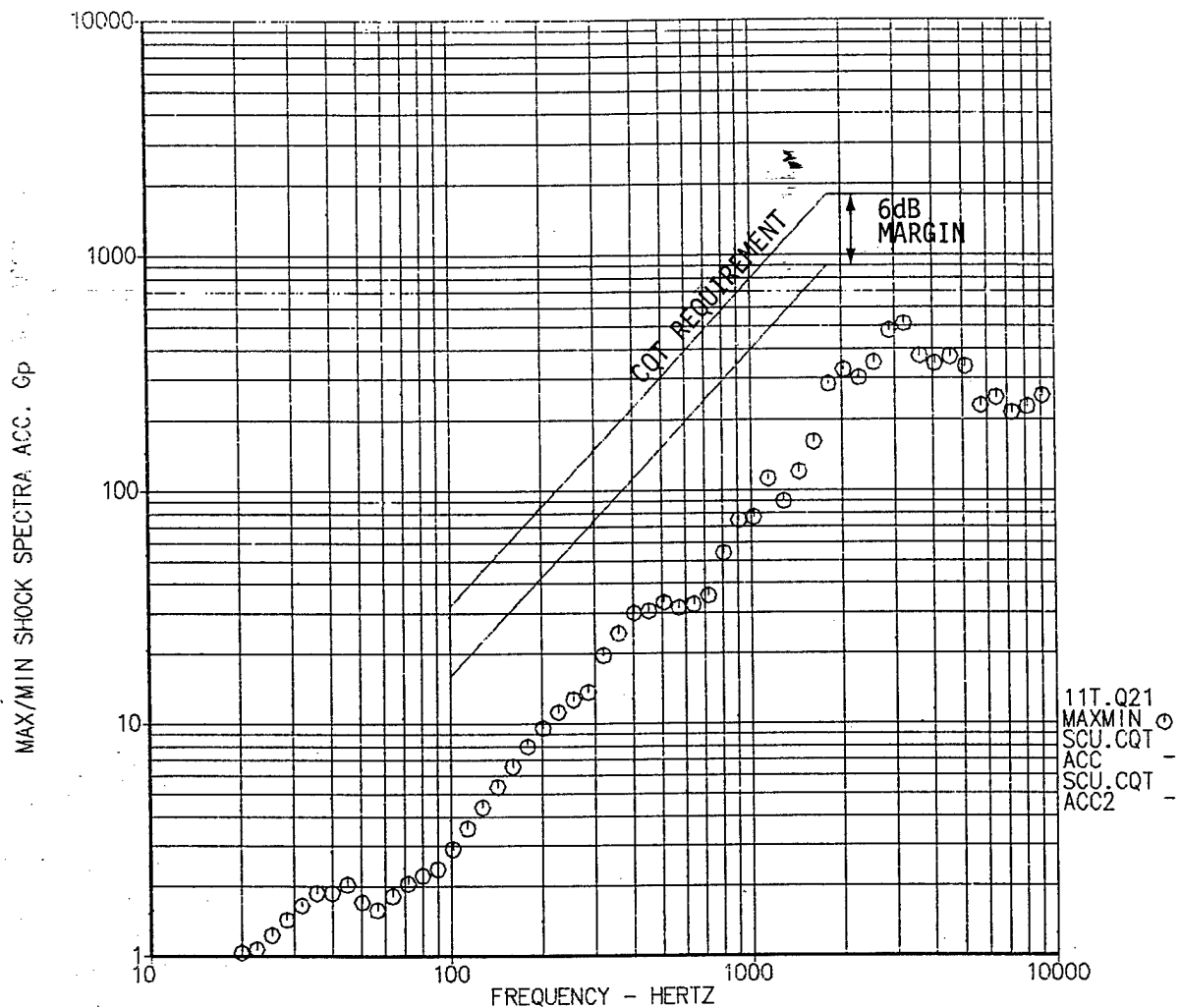


27-MAY-82 13:43:19

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11R
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FIGURE 2-83
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 2 PULSE 1

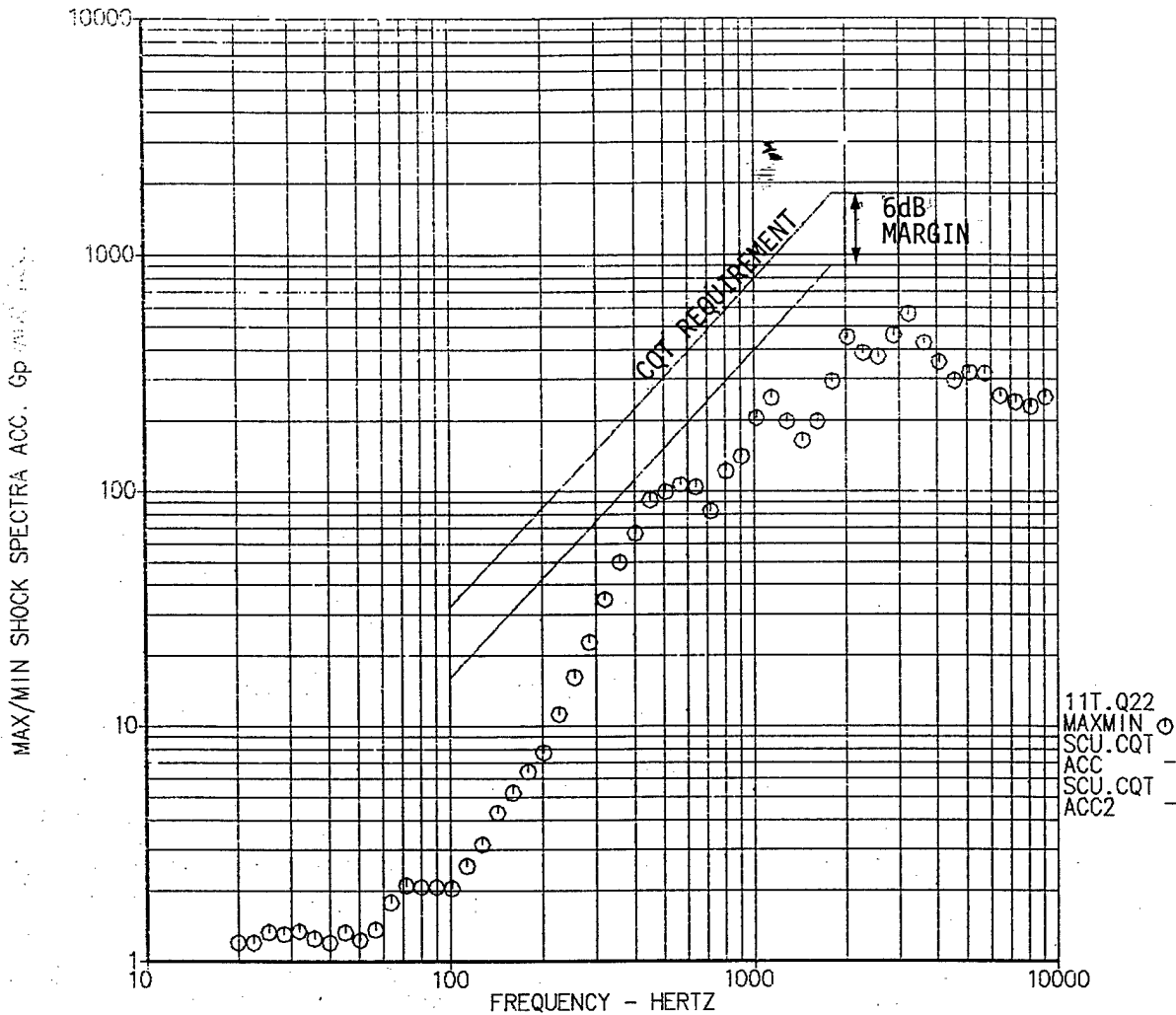


27-MAY-82 14:40:16

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 11T
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FIGURE 2-84
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 2 PULSE 2

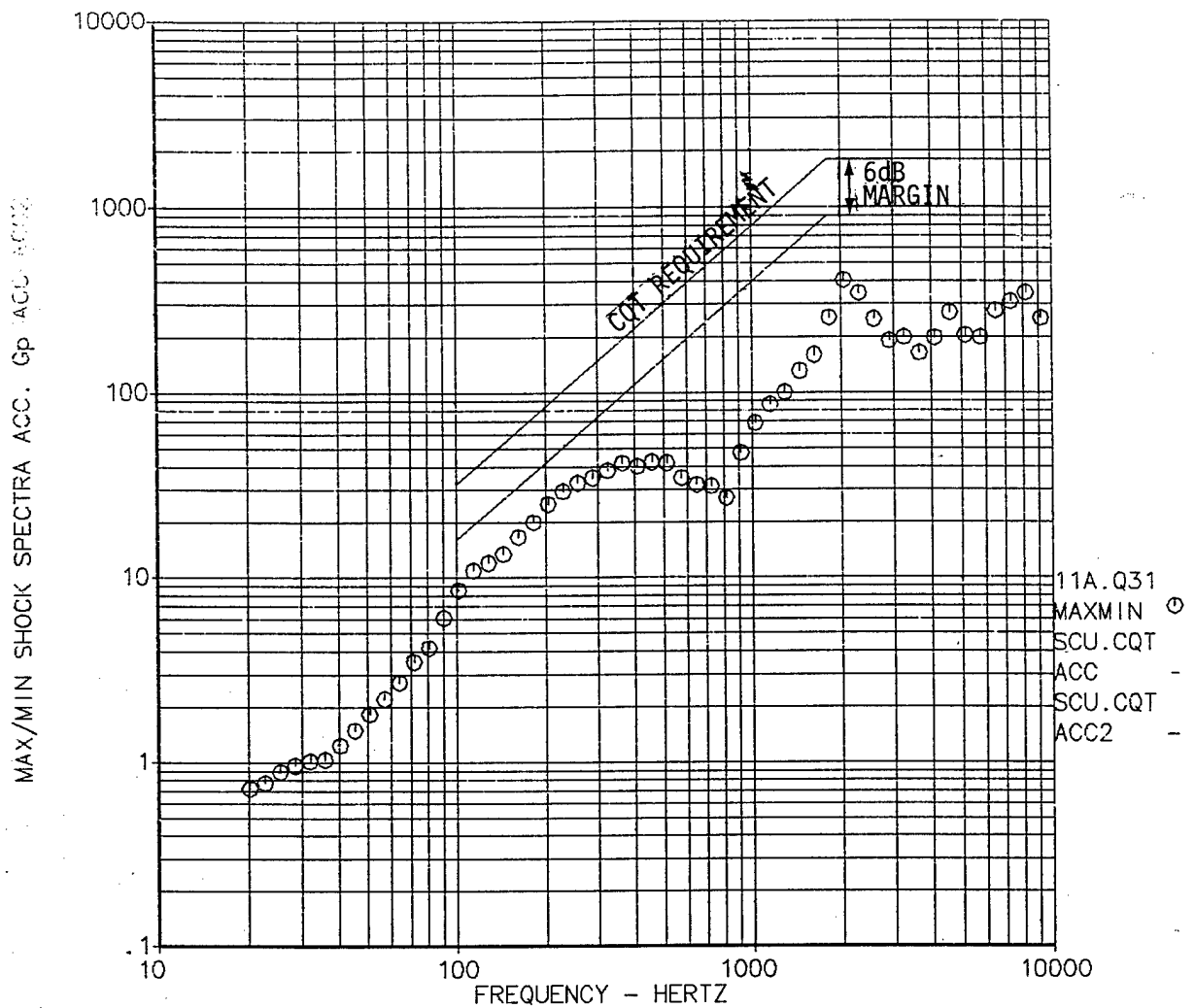


27-MAY-82 14:49:31.

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11T
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FIGURE 2-85 -
SHOCK SPECTRA (Q = 10)
H11A QTV PYROSHOCK TEST 3 PULSE 1

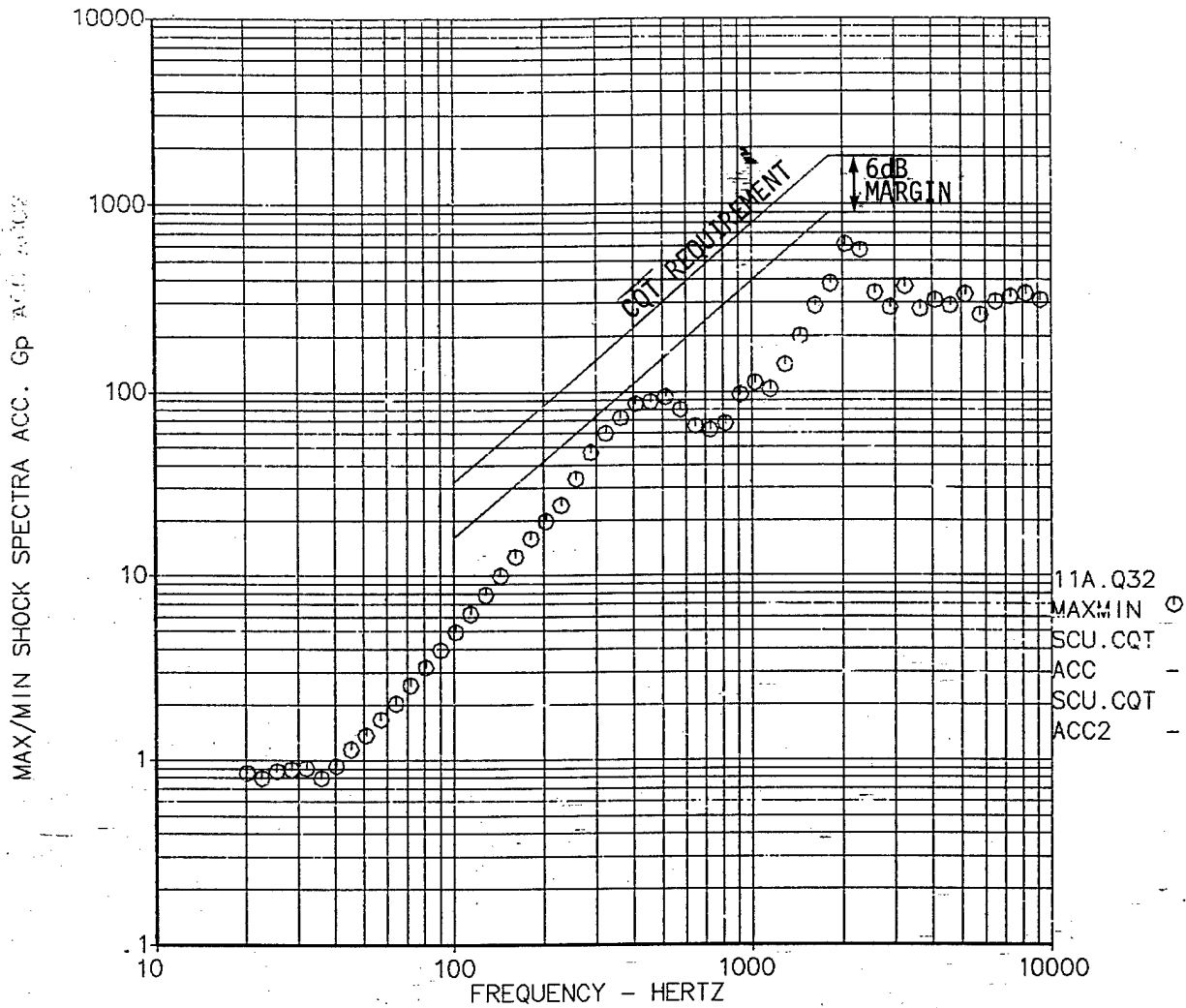


27-MAY-82 13:25:26

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CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11A
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FIGURE 2-86
SHOCK SPECTRA (Q = 10)
H11A QTV PYROSHOCK TEST 3 PULSE 2

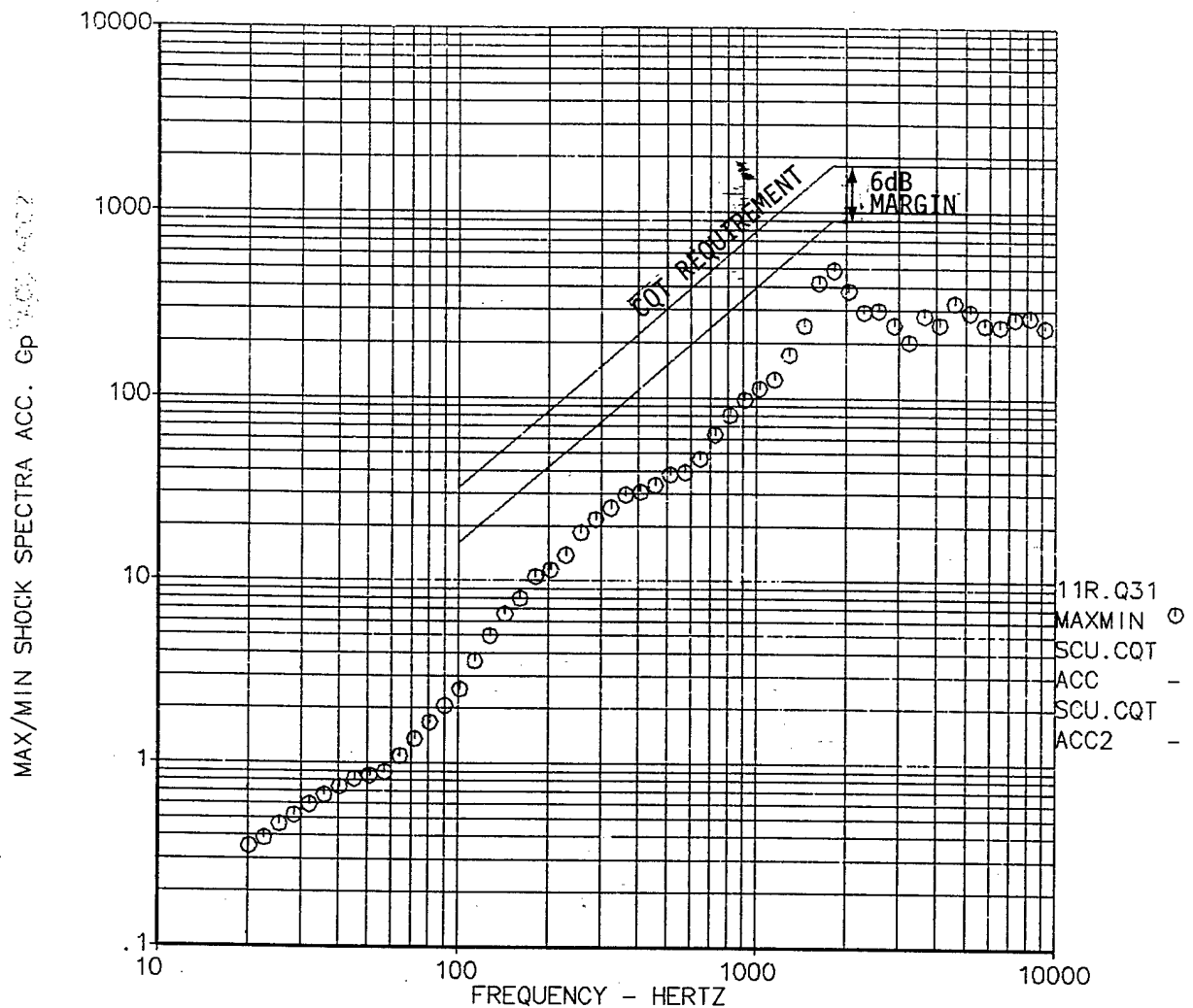


27-MAY-82 13:27:59

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11A
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FIGURE 2-87
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 3 PULSE 1



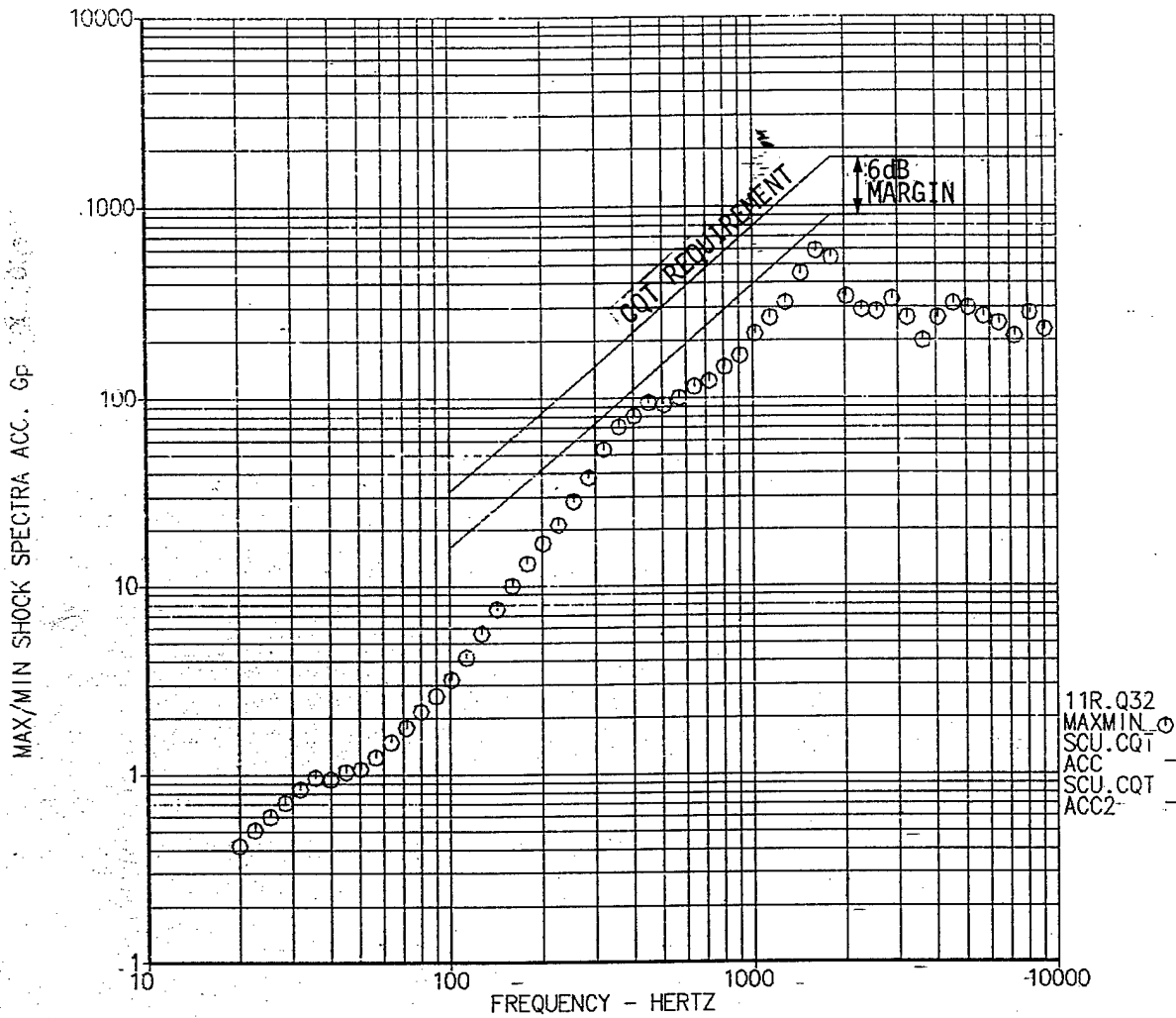
27-MAY-82 13:44:27

SCU

CALC		27MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 11R
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FIGURE 2-88
SHOCK SPECTRA (Q = 10)
H11R QTV PYROSHOCK TEST 3 PULSE 2

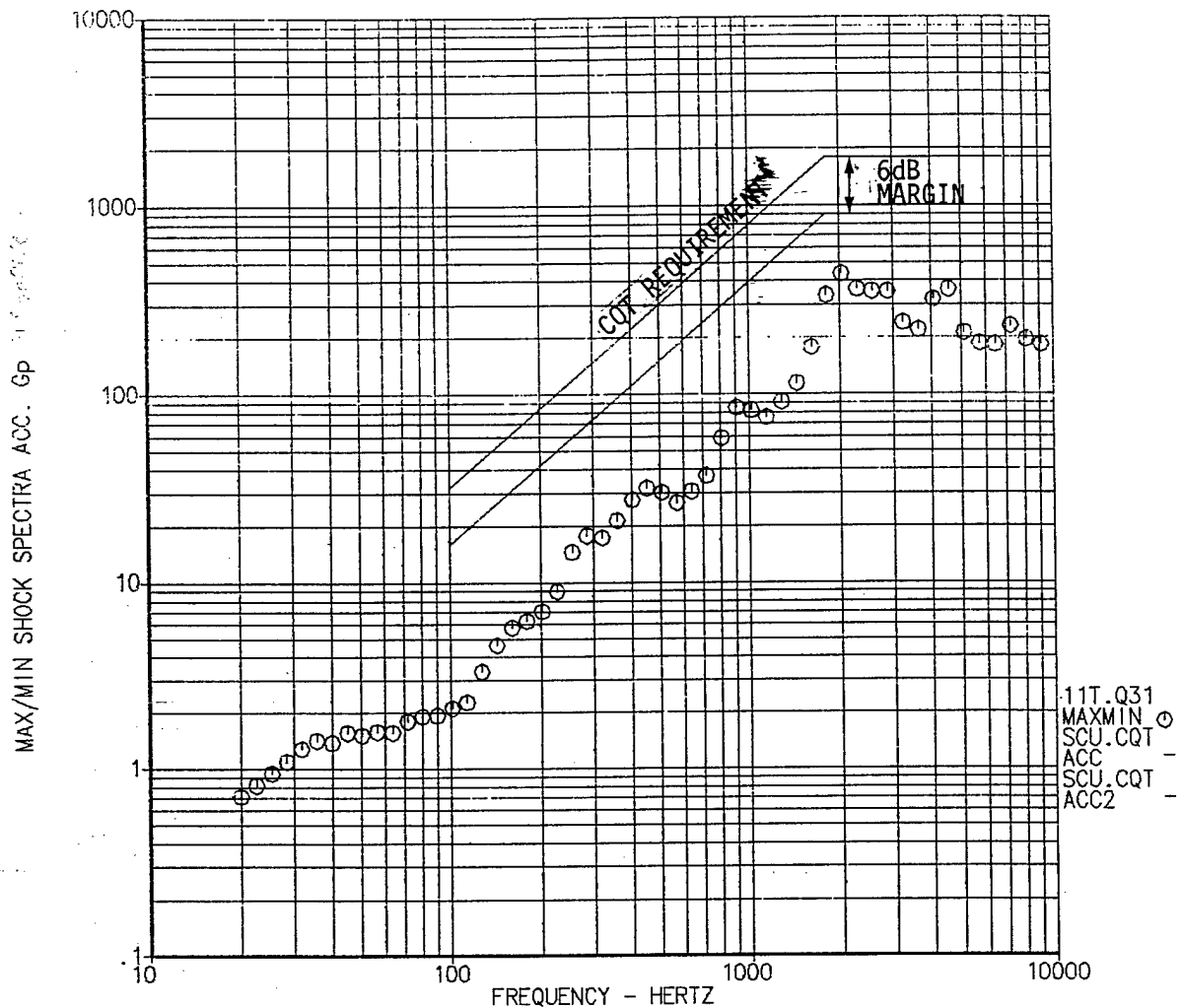


27-MAY-82 14:30:32

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 11R
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FIGURE 2-89
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 3 PULSE 1

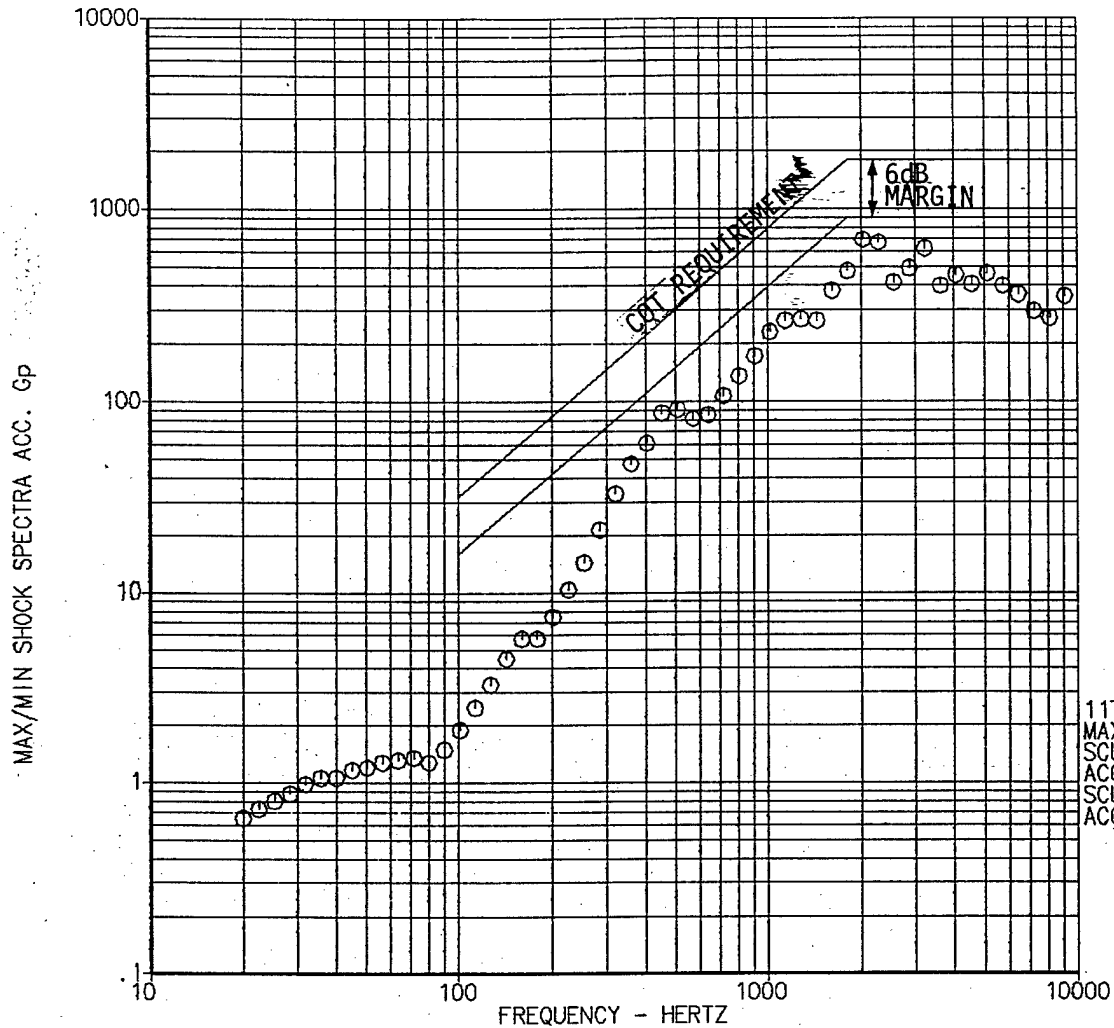


27-MAY-82 14:55:17

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11T
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FIGURE 2-90
SHOCK SPECTRA (Q = 10)
H11T QTV PYROSHOCK TEST 3 PULSE 2

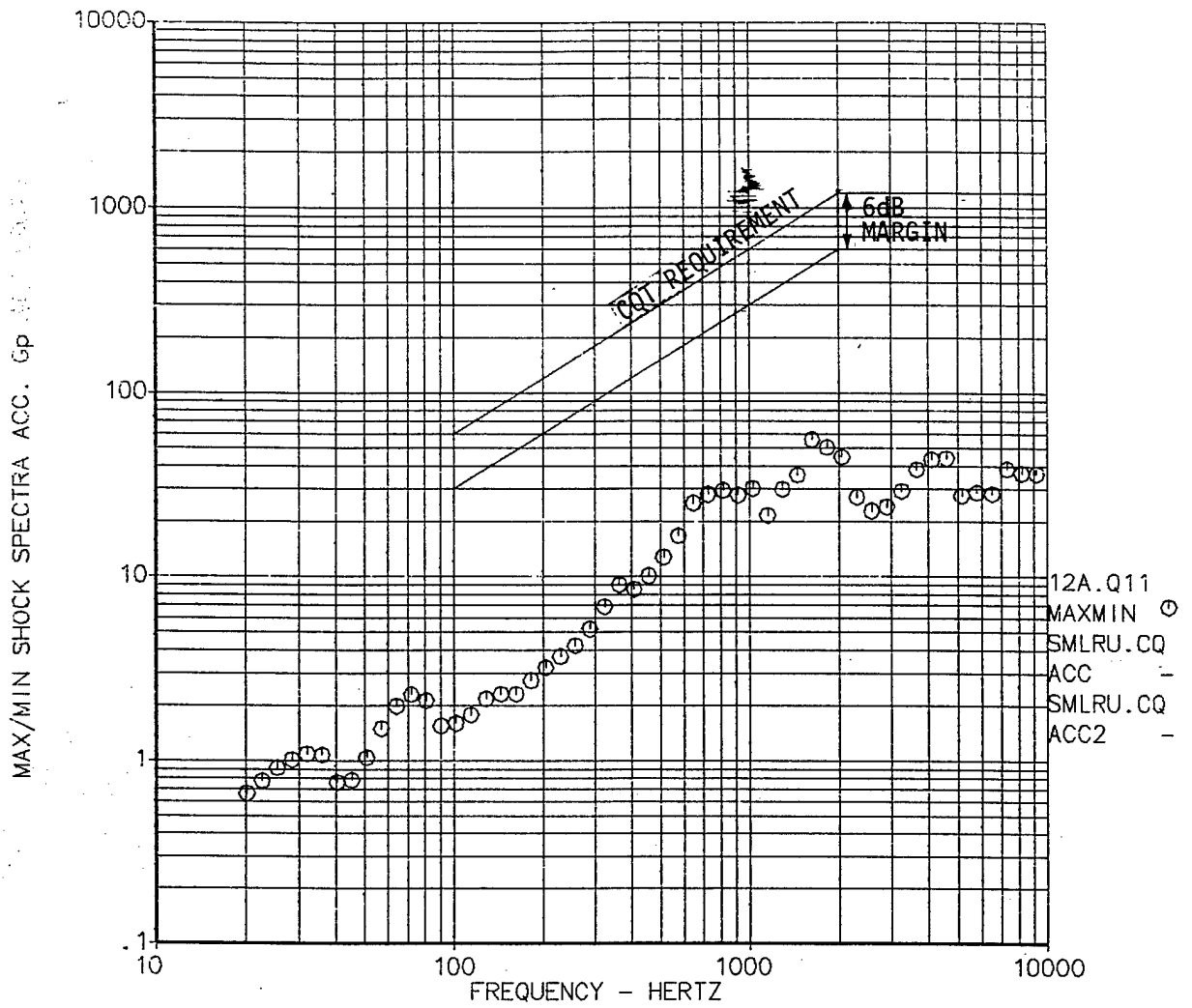


27-MAY-82 15:03:23

SCU

CALC	27MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 11T
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FIGURE 2-91
SHOCK SPECTRA (Q = 10)
H12A QTV PYROSHOCK TEST 1 PULSE 1

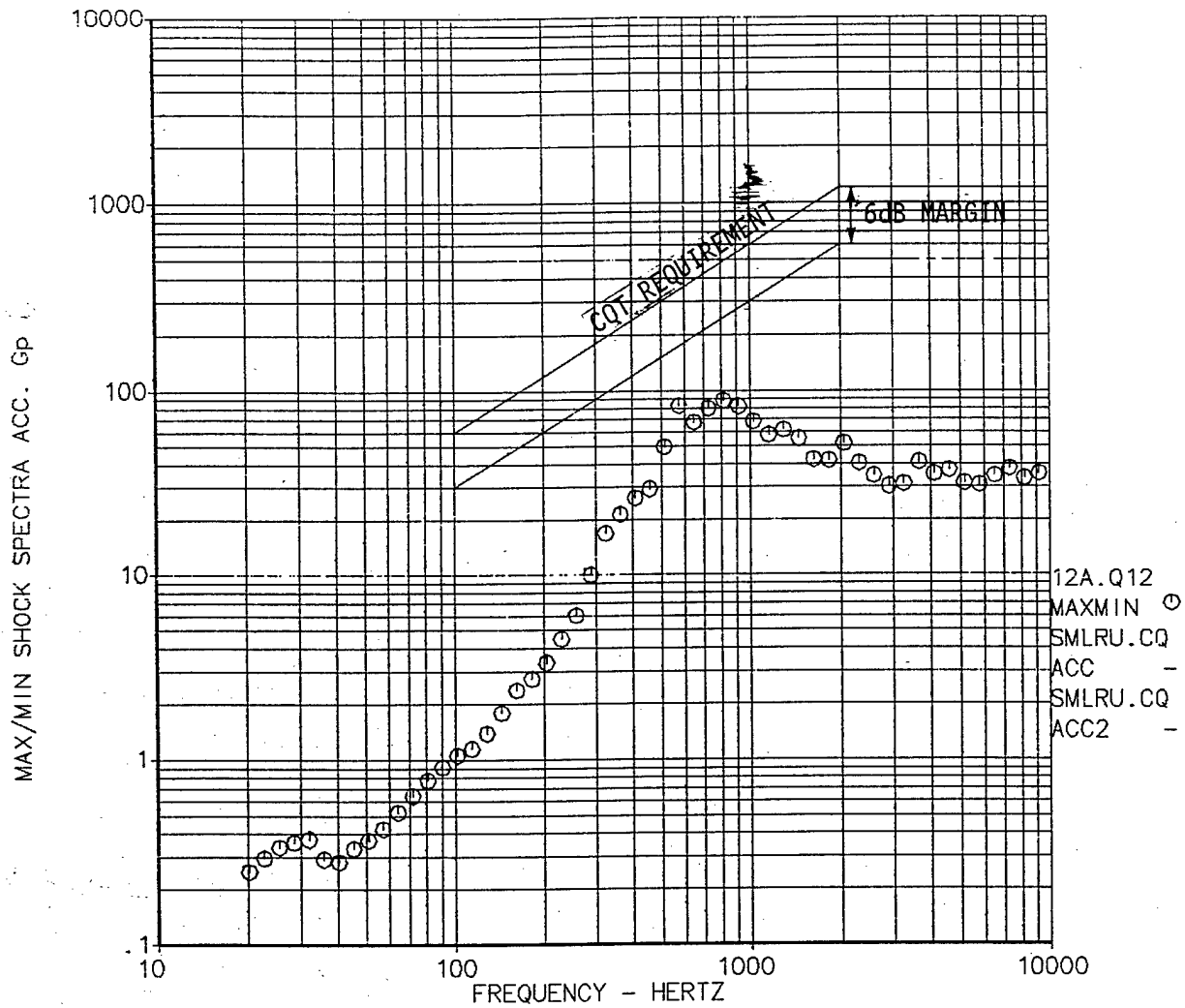


28-MAY-82 08:18:30

PDU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 12A
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FIGURE 2-92
SHOCK SPECTRA (Q = 10)
H12A QTV PYROSHOCK TEST 1 PULSE 2

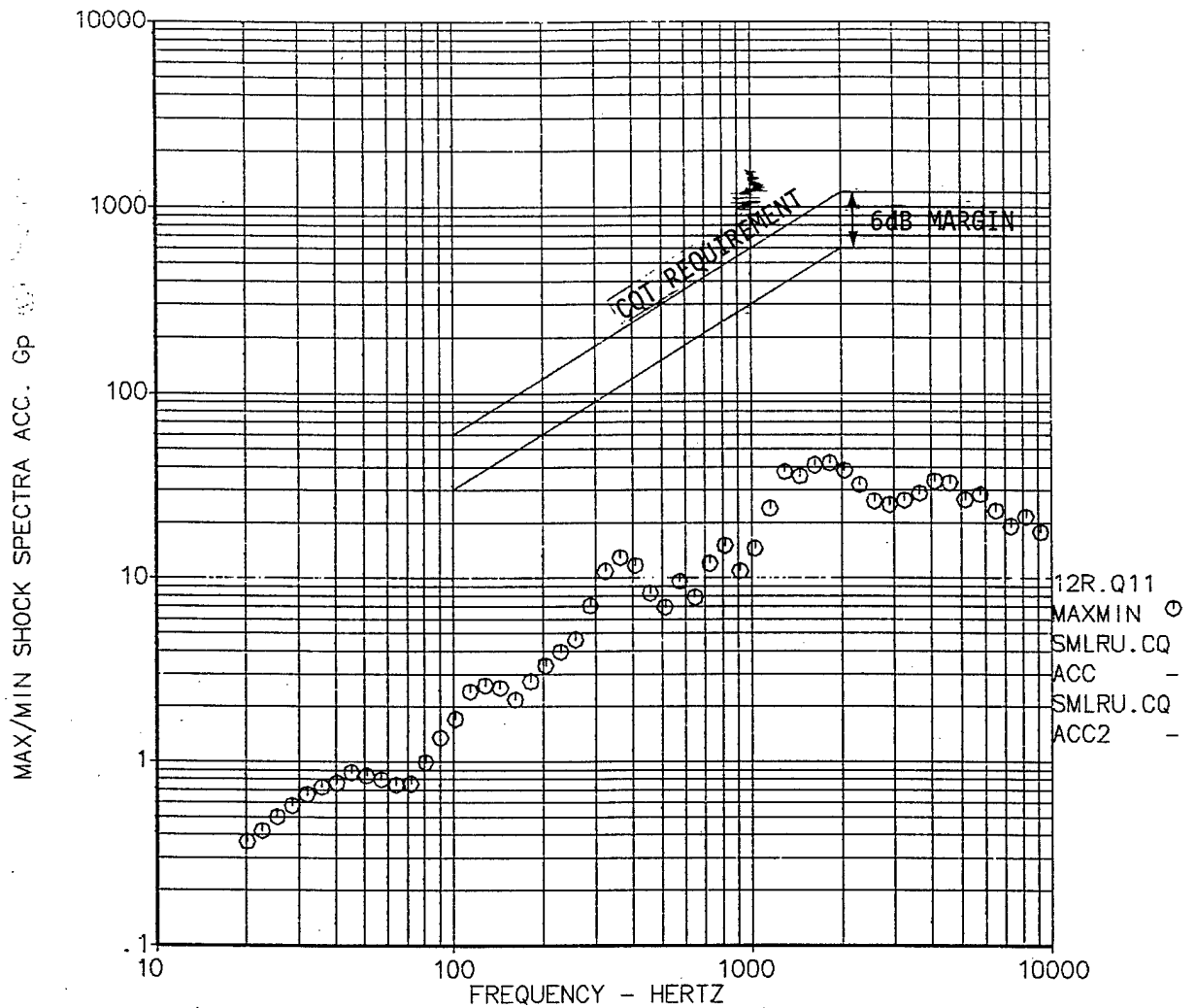


28-MAY-82 08:19:35

PDU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement THE BOEING COMPANY	Acc 12A
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FIGURE 2-93
SHOCK SPECTRA (Q = 10)
H12R QTV PYROSHOCK TEST 1 PULSE 1

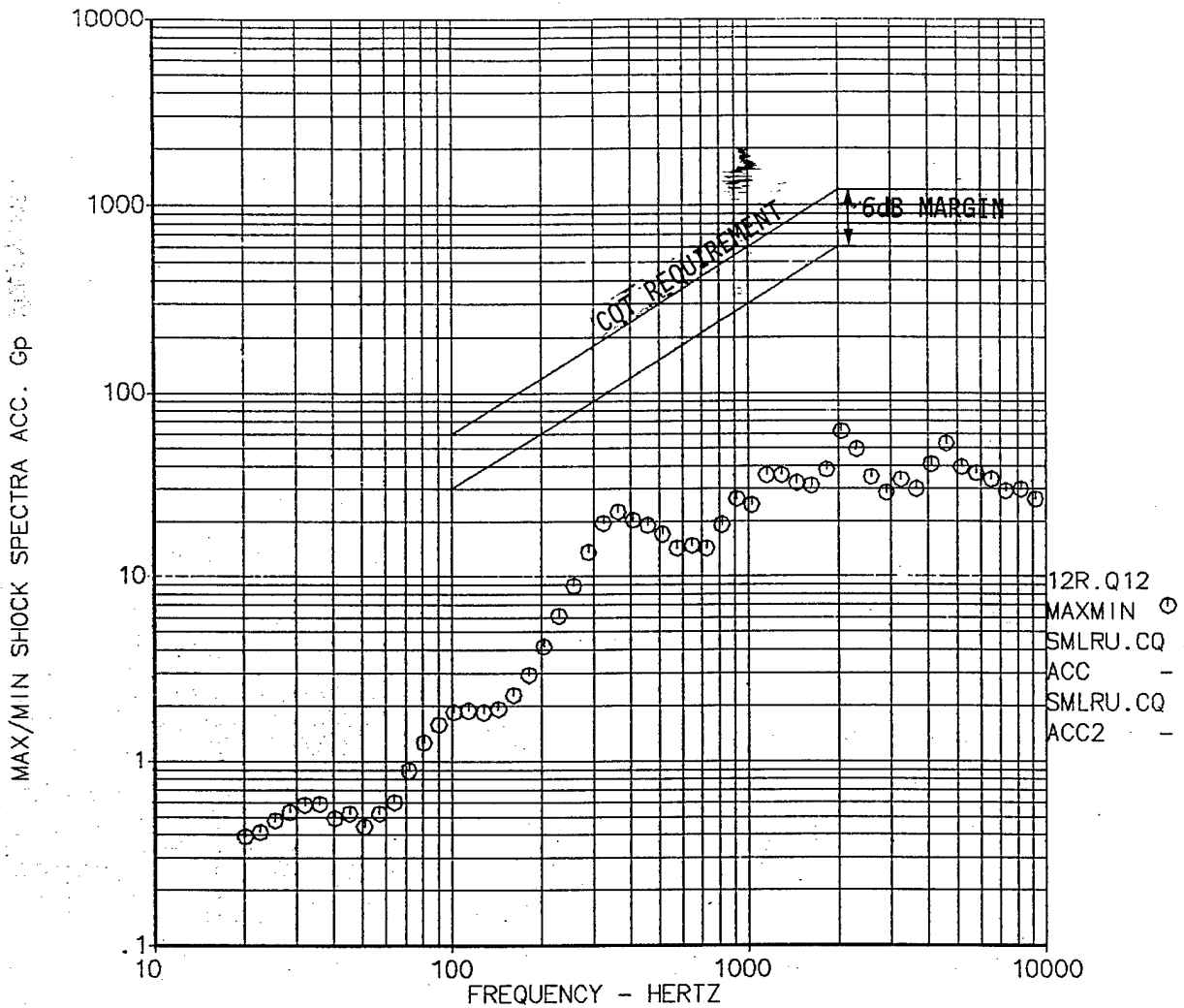


28-MAY-82 08:24:28

PDU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 12R
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FIGURE 2-94
SHOCK SPECTRA (Q = 10)
H12R QTV PYROSHOCK TEST 1 PULSE 2

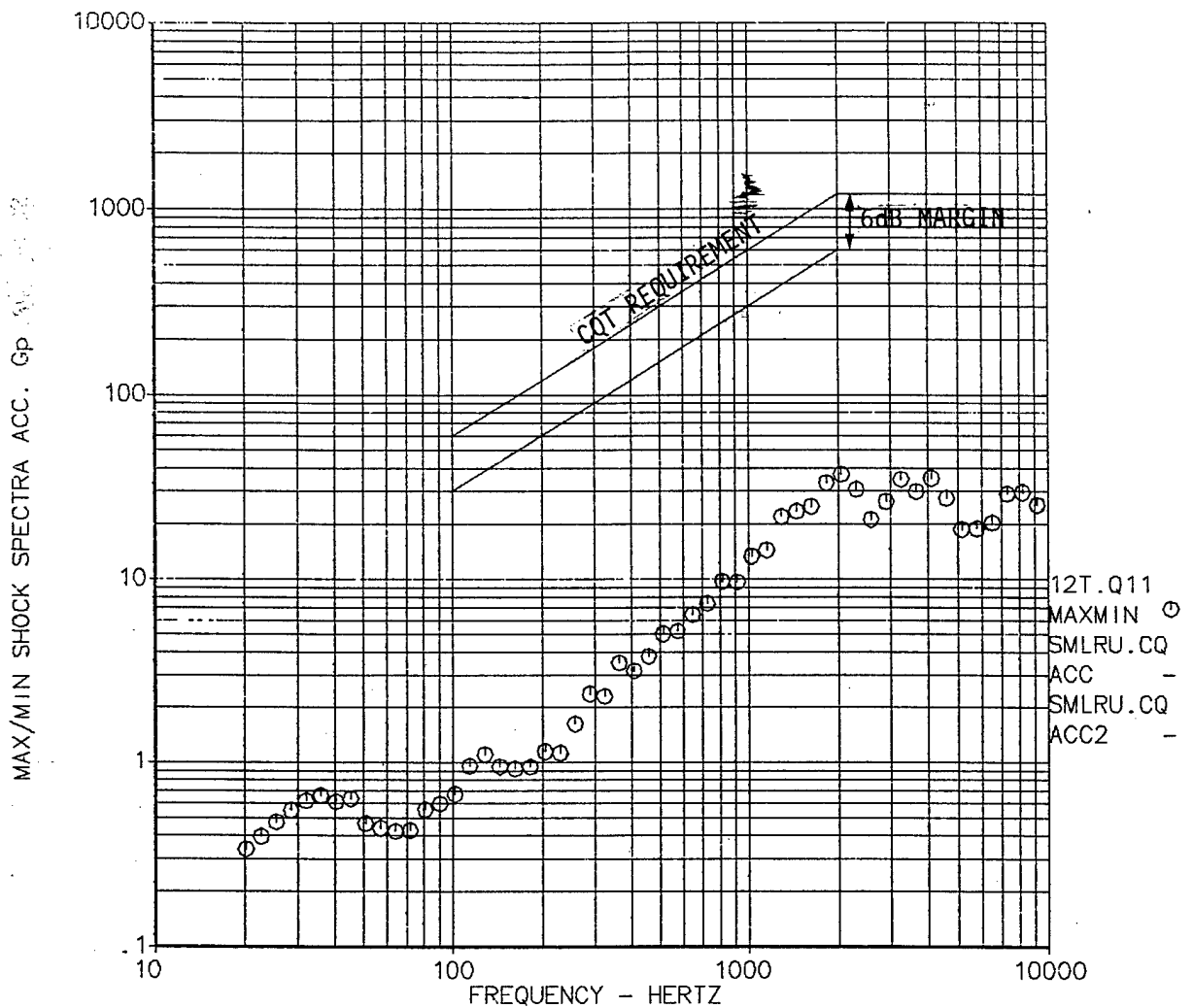


28-MAY-82 08:25:35

PDU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 12R
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FIGURE 2-95
SHOCK SPECTRA (Q = 10)
H12T QTV PYROSHOCK TEST 1 PULSE 1

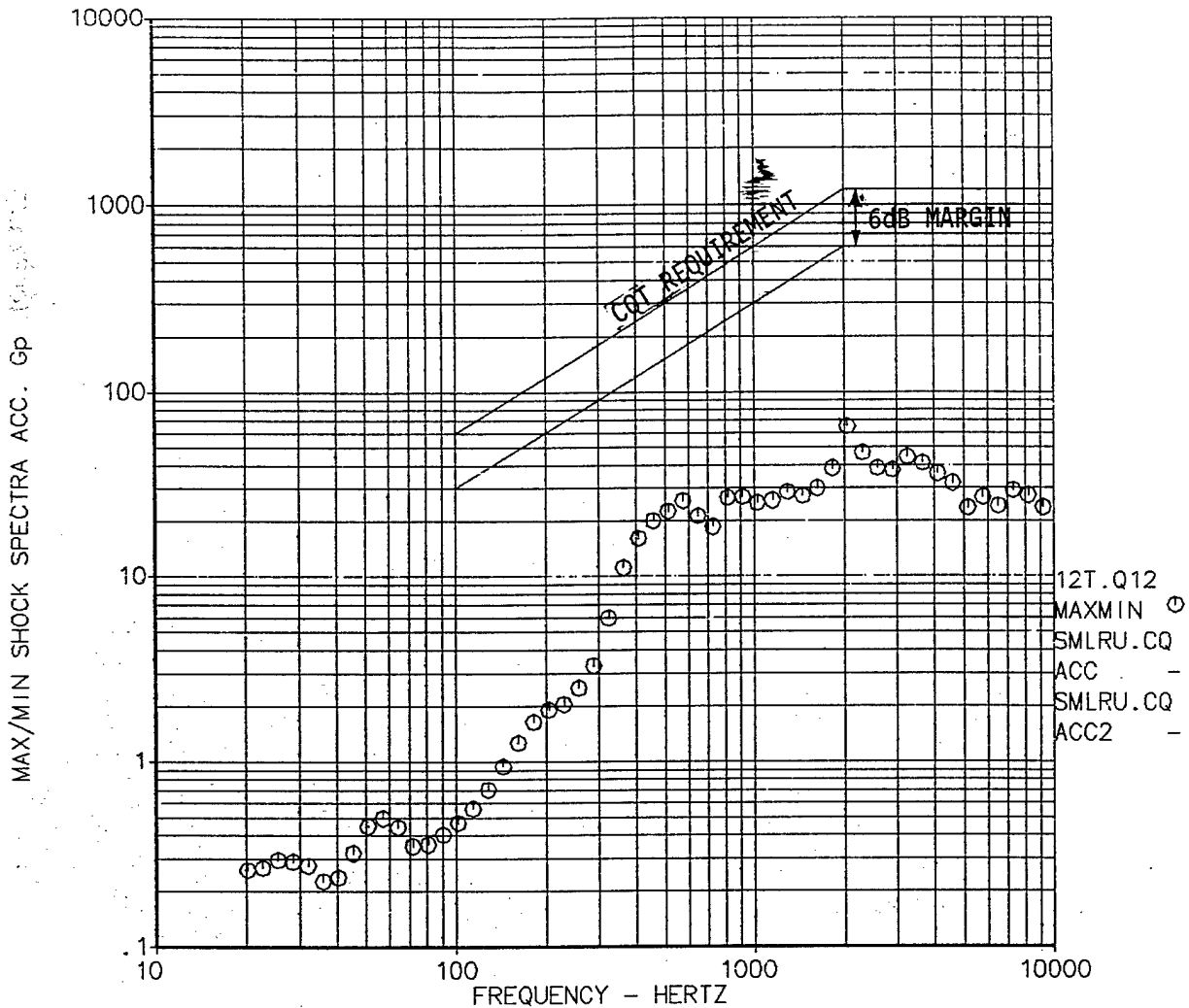


28-MAY-82 08:27:03

PDU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 12T
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FIGURE 2-96
SHOCK SPECTRA (Q = 10)
H12T QTV PYROSHOCK TEST 1 PULSE 2

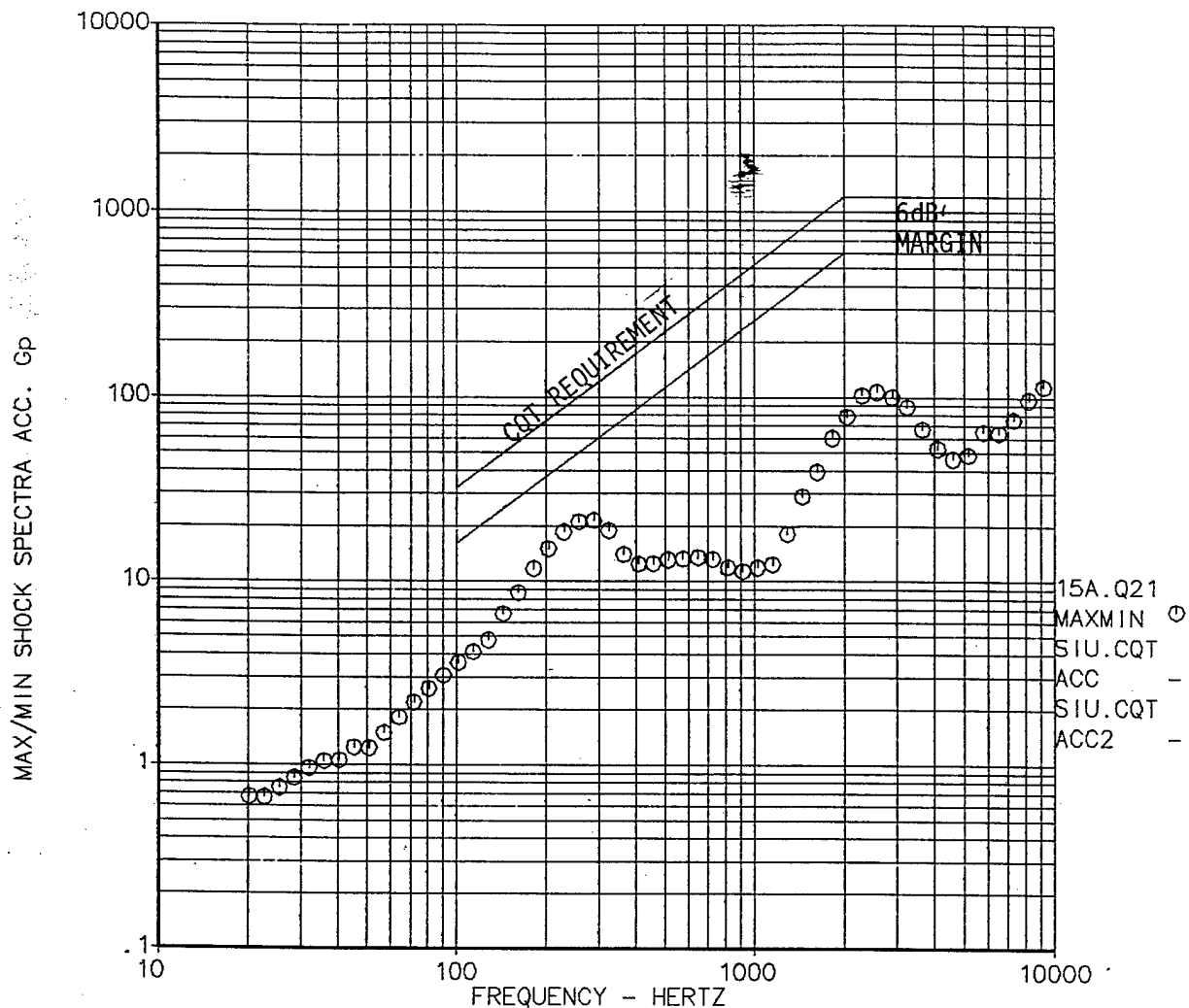


28-MAY-82 08:29:38

PDU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 12T
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FIGURE 2-97
SHOCK SPECTRA (Q = 10)
H15A QTV PYROSHOCK TEST 2 PULSE 1

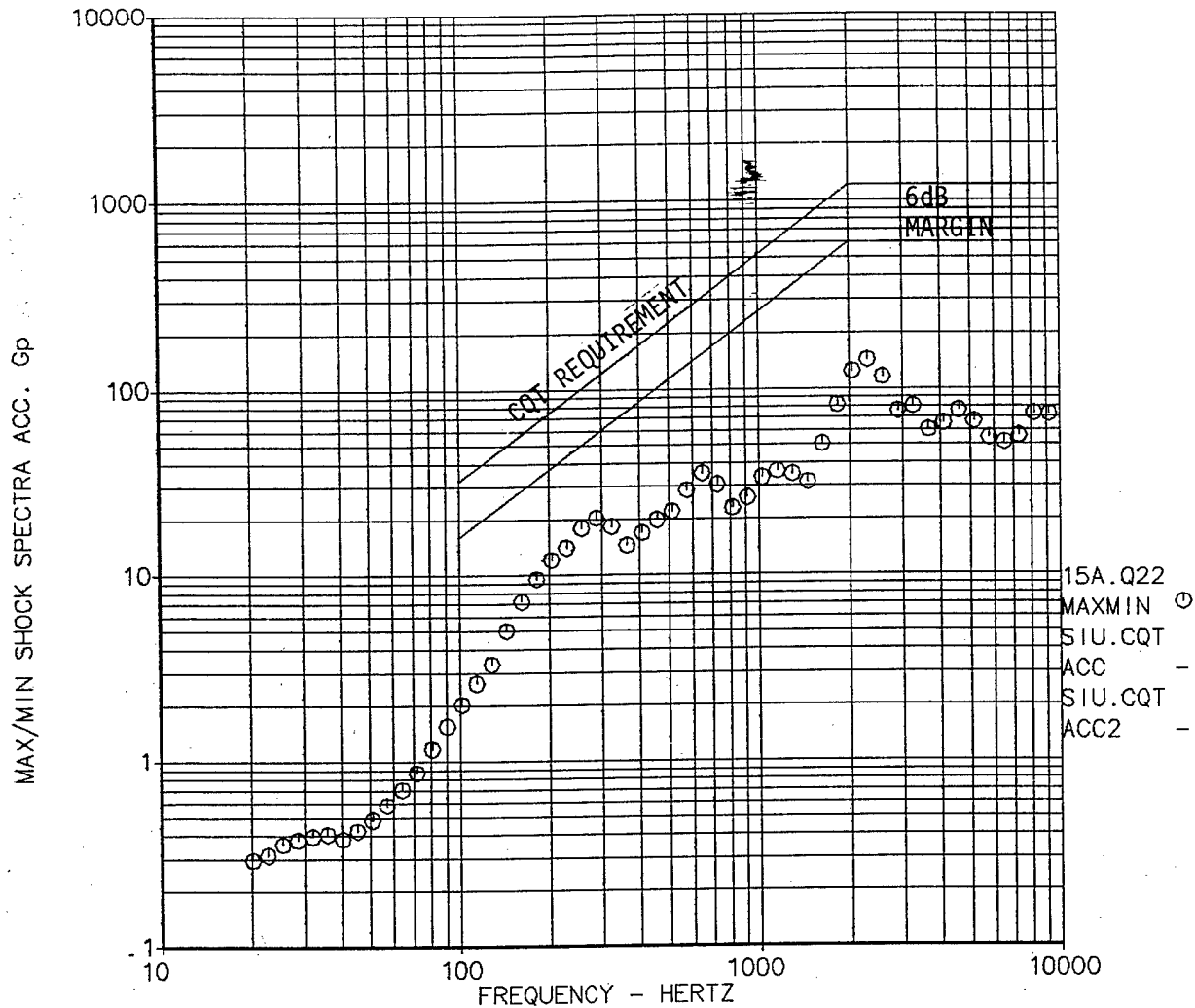


25-JUN-82 12:55:36

SIU

CALC		25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 15a
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FIGURE 2-98
SHOCK SPECTRA ($Q = 10$)
H15A QTV PYROSHOCK TEST 2 PULSE 2

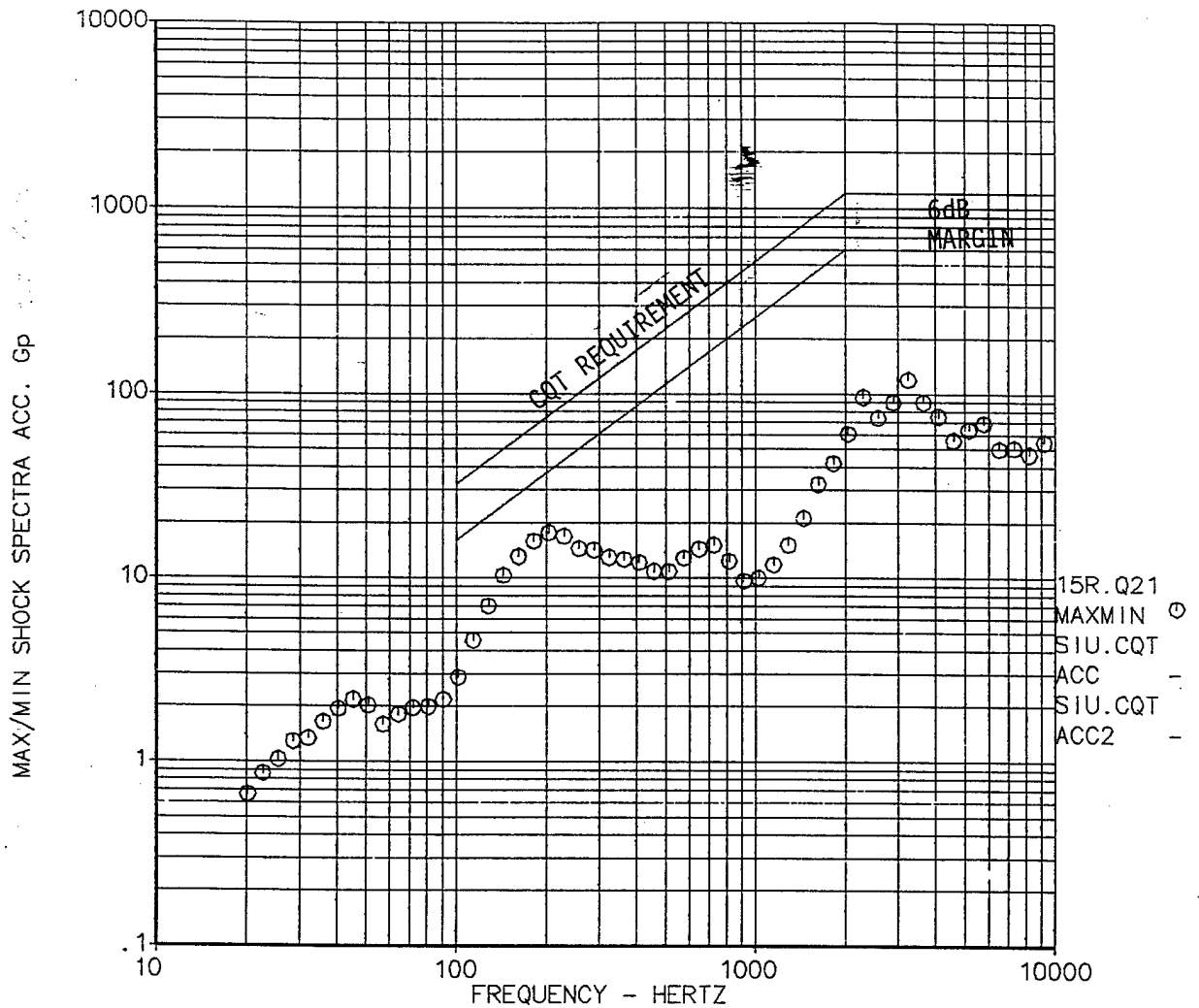


25-JUN-82 12:58:09

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	15A
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FIGURE 2-99
SHOCK SPECTRA (Q = 10)
H15R QTV PYROSHOCK TEST 2 PULSE 1

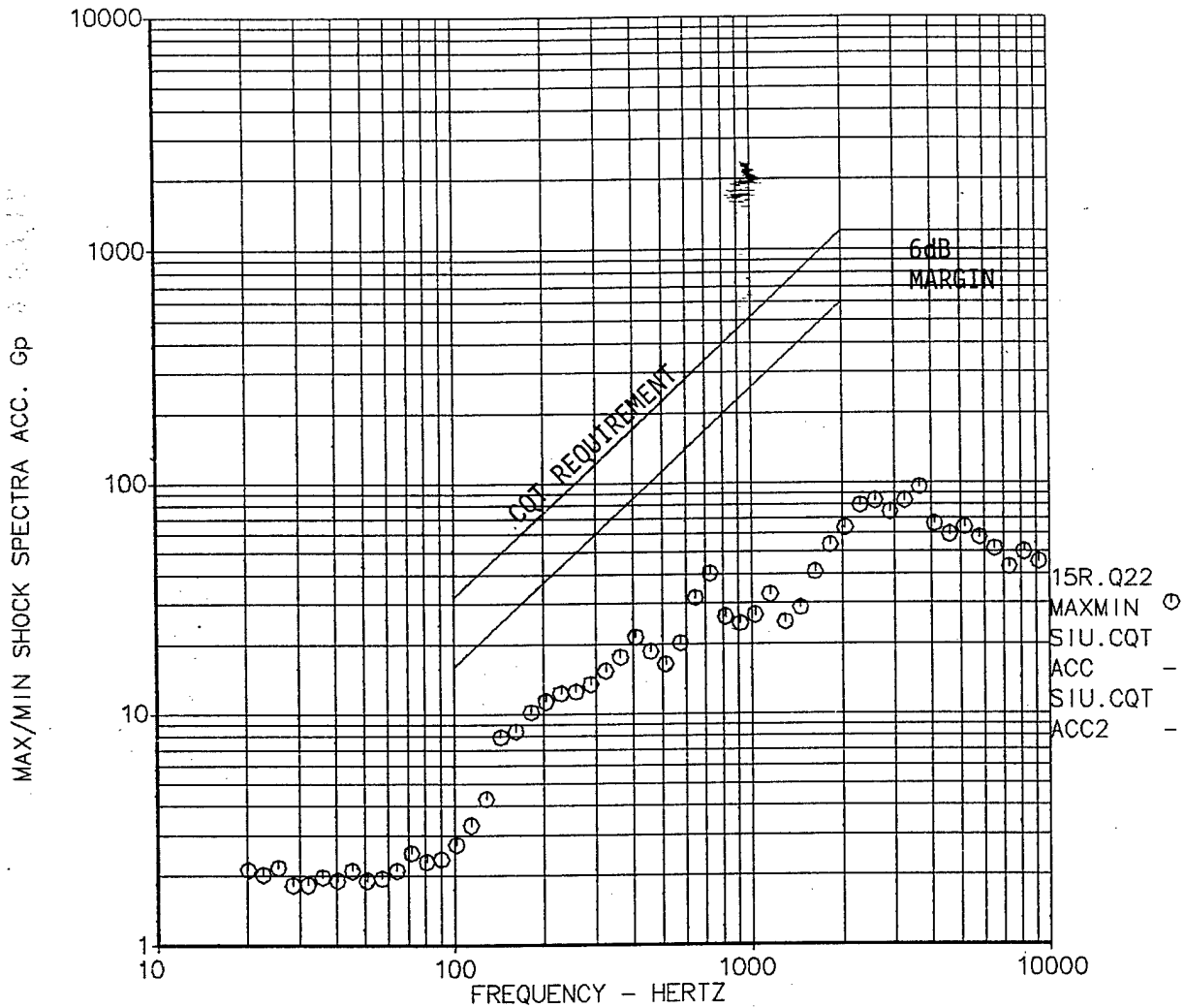


25-JUN-82 13:03:31

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15R
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FIGURE 2-100
SHOCK SPECTRA (Q = 10)
H15R QTV PYROSHOCK TEST 2 PULSE 2

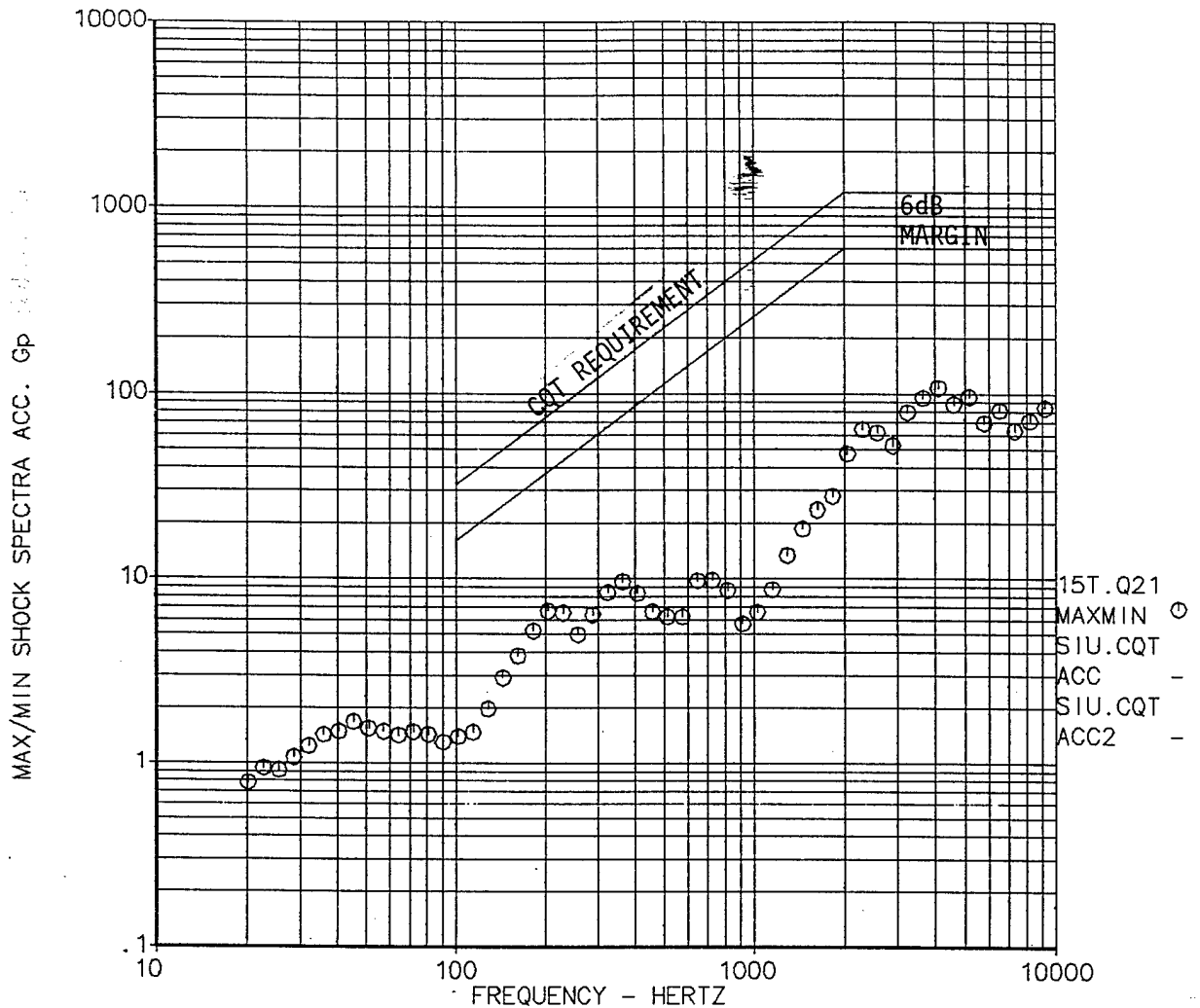


25-JUN-82 13:05:07

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15R
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FIGURE 2-101
SHOCK SPECTRA (Q = 10)
H15T QTV PYROSHOCK TEST 2 PULSE 1

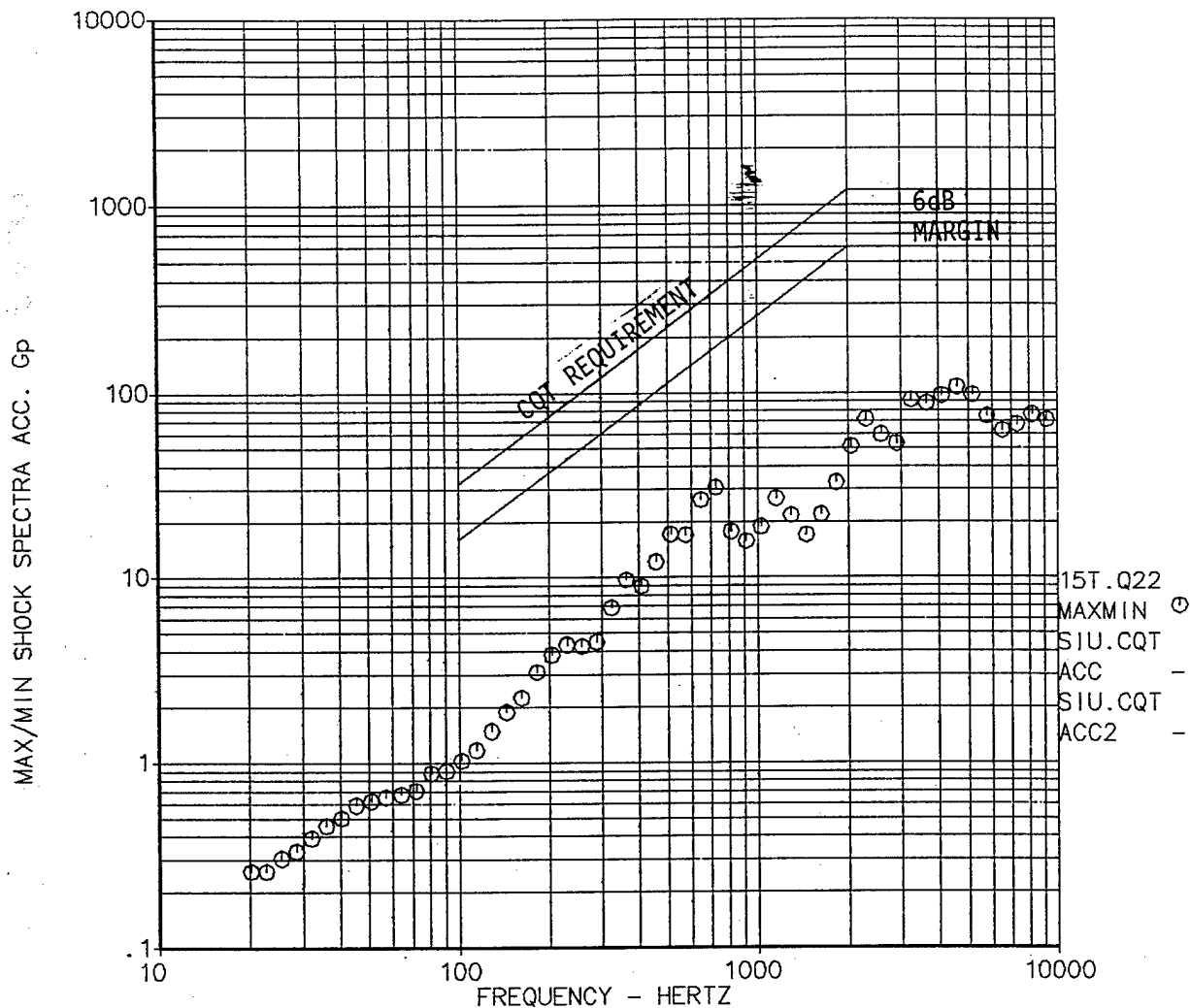


25-JUN-82 13:12:54

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15T
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FIGURE2-102
SHOCK SPECTRA (Q = 10)
H15T QTV PYROSHOCK TEST 2 PULSE 2

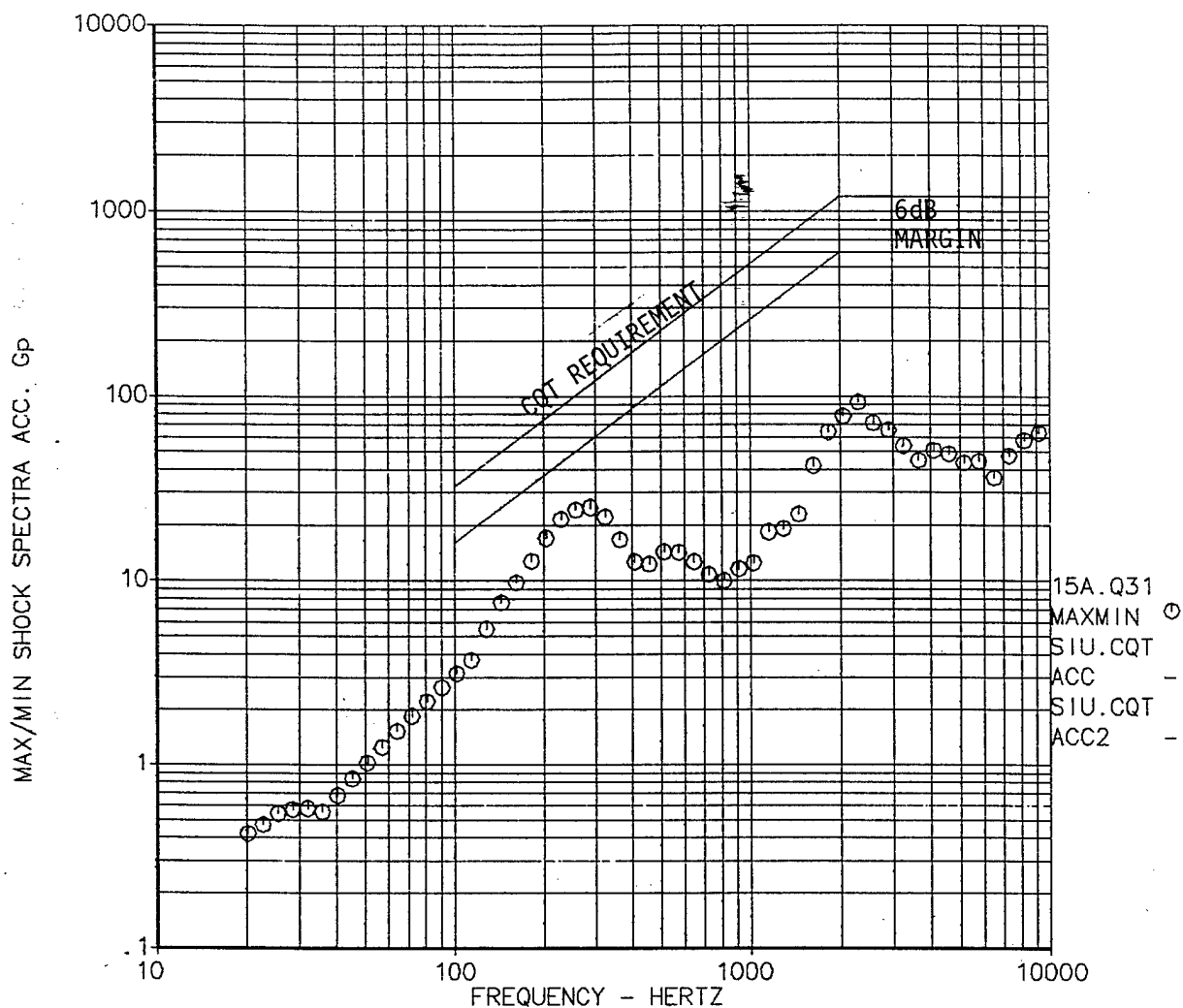


25-JUN-82 13:15:55

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15T
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FIGURE 2-103
SHOCK SPECTRA (Q = 10)
H15A QTV PYROSHOCK TEST 3 PULSE 1

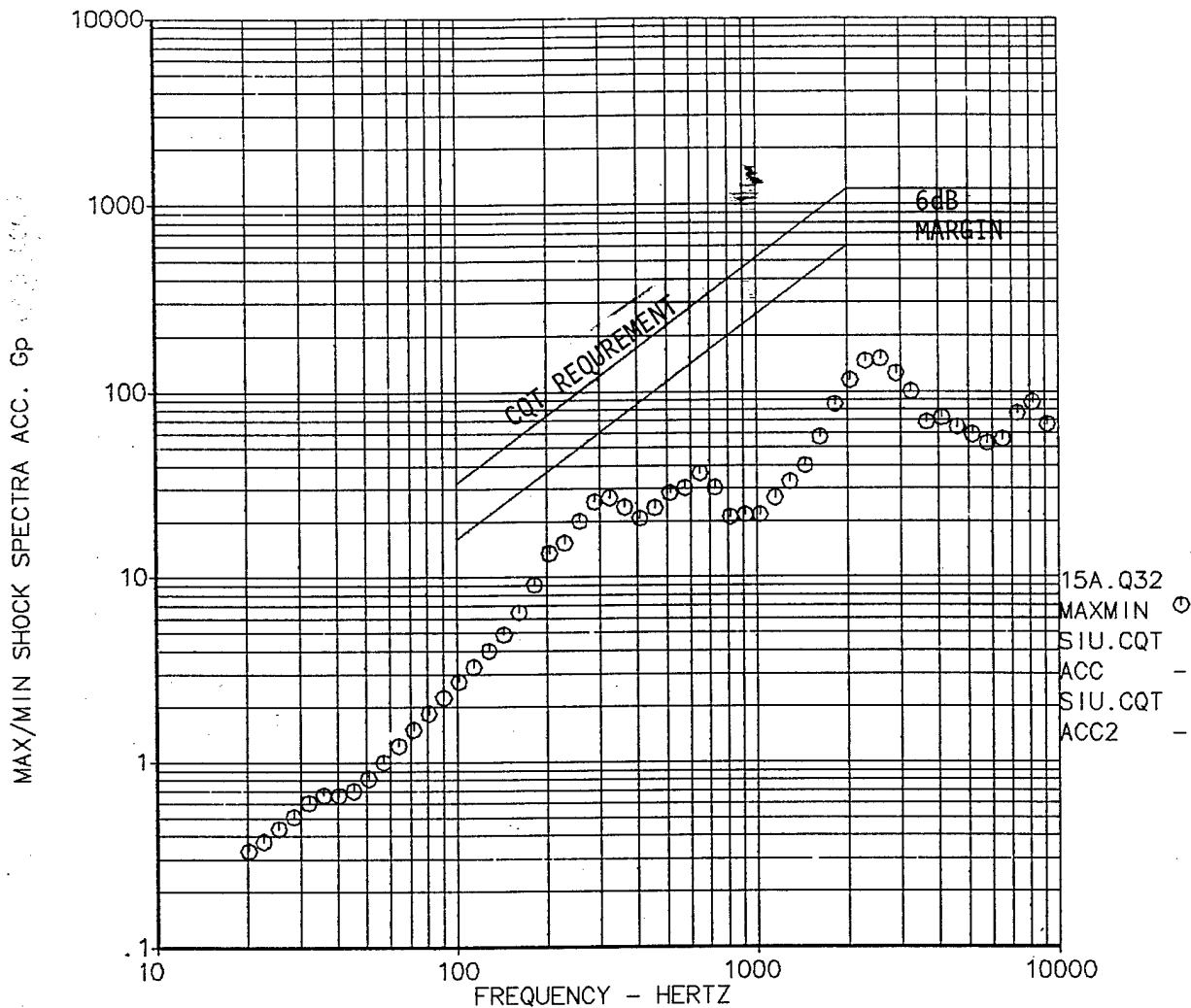


25-JUN-82 13:00:20

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15R
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FIGURE 2-104
SHOCK SPECTRA (Q = 10)
H15A QTV PYROSHOCK TEST 3 PULSE 2

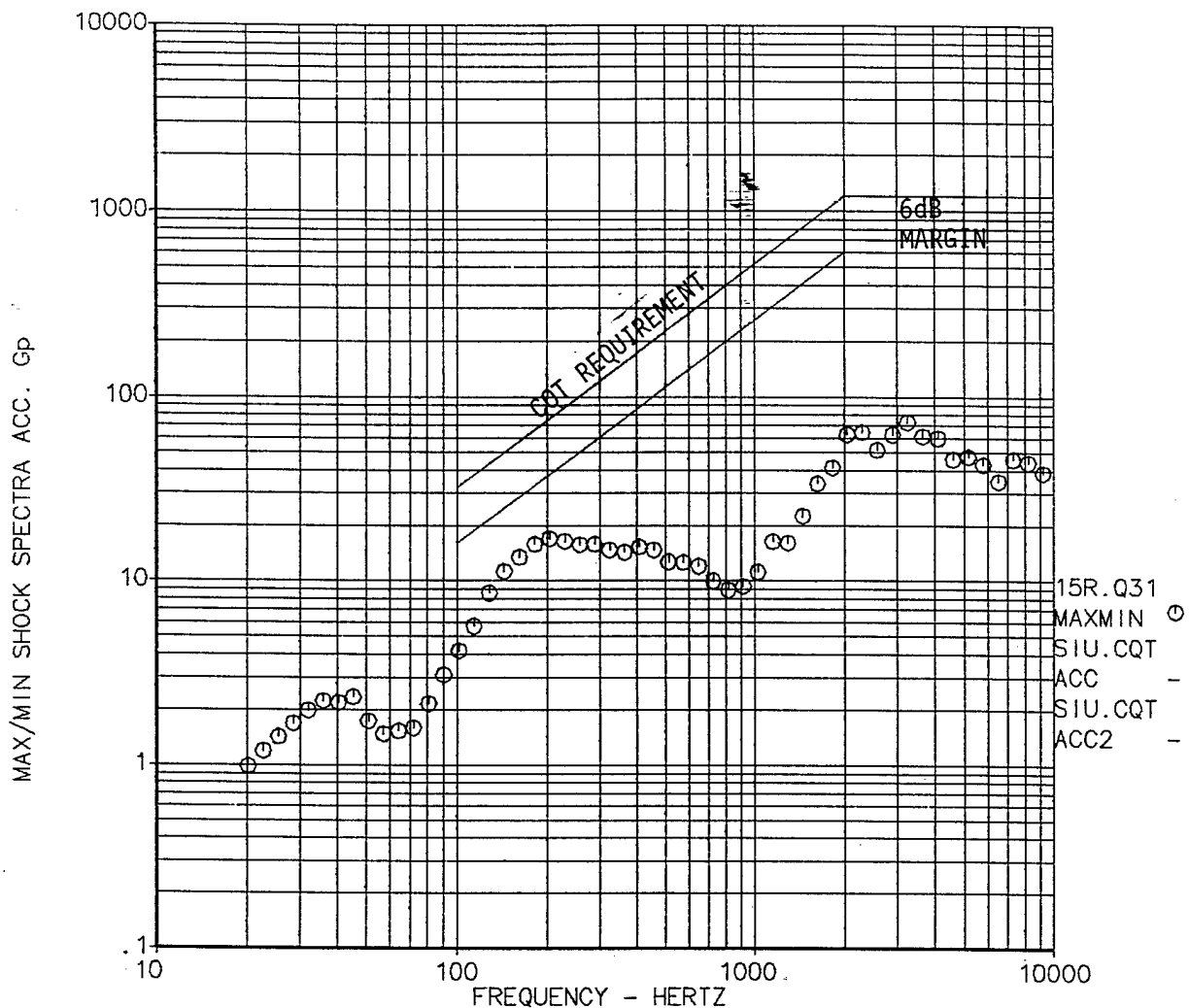


25-JUN-82 13:02:20

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	ACC 15A
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FIGURE 2-105
SHOCK SPECTRA (Q = 10)
H15R QTV PYROSHOCK TEST 3 PULSE 1

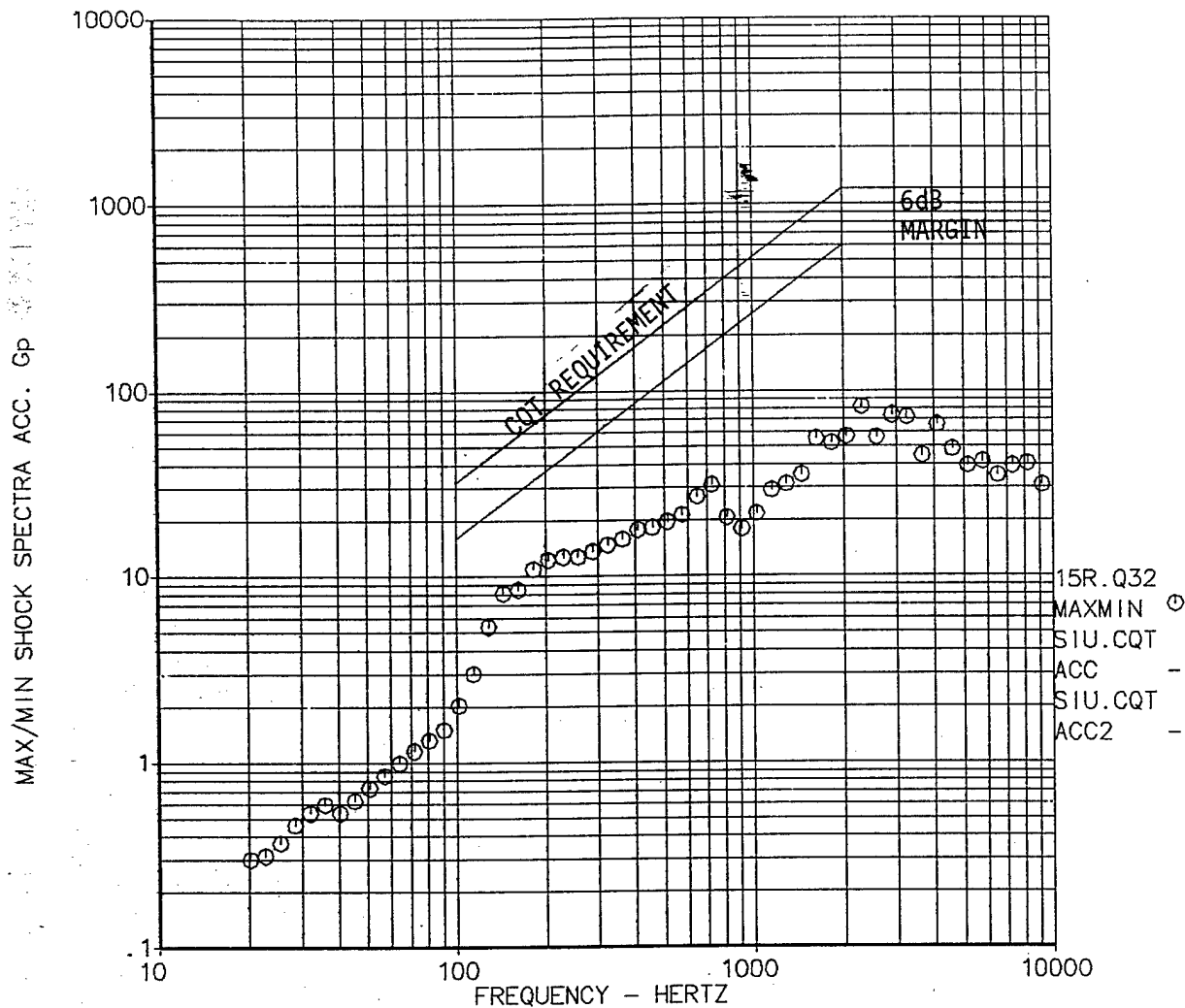


25-JUN-82 13:07:18

SIU

CALC		25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15R
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FIGURE 2-106
SHOCK SPECTRA (Q = 10)
H15R QTV PYROSHOCK TEST 3 PULSE 2



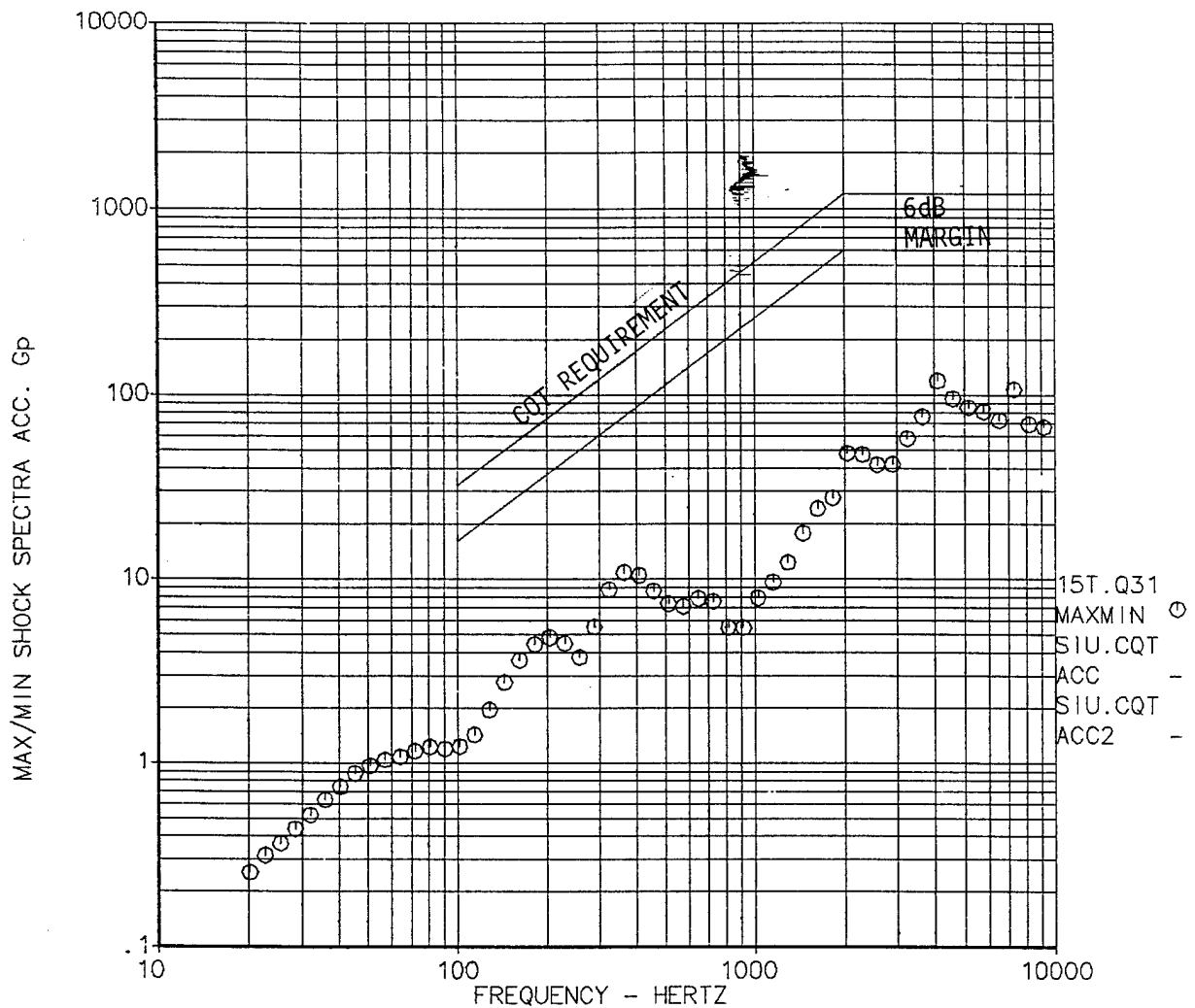
25-JUN-82 13:10:08

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc. 15R
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FIGURE 2-107
SHOCK SPECTRA (Q = 10)
H15T QTV PYROSHOCK TEST 3 PULSE 1

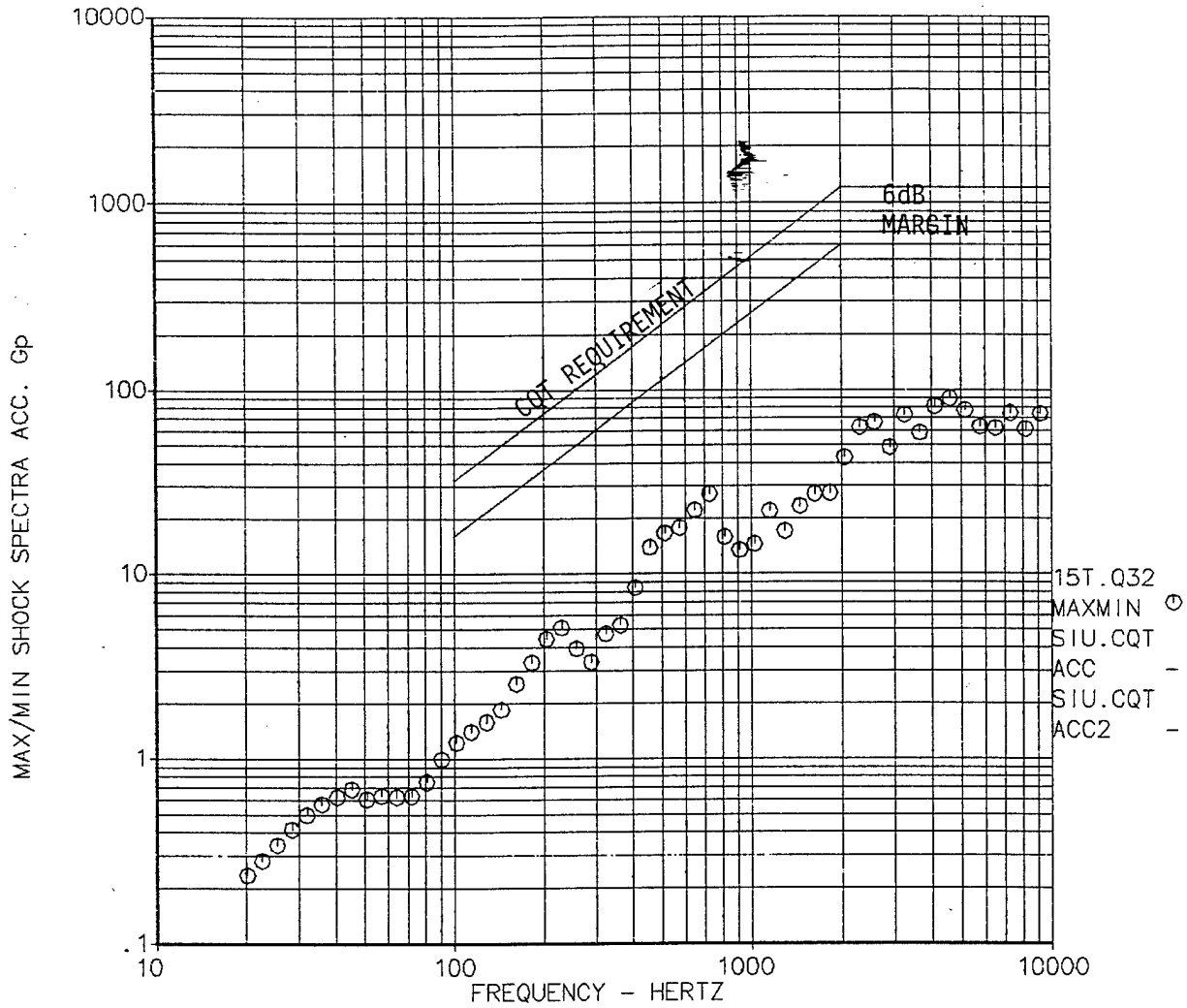


25-JUN-82 13:18:33

SIU

CALC		25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15T
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FIGURE 2-108
SHOCK SPECTRA (Q = 10)
H15T QTV PYROSHOCK TEST 3 PULSE 2

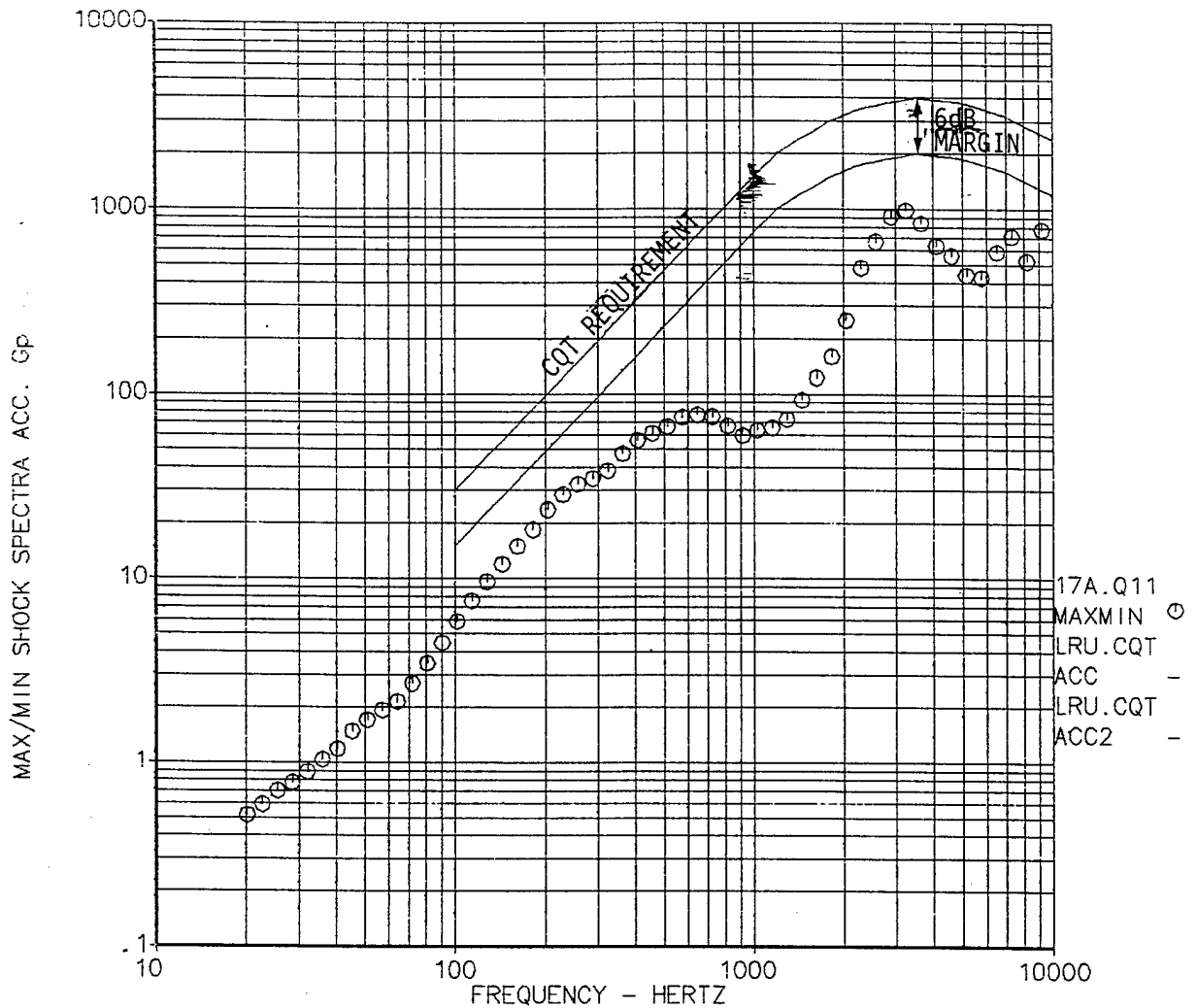


25-JUN-82 13:25:27

SIU

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 15T
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FIGURE 2-109
SHOCK SPECTRA (Q = 10)
H17A QTV PYROSHOCK TEST 1 PULSE 1

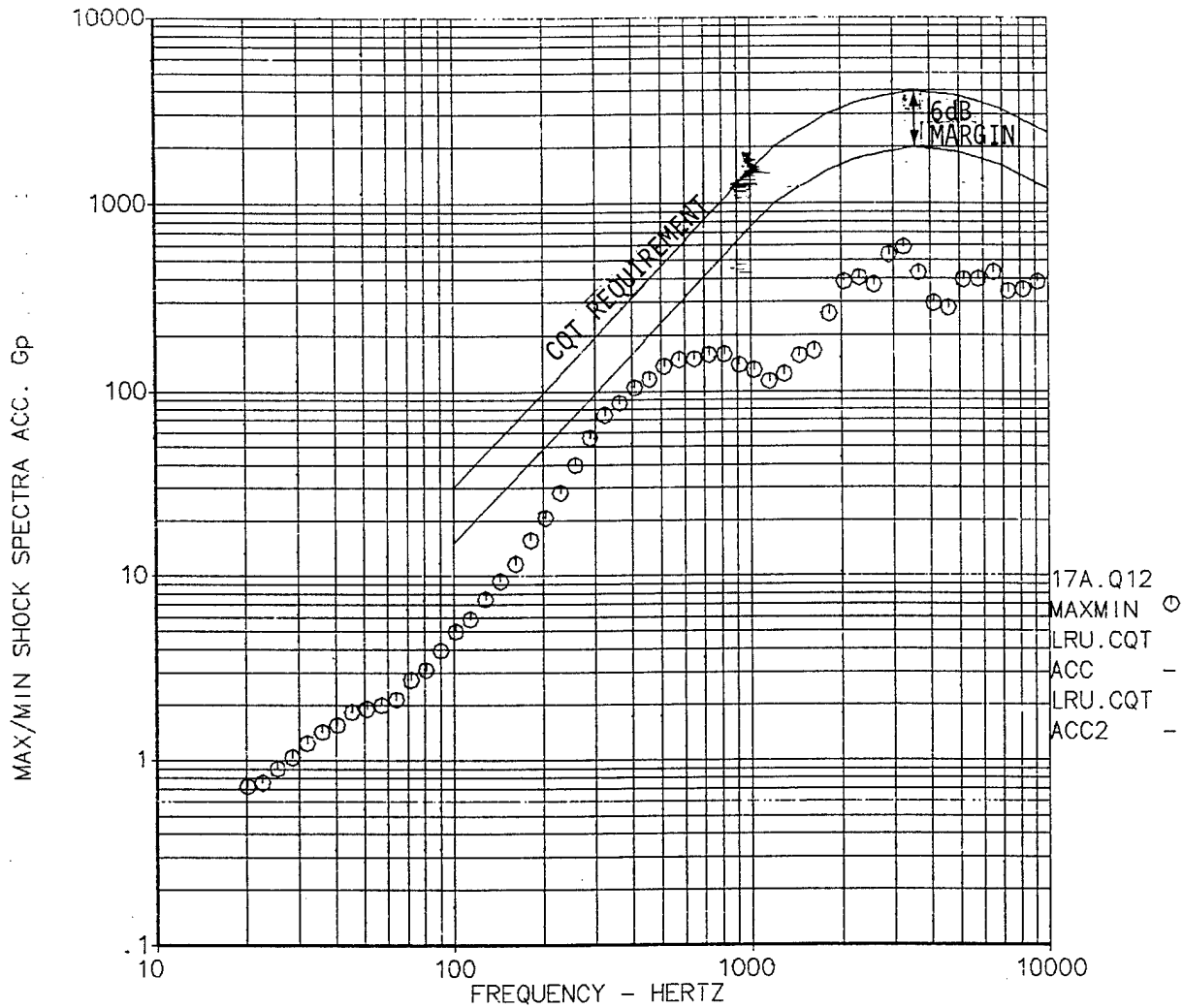


28-MAY-82 09:06:35

PTU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17A
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FIGURE 2-110
SHOCK SPECTRA (Q = 10)
H17A QTV PYROSHOCK TEST 1 PULSE 2

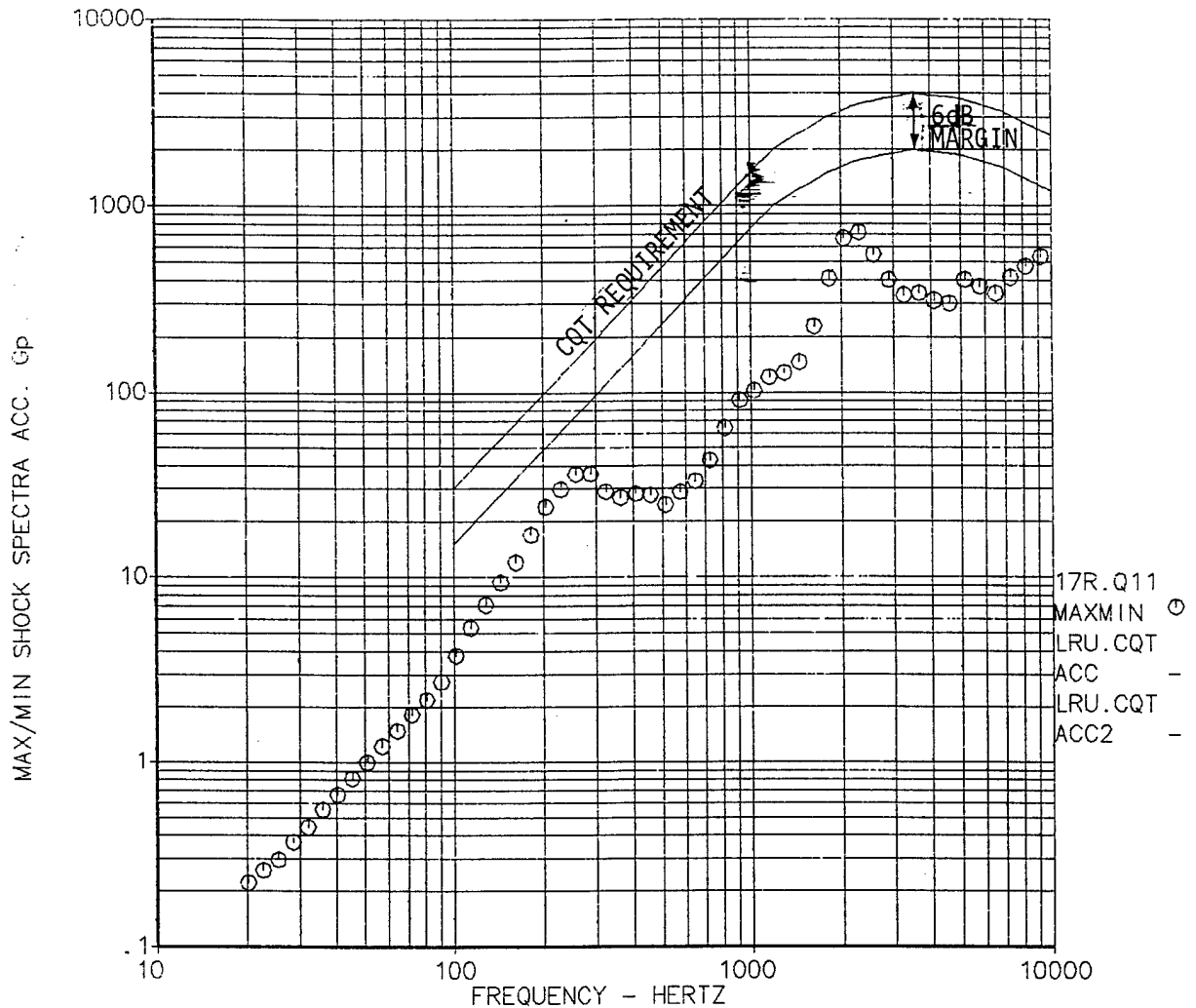


28-MAY-82 09:08:34

PTU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 17A
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FIGURE 2-111
SHOCK SPECTRA (Q = 10)
H17R QTV PYROSHOCK TEST 1 PULSE 1

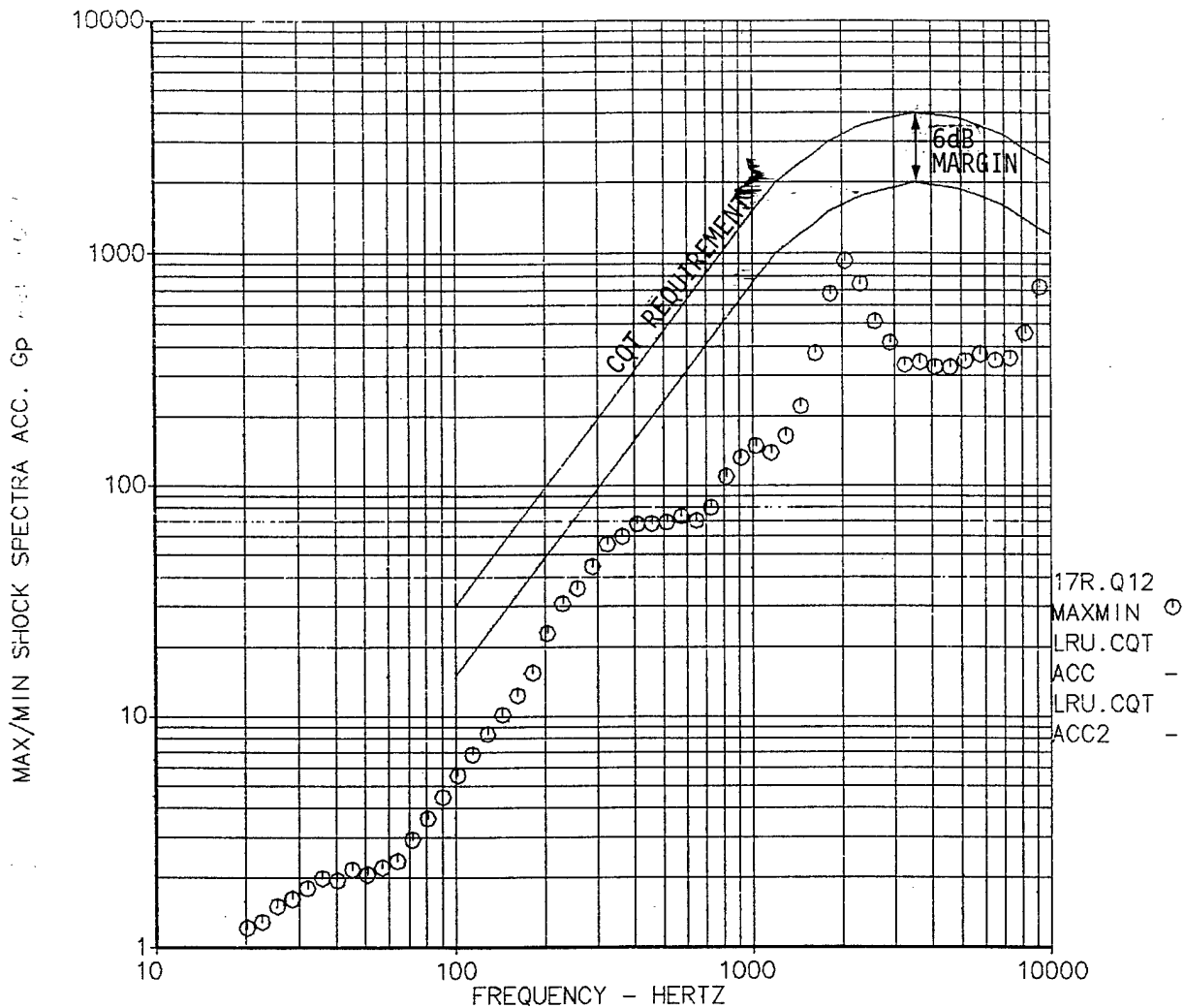


28-MAY-82 09:22:50

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 17R
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FIGURE 2-112
SHOCK SPECTRA (Q = 10)
H17R QTV PYROSHOCK TEST 1 PULSE 2

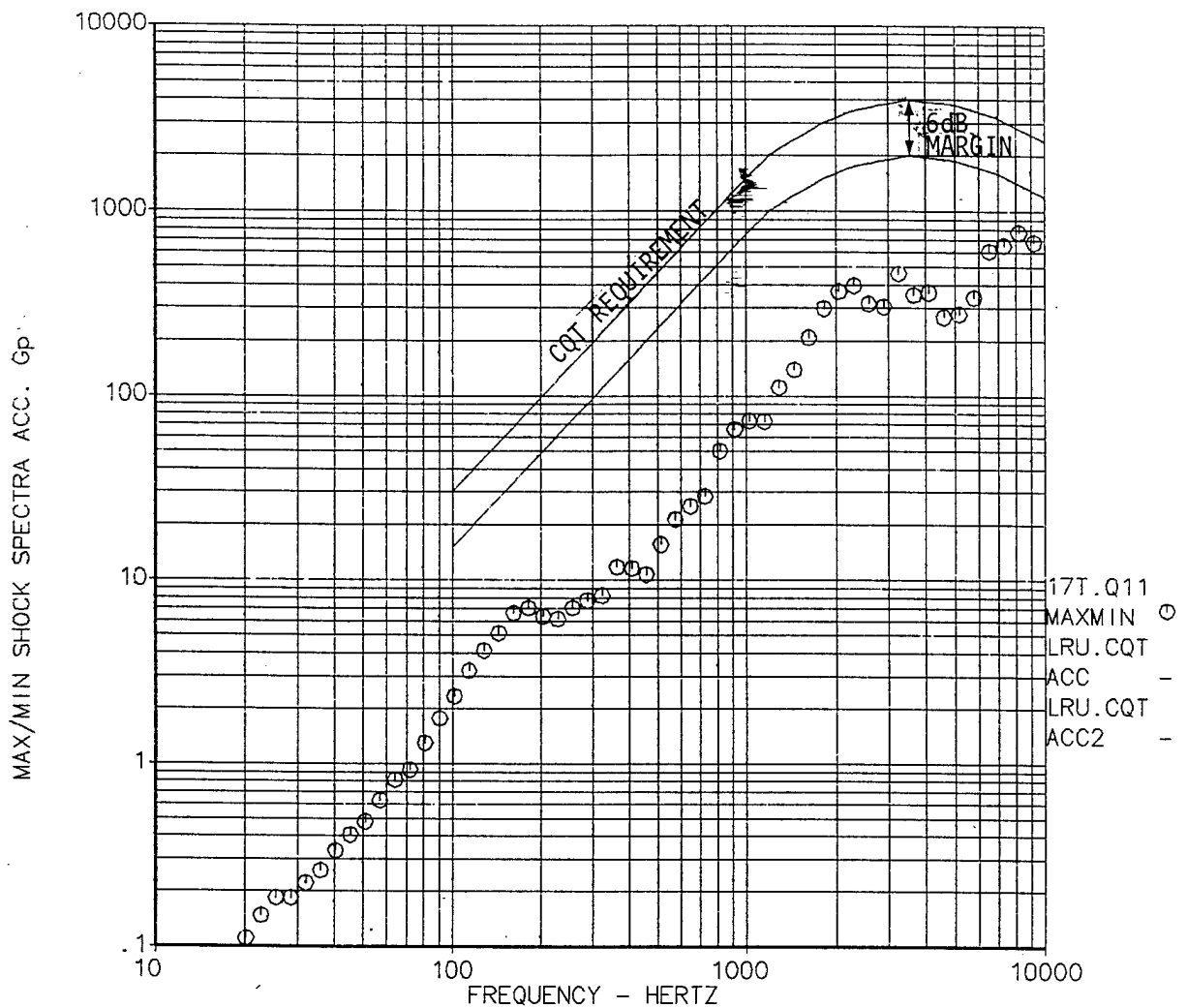


28-MAY-82 09:24:41

PTU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 17R
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FIGURE 2-113
SHOCK SPECTRA (Q = 10)
H17T QTV PYROSHOCK TEST 1 PULSE 1

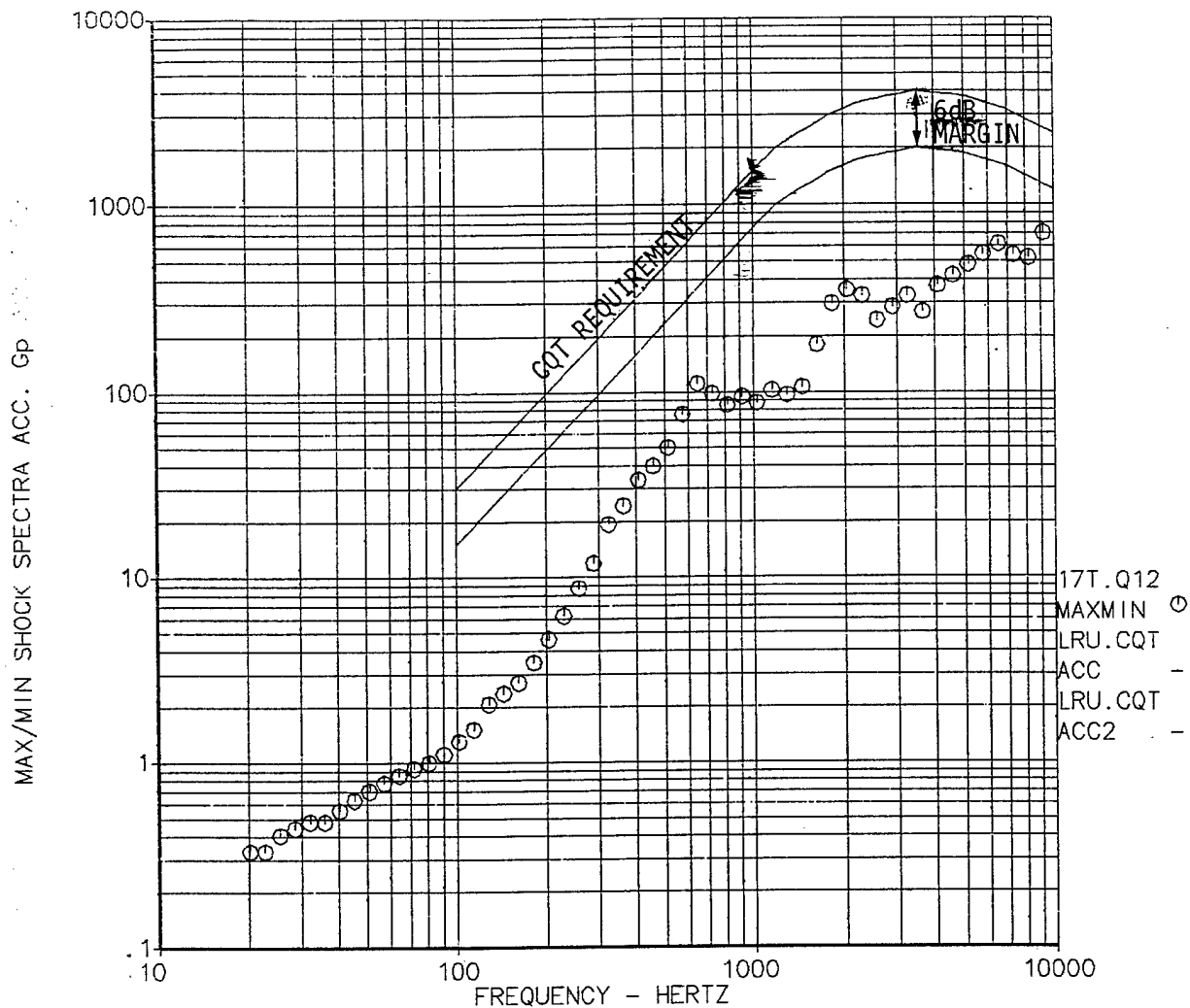


28-MAY-82 09:36:22

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17T
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FIGURE 2-114
SHOCK SPECTRA (Q = 10)
H17T QTV PYROSHOCK TEST 1 PULSE 2



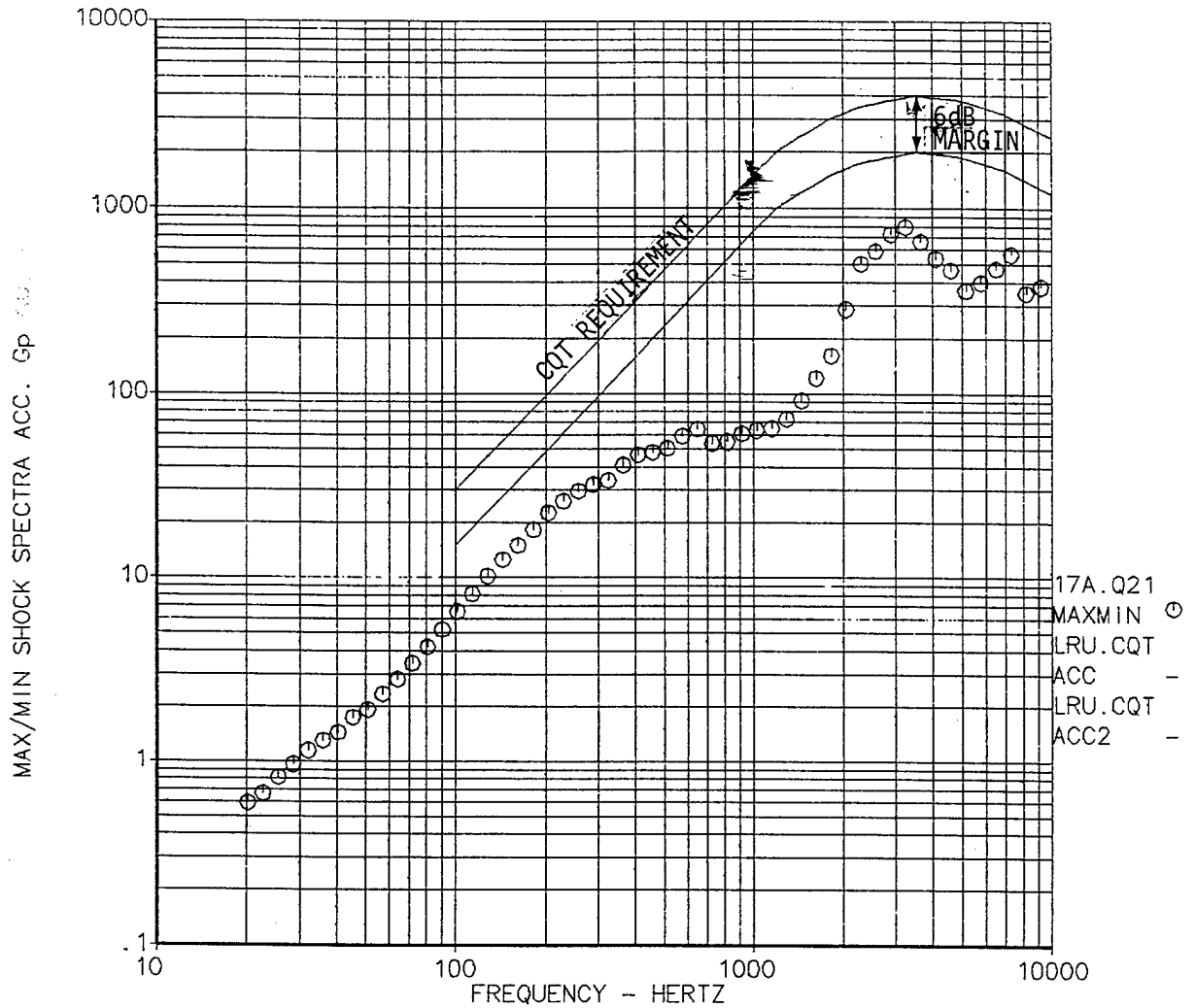
28-MAY-82 09:39:06

PTU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17T
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FIGURE 2-115
SHOCK SPECTRA (Q = 10)
H17A QTV PYROSHOCK TEST 2 PULSE 1

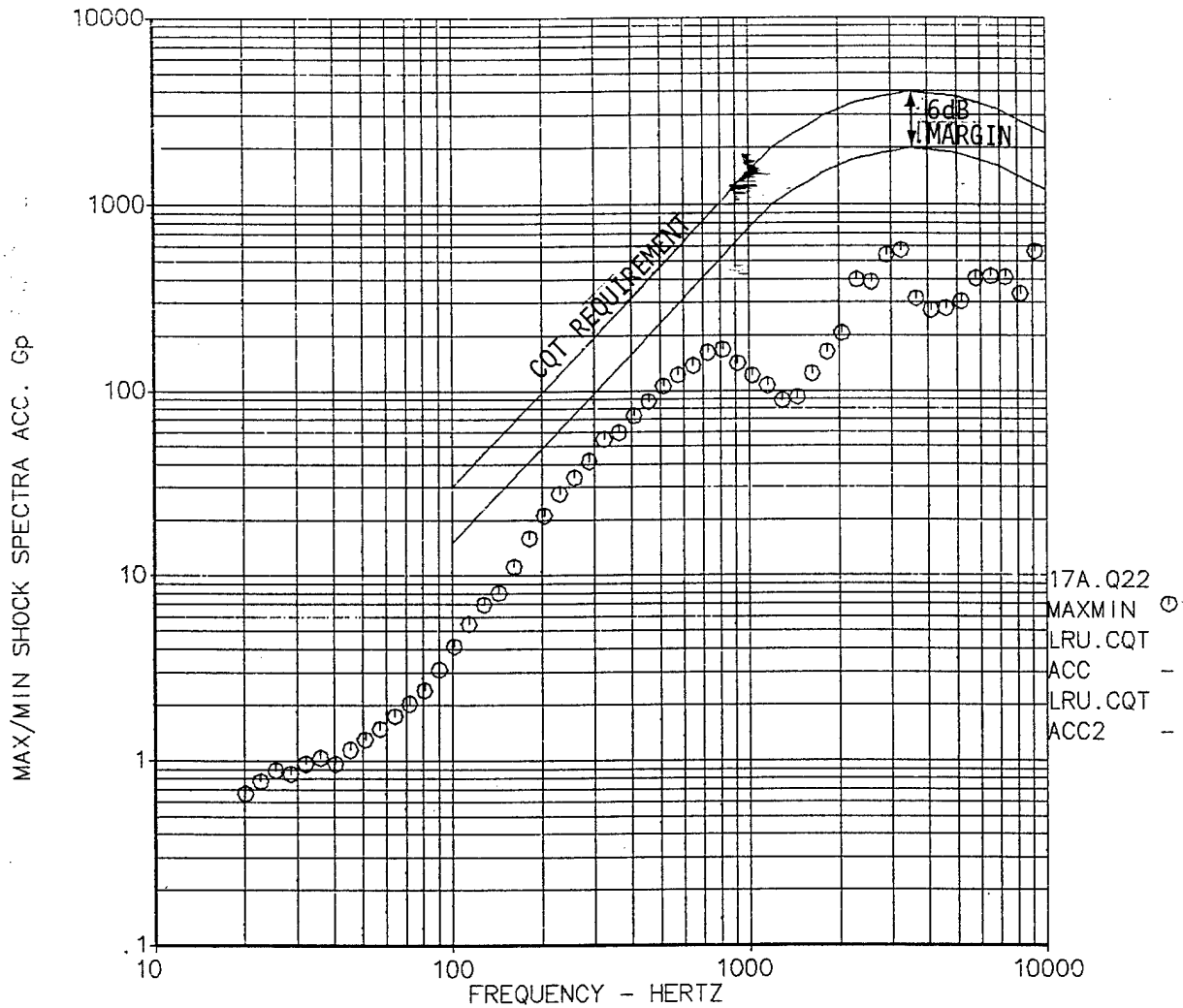


28-MAY-82 09:13:07

PTU

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17A
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FIGURE 2-116
SHOCK SPECTRA (Q = 10)
H17A QTV PYROSHOCK TEST 2 PULSE 2



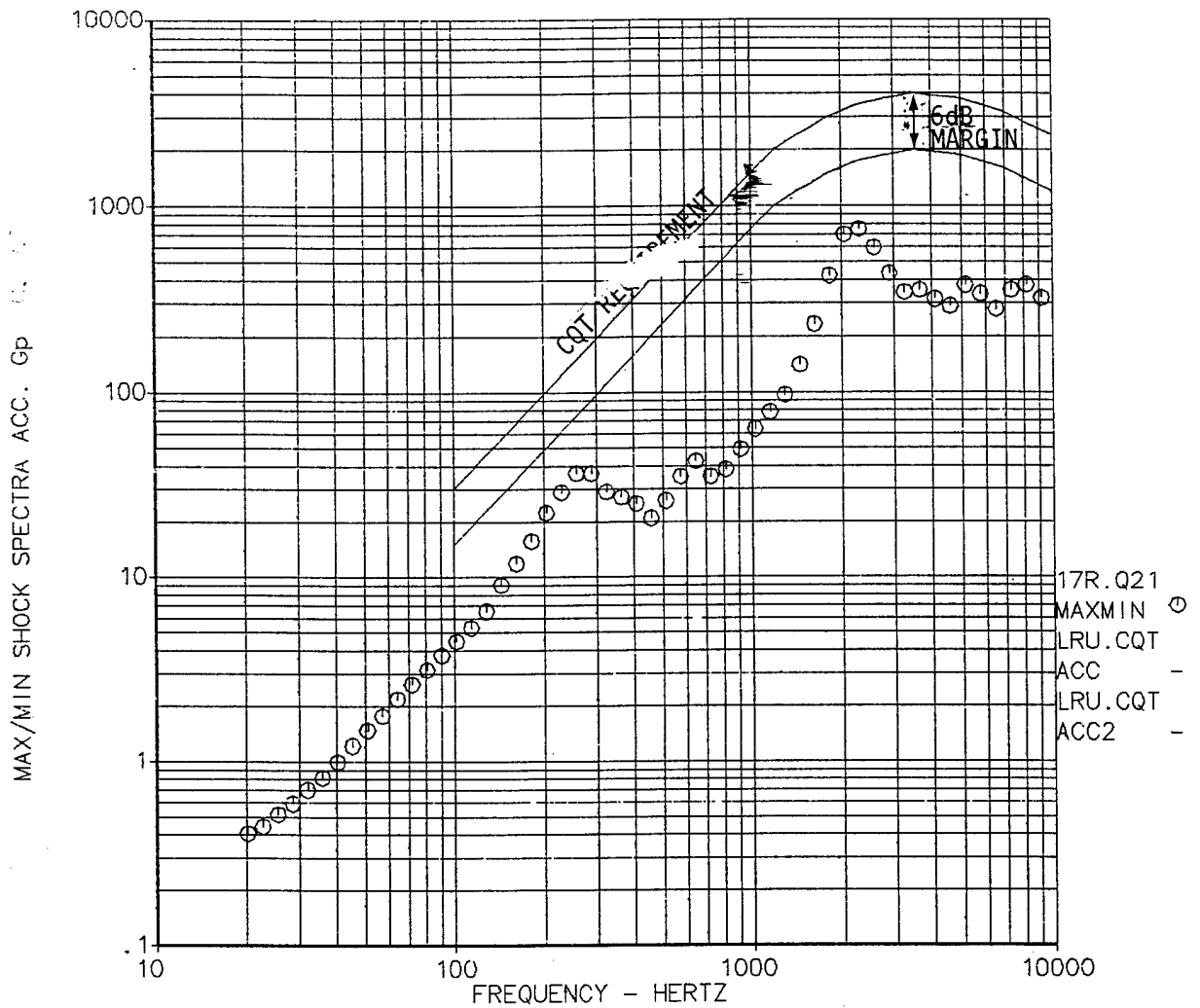
28-MAY-82 09:15:55

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17A
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FIGURE 2-117
SHOCK SPECTRA (Q = 10)
H17R QTV PYROSHOCK TEST 2 PULSE 1

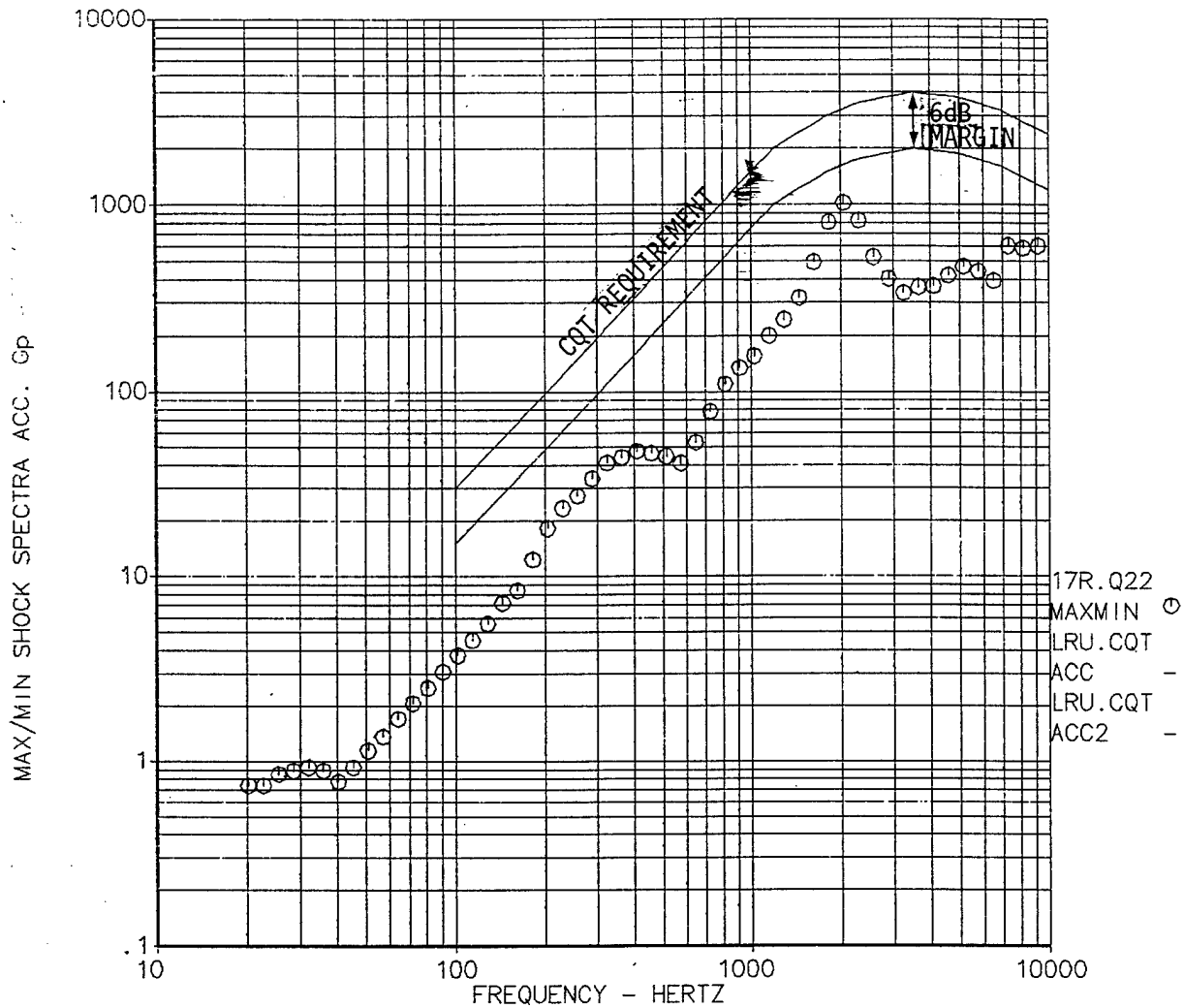


28-MAY-82 09:26:31

PTU

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17R
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FIGURE 2-118
SHOCK SPECTRA ($Q = 10$)
H17R QTV PYROSHOCK TEST 2 PULSE 2

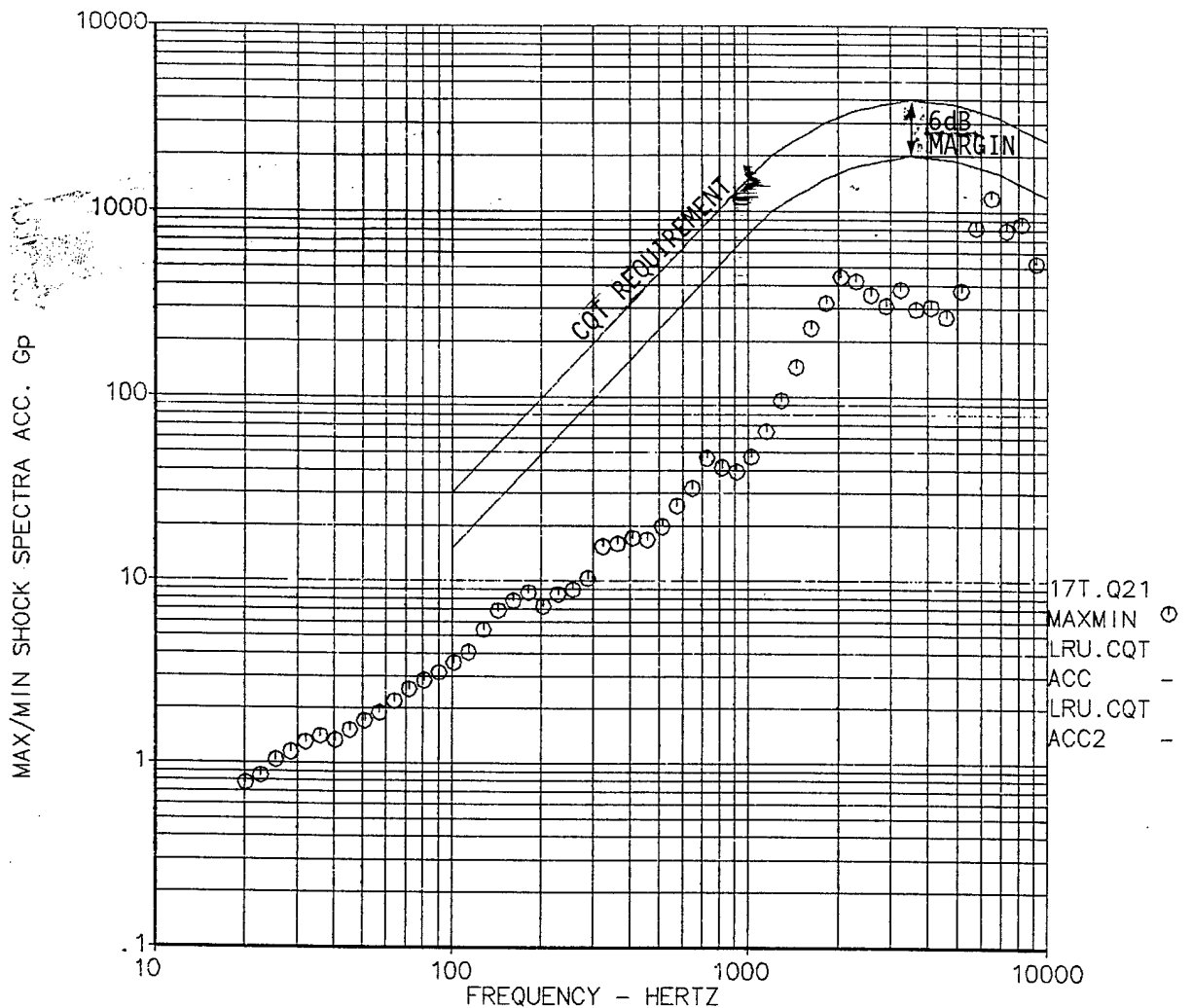


28-MAY-82 09:28:33

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 17R
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FIGURE 2-119
SHOCK SPECTRA (Q = 10)
H17T QTV PYROSHOCK TEST 2 PULSE 1

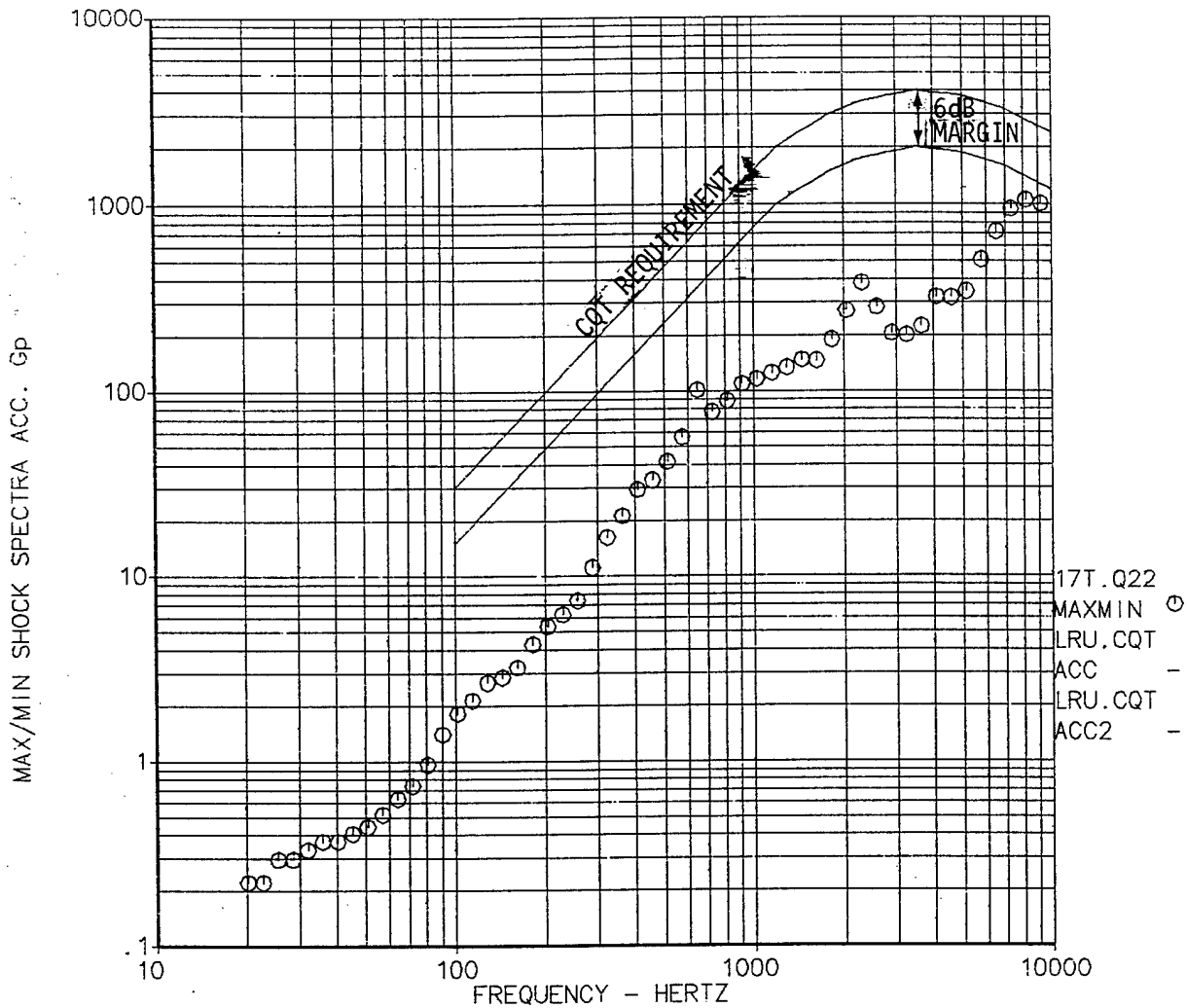


28-MAY-82 09:42:12

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CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17T
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FIGURE 2-120
SHOCK SPECTRA (Q = 10)
H17T QTV PYROSHOCK TEST 2 PULSE 2

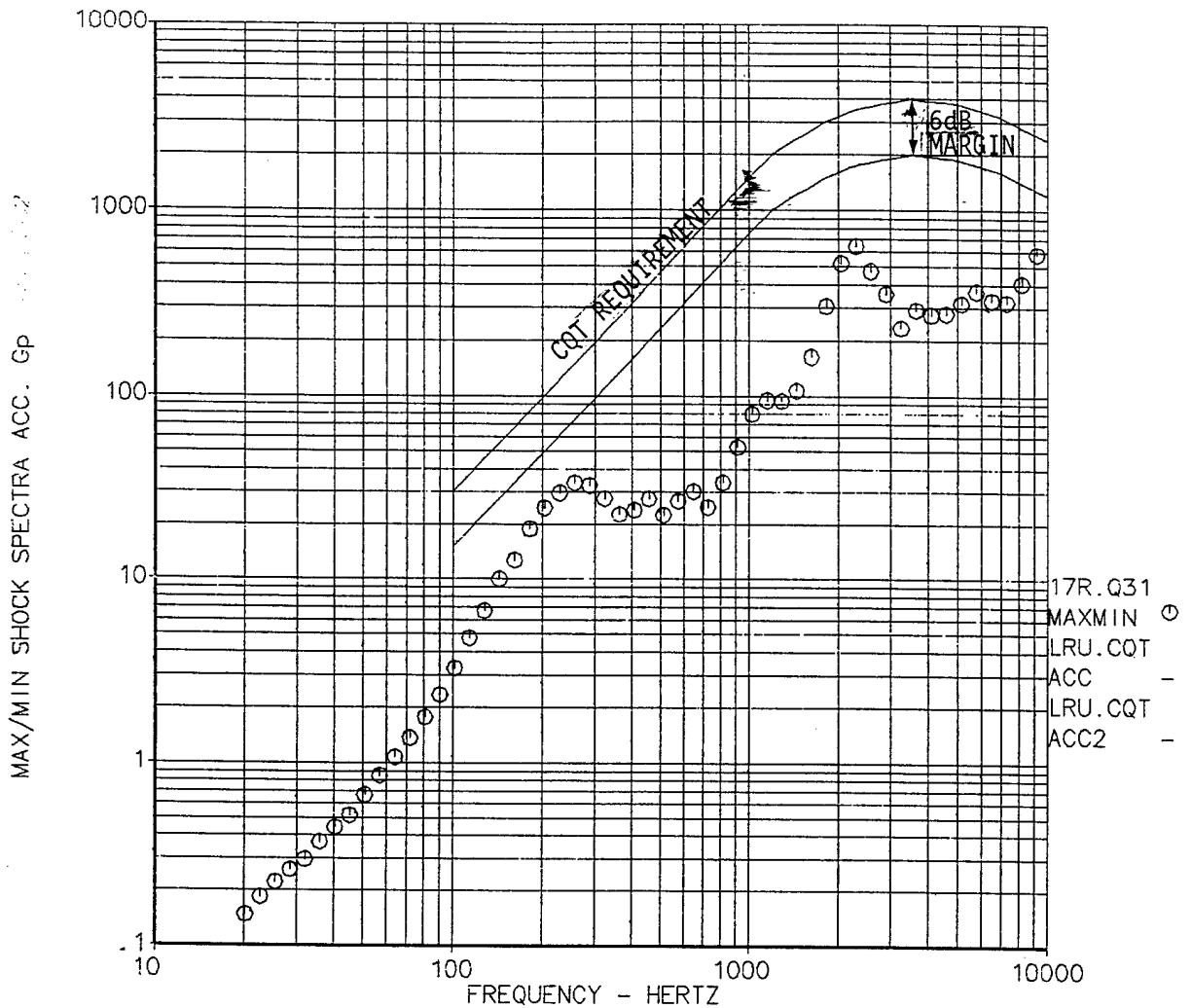


28-MAY-82 09:44:56

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 17T
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FIGURE 2-121
SHOCK SPECTRA (Q = 10)
H17R QTV PYROSHOCK TEST 3 PULSE 1

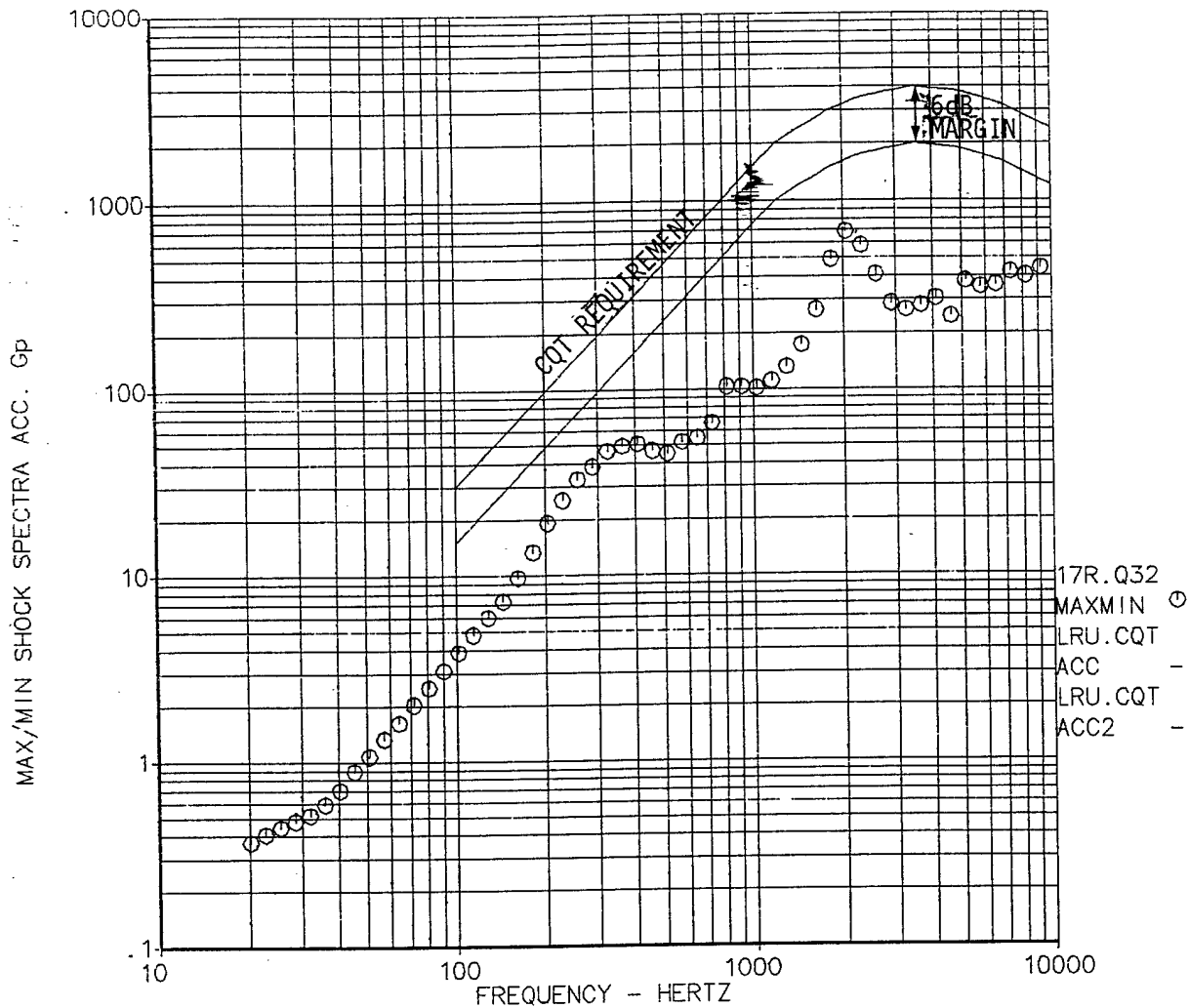


28-MAY-82 09:31:00

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CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17R
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FIGURE 2-122
SHOCK SPECTRA ($Q = 10$)
H17R QTV PYROSHOCK TEST 3 PULSE 2

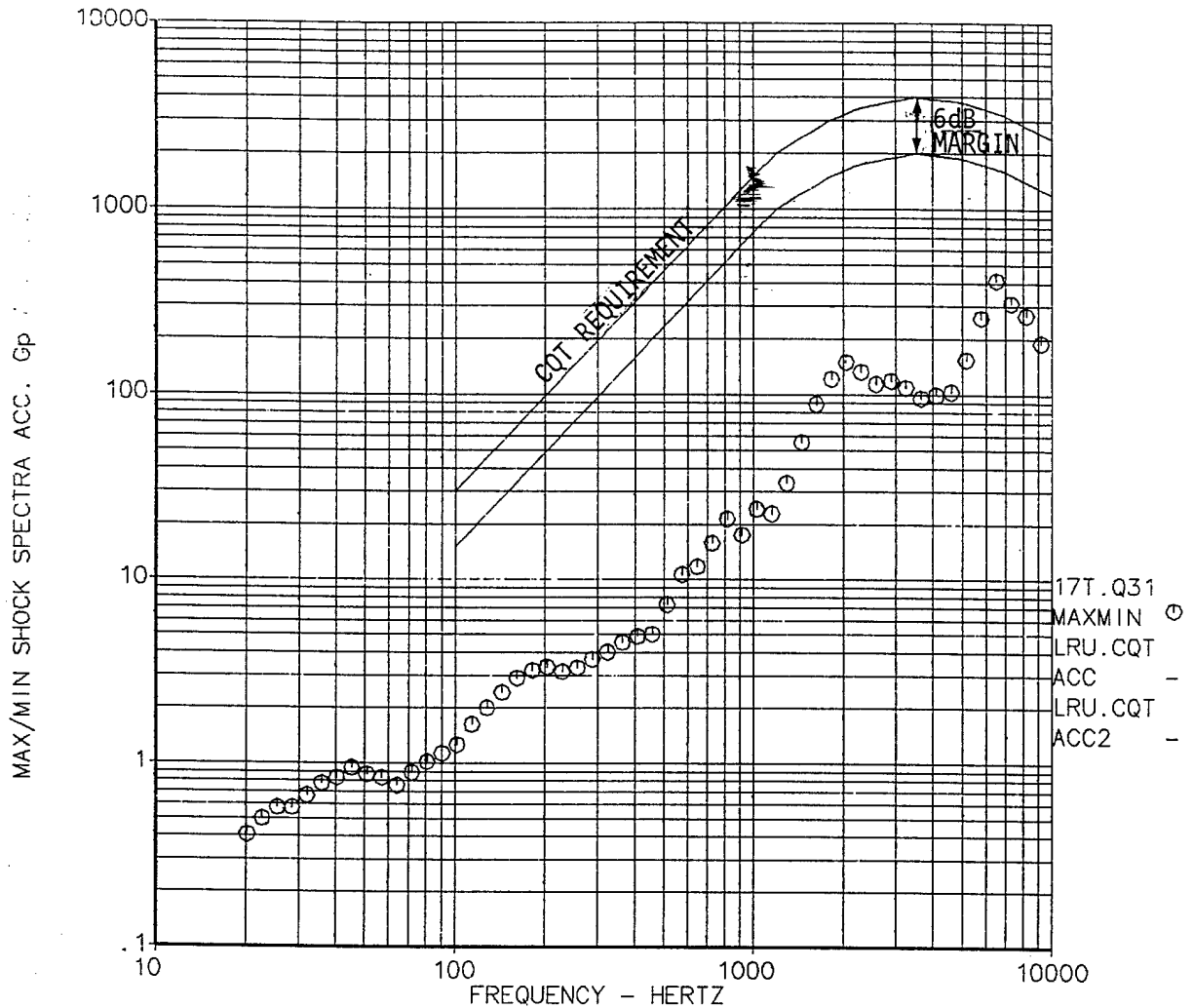


28-MAY-82 09:32:56

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17R
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FIGURE 2-123
SHOCK SPECTRA (Q = 10)
H17T QTV PYROSHOCK TEST 3 PULSE 1

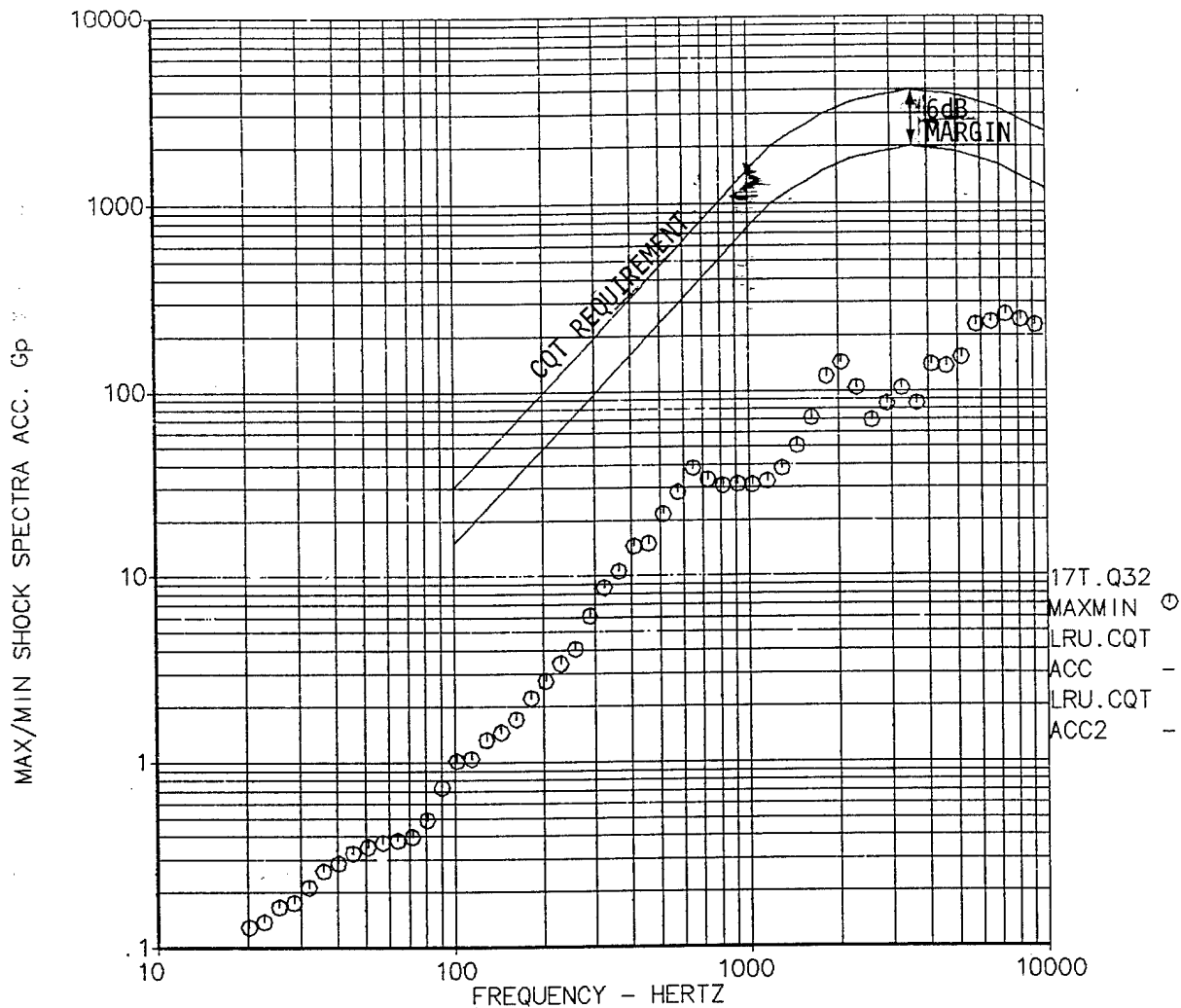


28-MAY-82 09:47:20

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CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 17T
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FIGURE 2-124
SHOCK SPECTRA (Q = 10)
1117T QTV PYROSHOCK TEST 3 PULSE 2

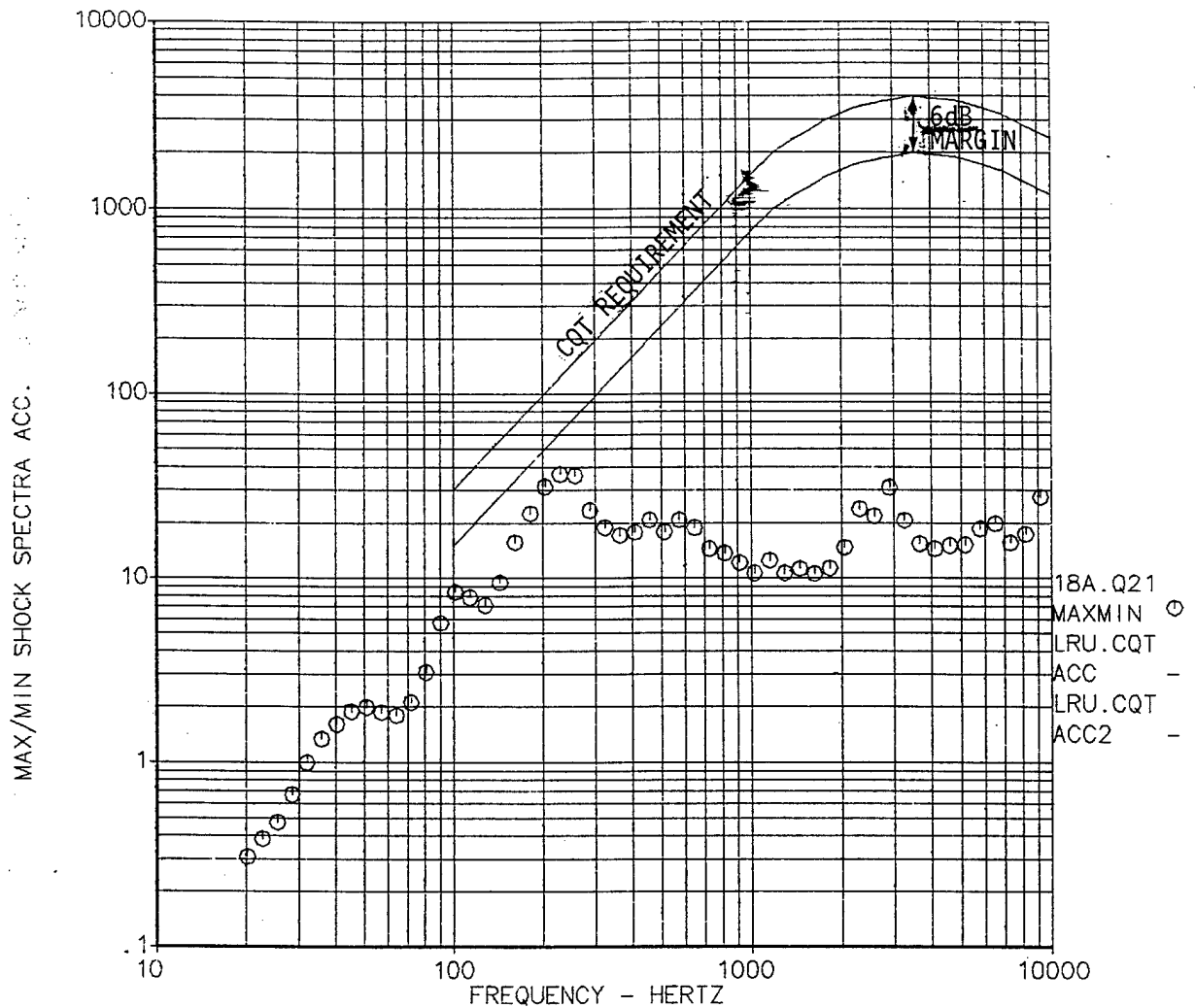


28-MAY-82 09:50:27

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CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 17T
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FIGURE 2-125
SHOCK SPECTRA ($Q = 10$)
H18A QTV PYROSHOCK TEST 2 PULSE 1



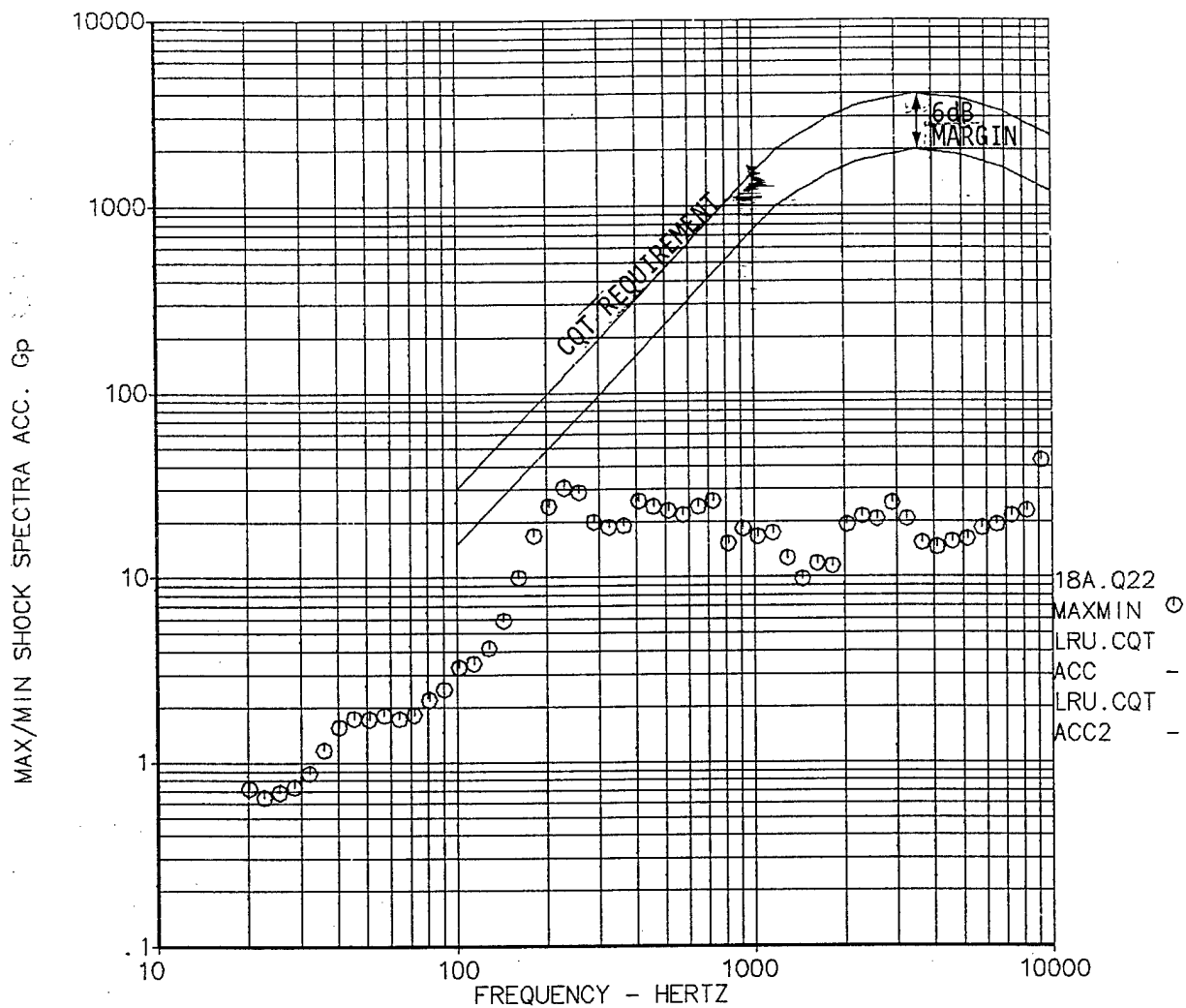
28-MAY-82 15:27:31

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18A
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FIGURE 2-126
SHOCK SPECTRA (Q = 10)
H18A QTV PYROSHOCK TEST 2 PULSE 2



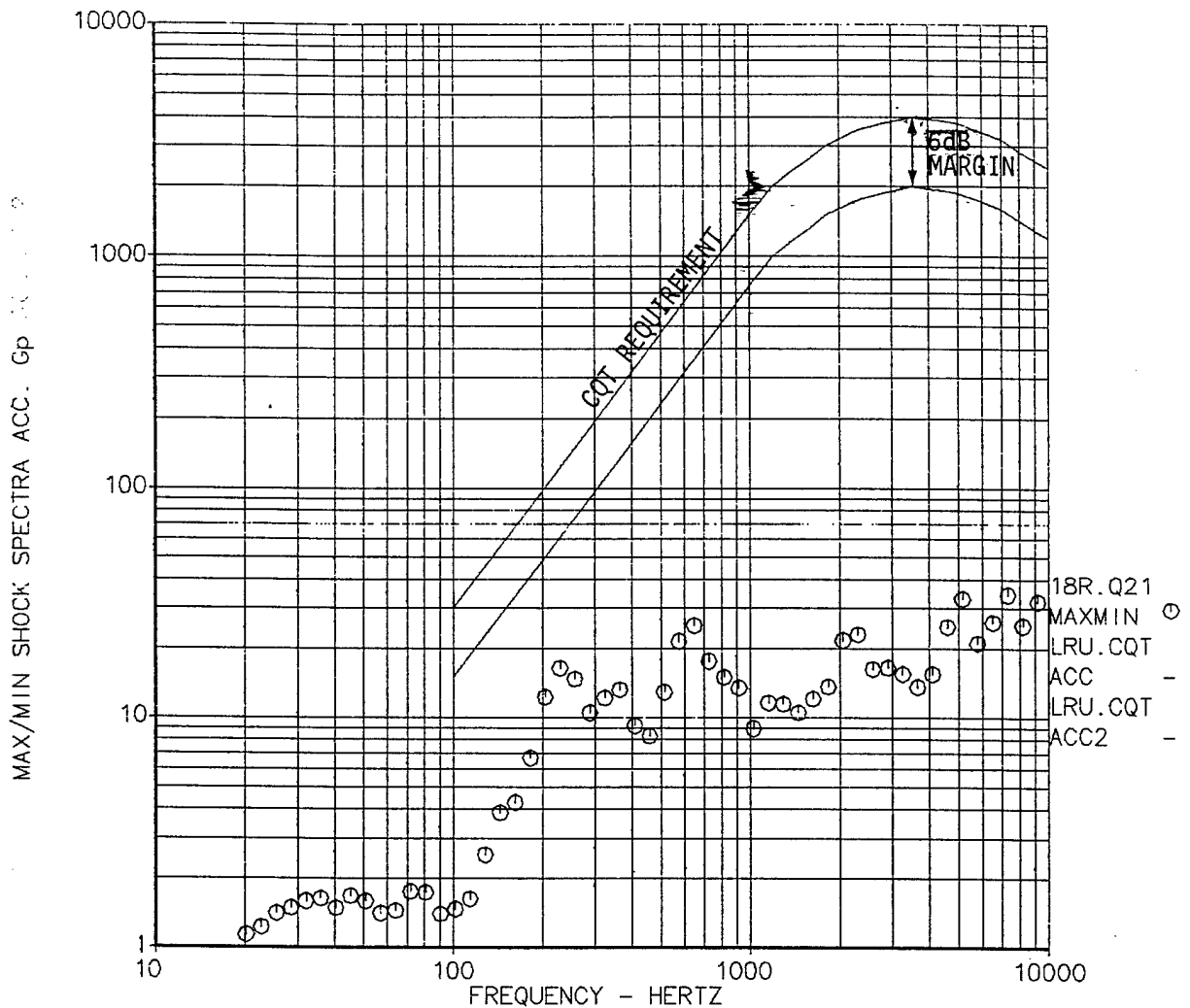
28-MAY-82 15:29:01

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18A
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FIGURE 2-127
SHOCK SPECTRA (Q = 10)
H18R QTV PYROSHOCK TEST 2 PULSE 1

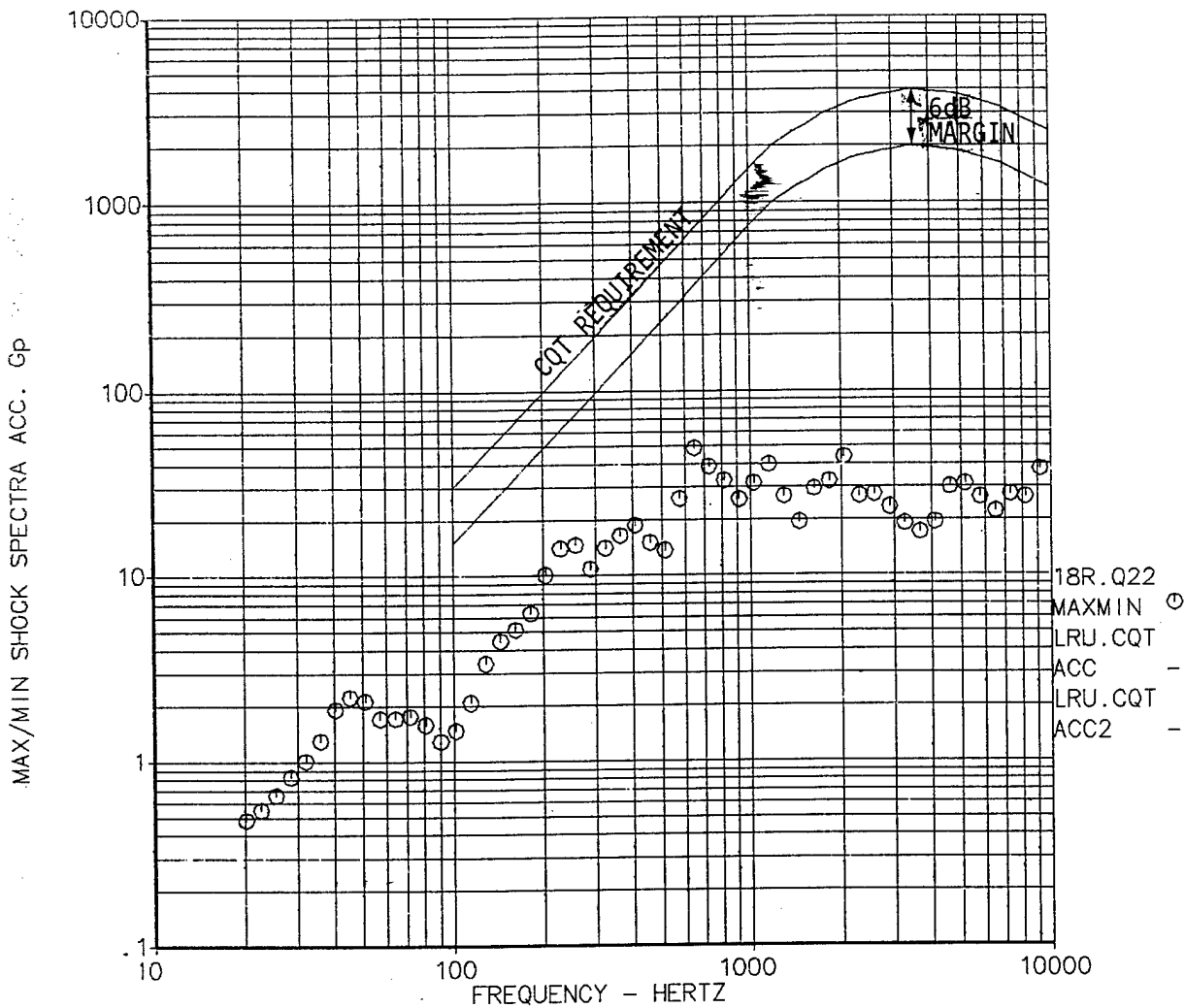


28-MAY-82 15:33:21

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement THE BOEING COMPANY	Acc 18R
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FIGURE 2-128
SHOCK SPECTRA ($Q = 10$)
H18R QTV PYROSHOCK TEST 2 PULSE 2



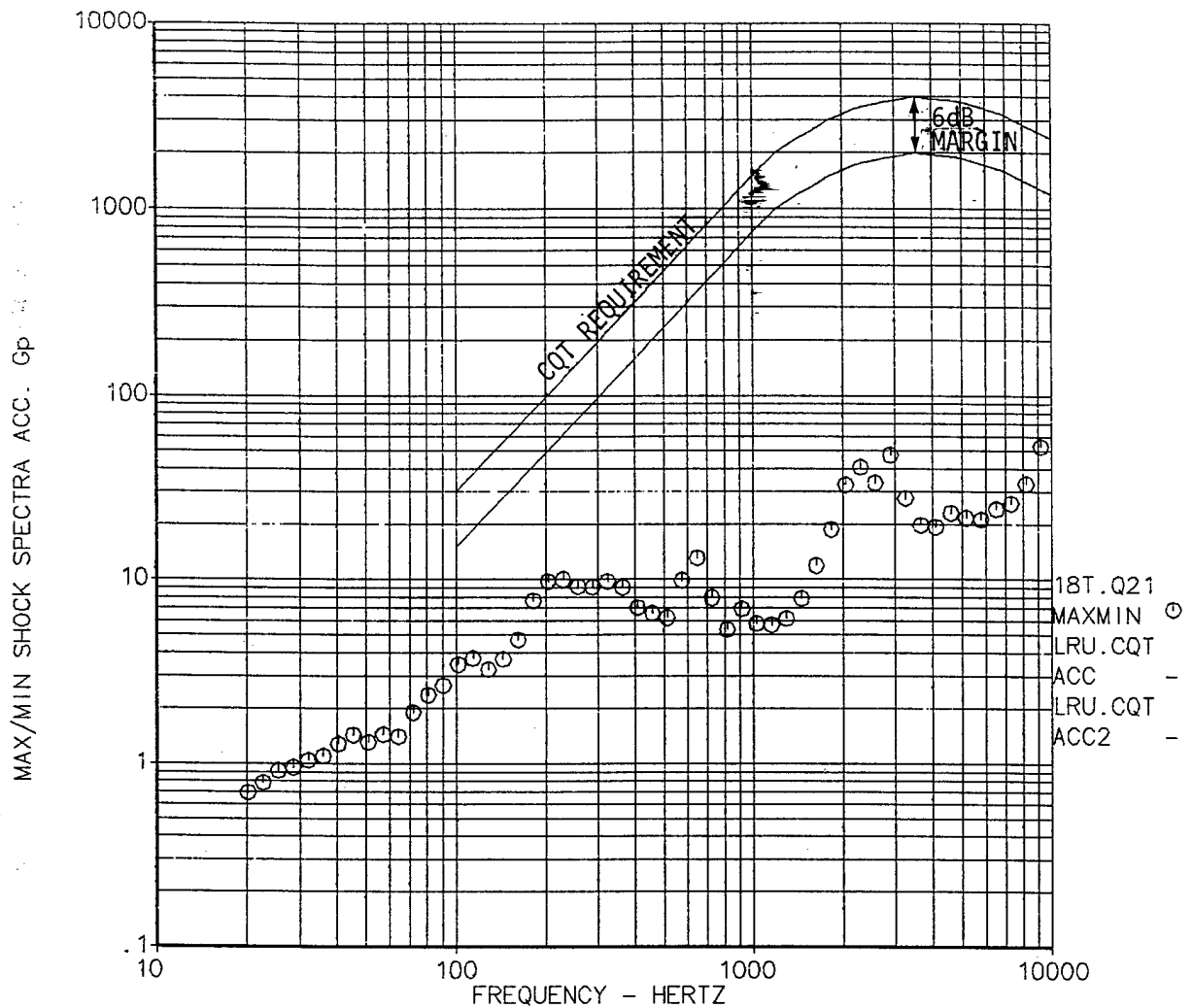
28-MAY-82 15:36:21

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 18R
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FIGURE 2-129
SHOCK SPECTRA ($Q = 10$)
H18T QTV PYROSHOCK TEST 2 PULSE 1

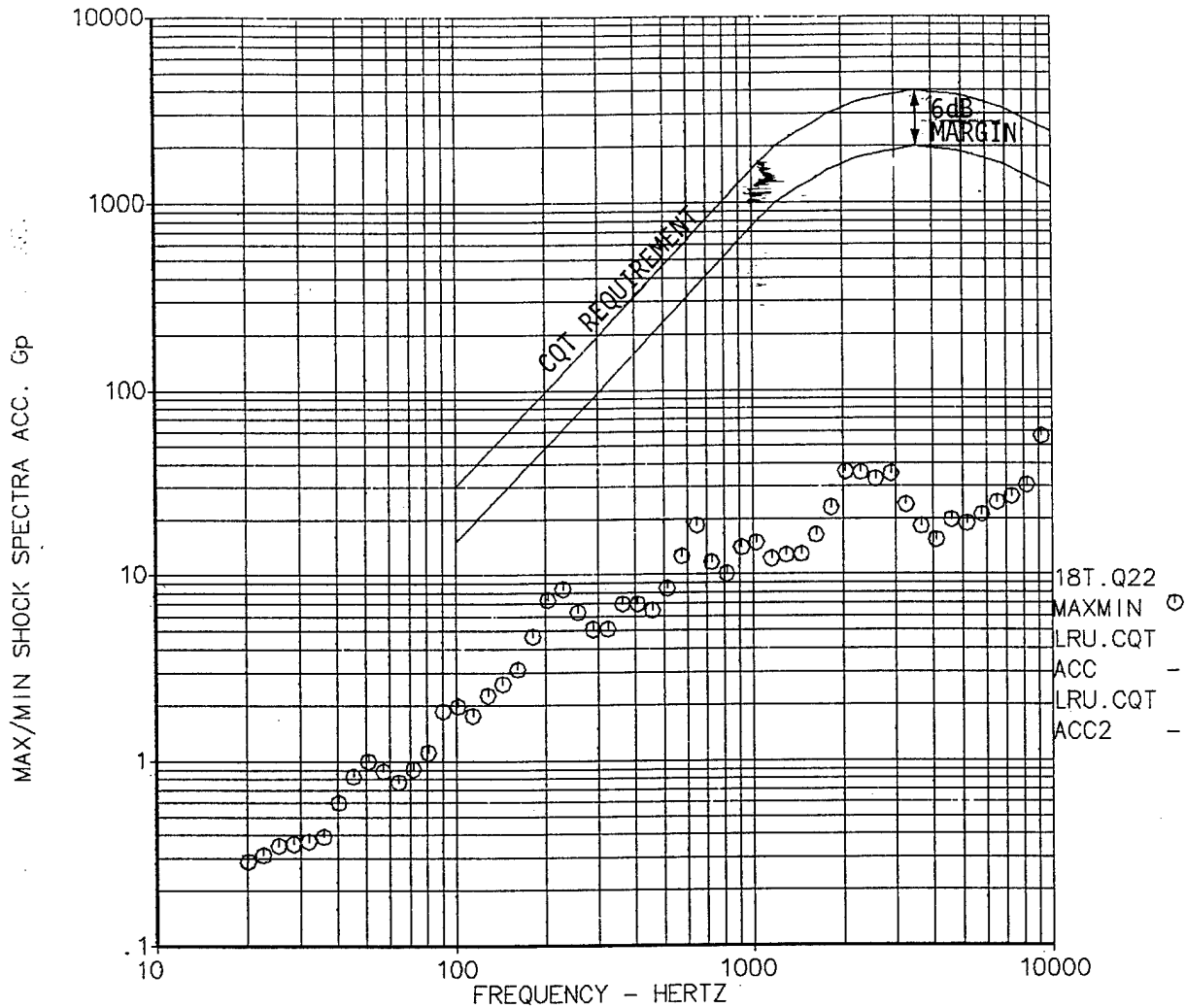


28-MAY-82 15:45:25

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18T
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FIGURE 2-130
SHOCK SPECTRA (Q = 10)
H18T QTV PYROSHOCK TEST 2 PULSE 2

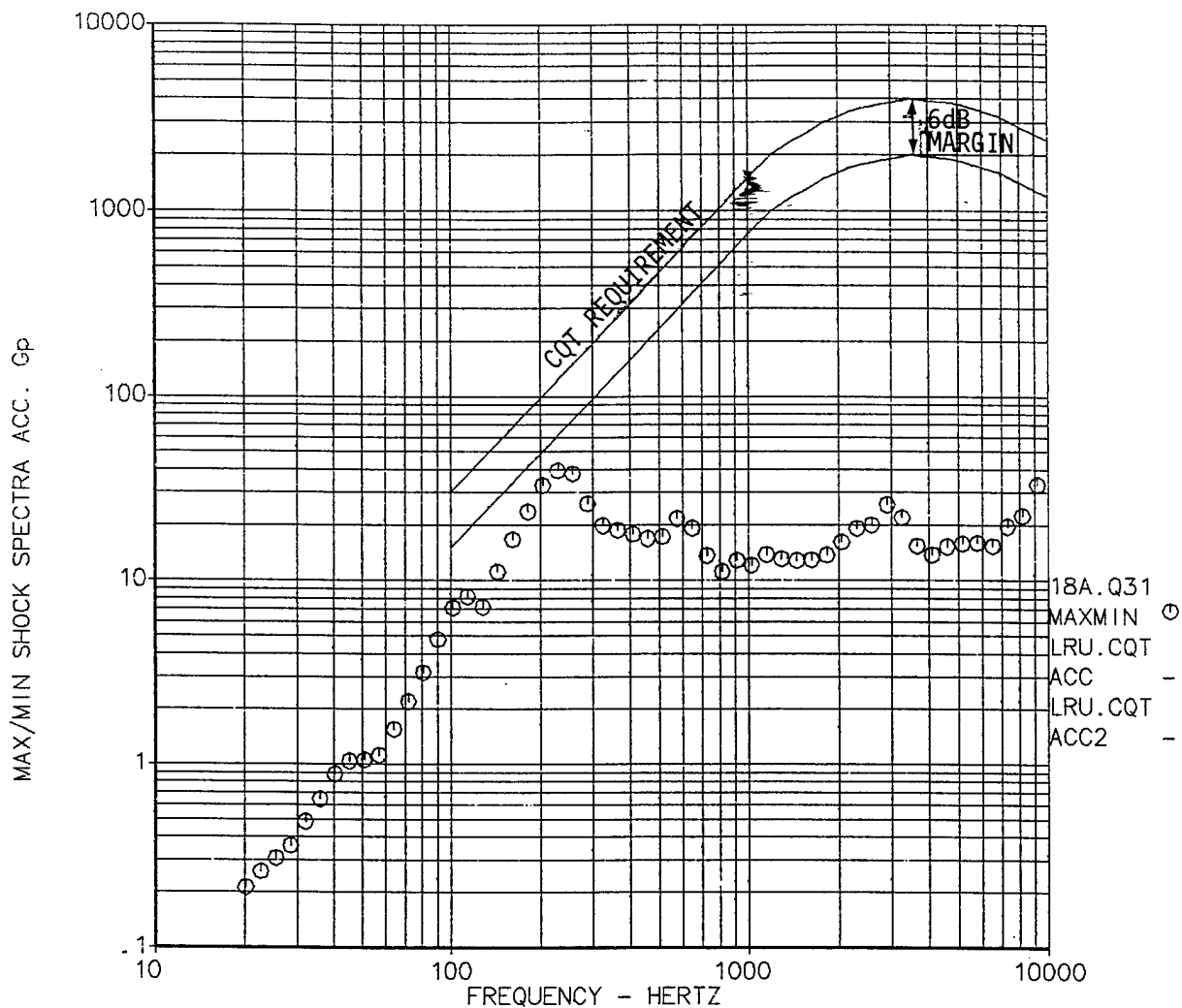


28-MAY-82 15:47:45

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 18T
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FIGURE 2-131
SHOCK SPECTRA (Q = .10)
H18A QTV PYROSHOCK TEST 3 PULSE 1

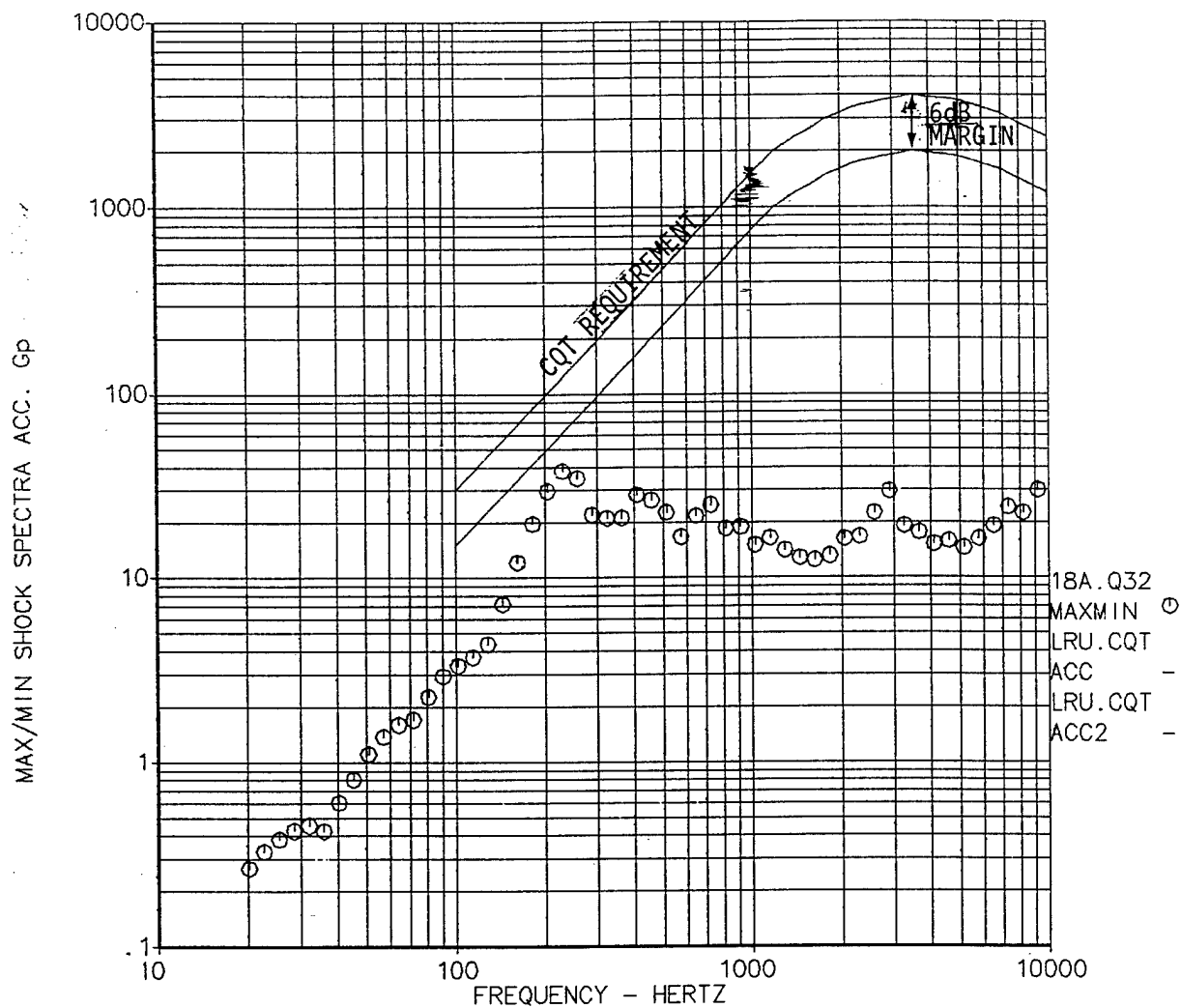


28-MAY-82 15:30:33

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18A
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FIGURE 2-132
SHOCK SPECTRA ($Q = .10$)
H18A QTV PYROSHOCK TEST 3 PULSE 2

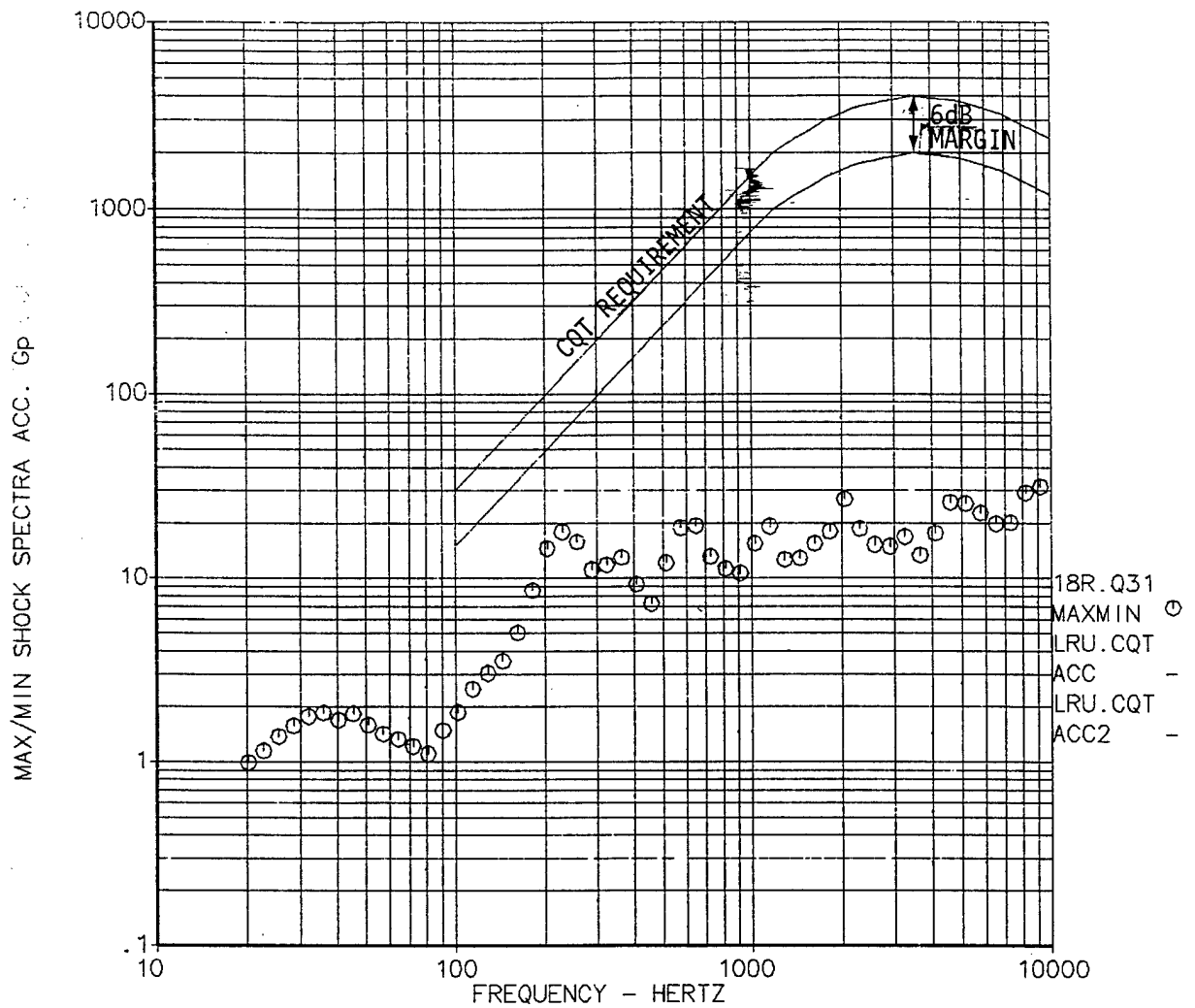


28-MAY-82 15:31:55

DECRYPTOR A

CALC	28MAY82	REVISED	DATE	Comparison of component shock environment with component test requirement THE BOEING COMPANY	Acc 18A
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FIGURE 2-133
SHOCK SPECTRA (Q = 10)
H18R QTV PYROSHOCK TEST 3 PULSE 1

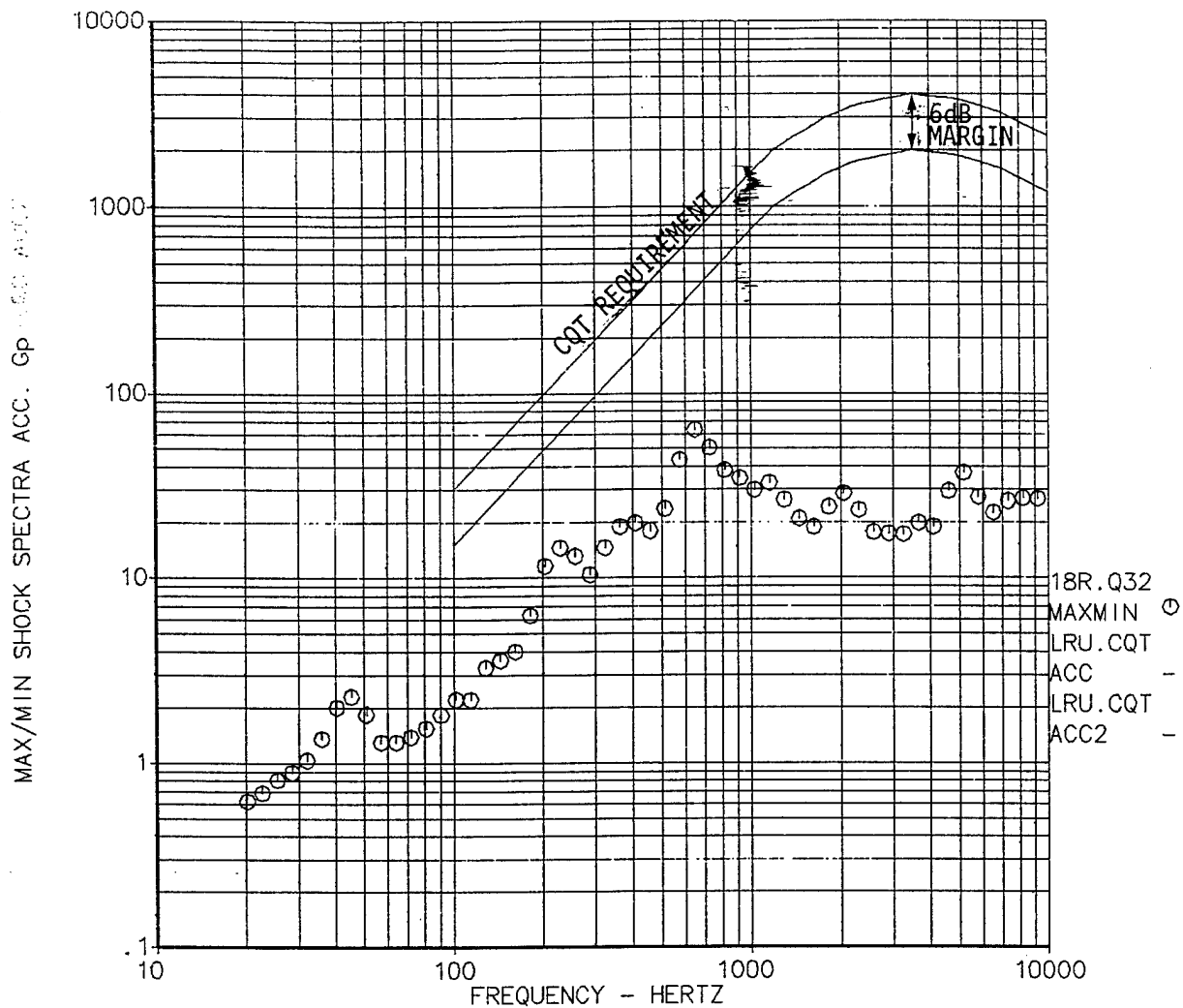


28-MAY-82 15:39:37

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18R
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FIGURE 2-134
SHOCK SPECTRA ($Q = 10$)
H18R QTV PYROSHOCK TEST 3 PULSE 2



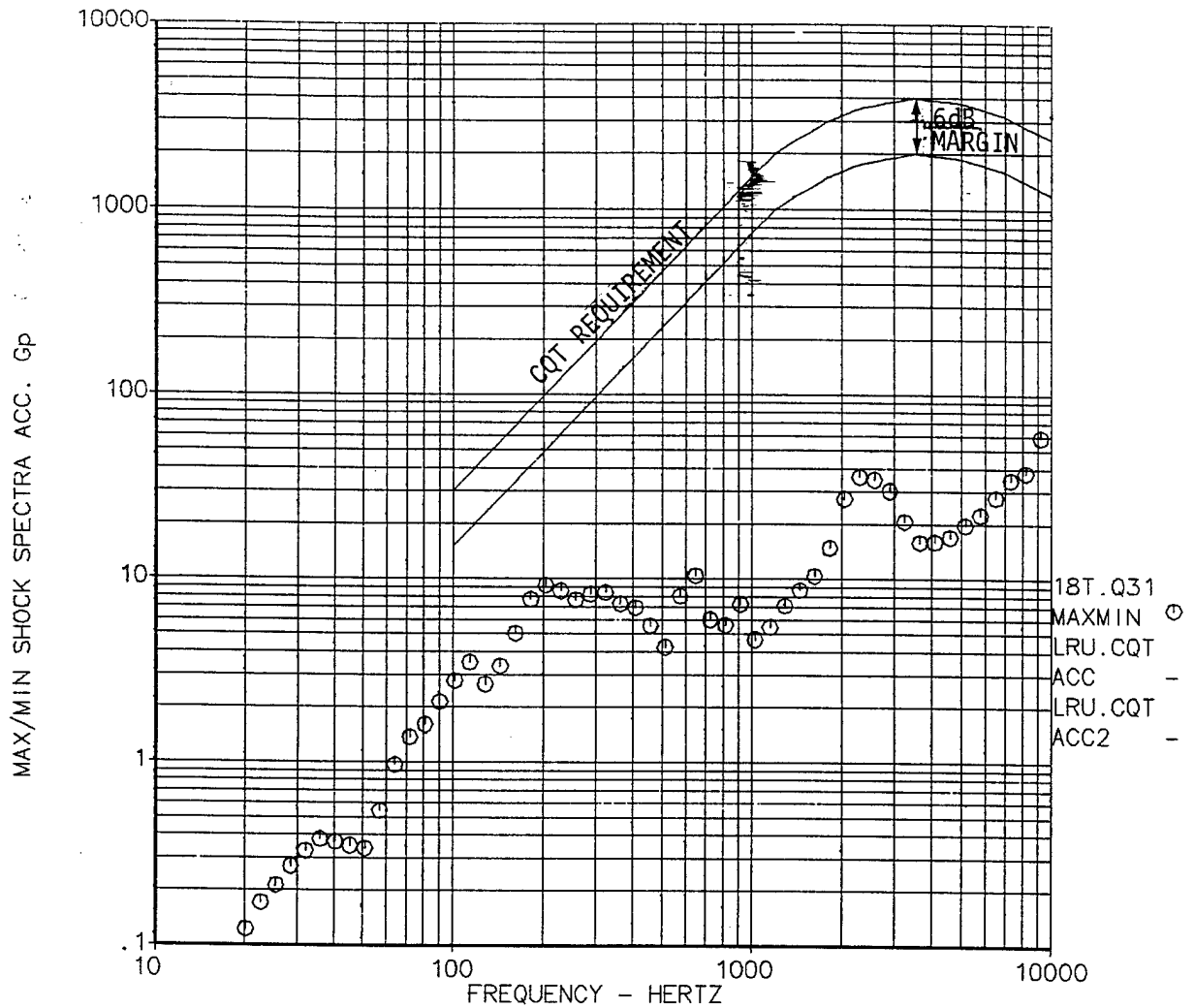
28-MAY-82 15:42:59

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18R
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FIGURE 2-135
SHOCK SPECTRA (Q = 10)
H18T QTV PYROSHOCK TEST 3 PULSE 1

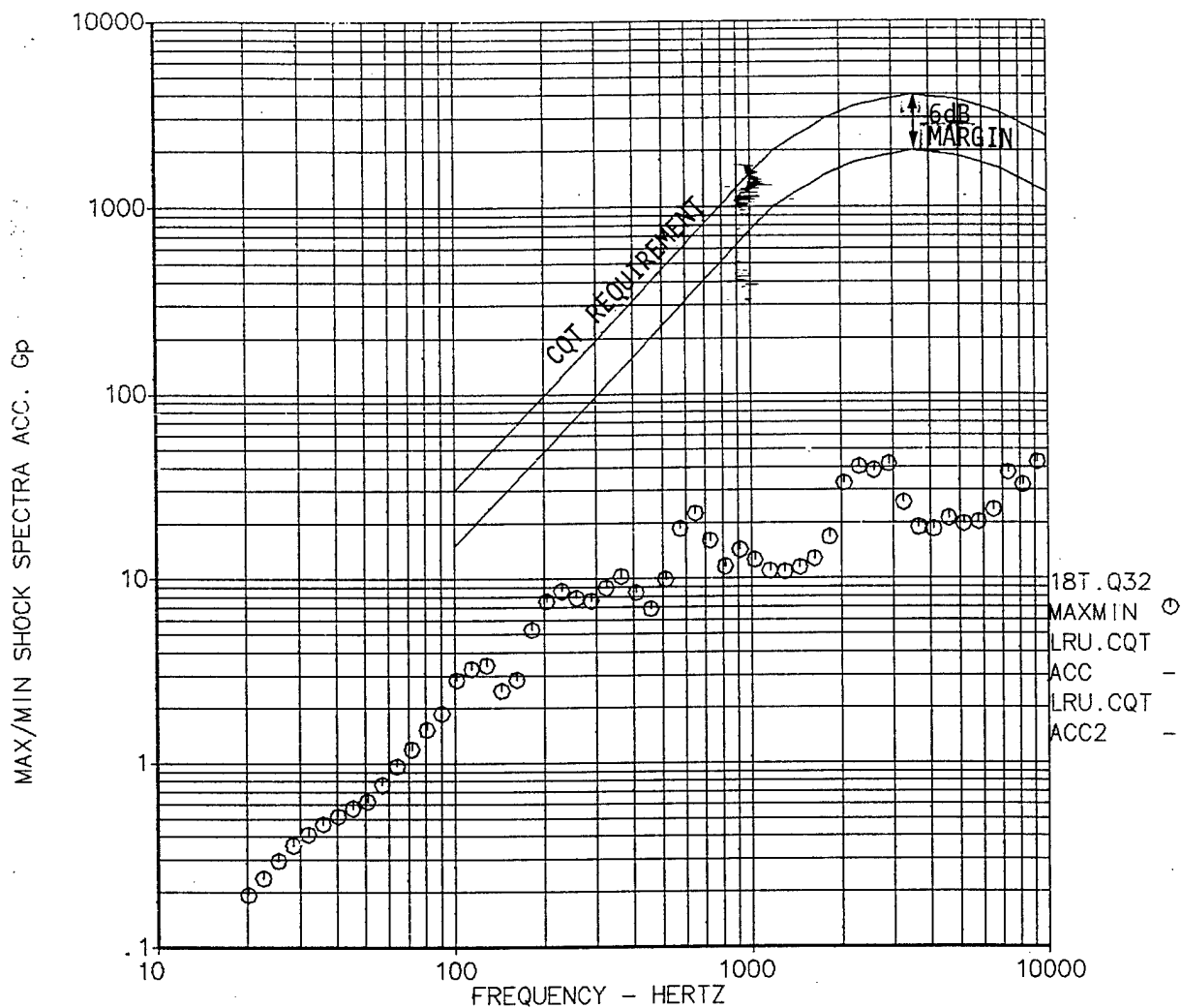


28-MAY-82 15:49:53

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18T
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FIGURE 2-136
SHOCK SPECTRA ($Q = .10$)
H18T QTV PYROSHOCK TEST 3 PULSE 2



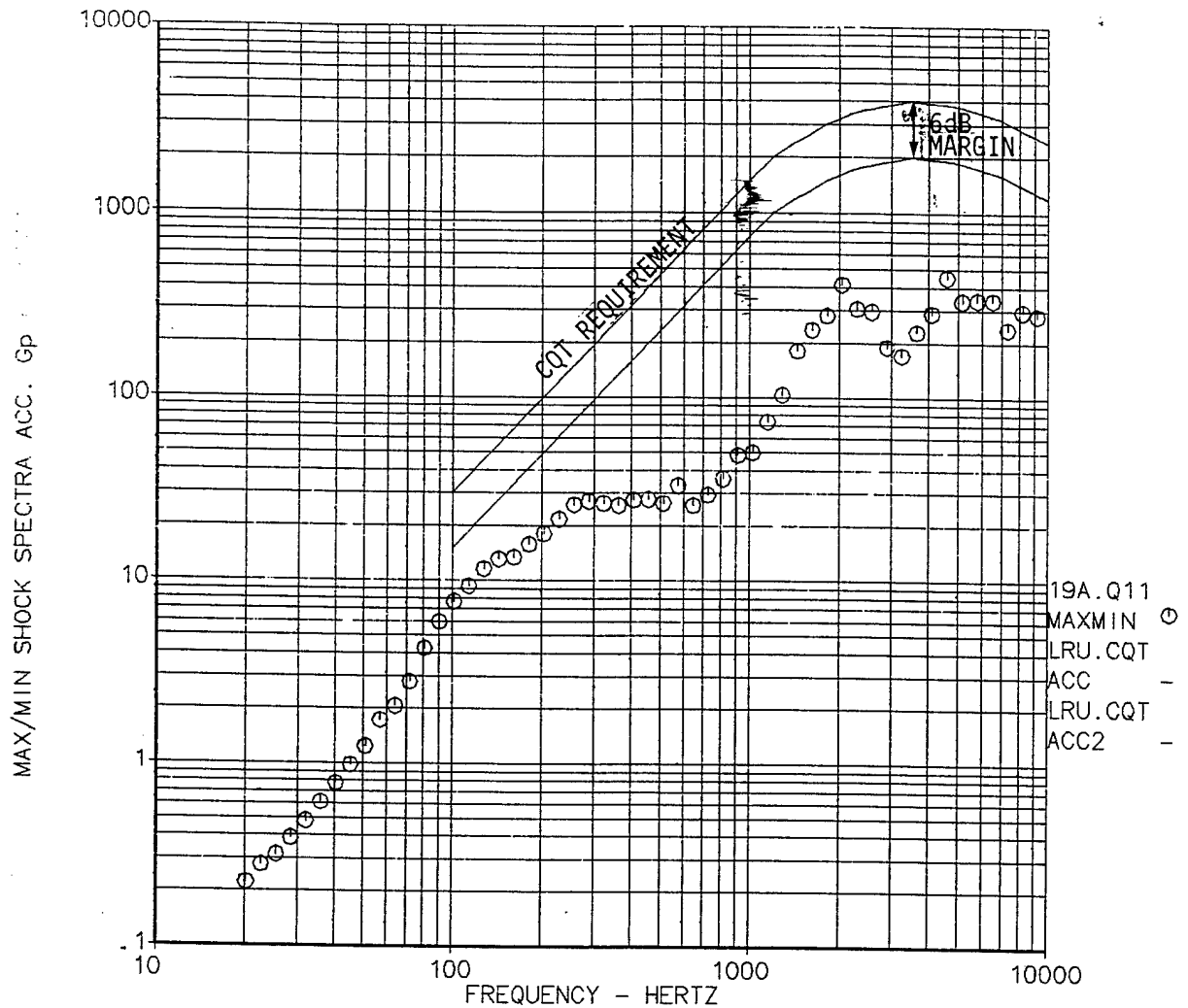
28-MAY-82 15:51:58

DECRYPTOR A

CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 18T
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FIGURE 2-137
SHOCK SPECTRA (Q = .10)
H19A QTV PYROSHOCK TEST 1 PULSE 1

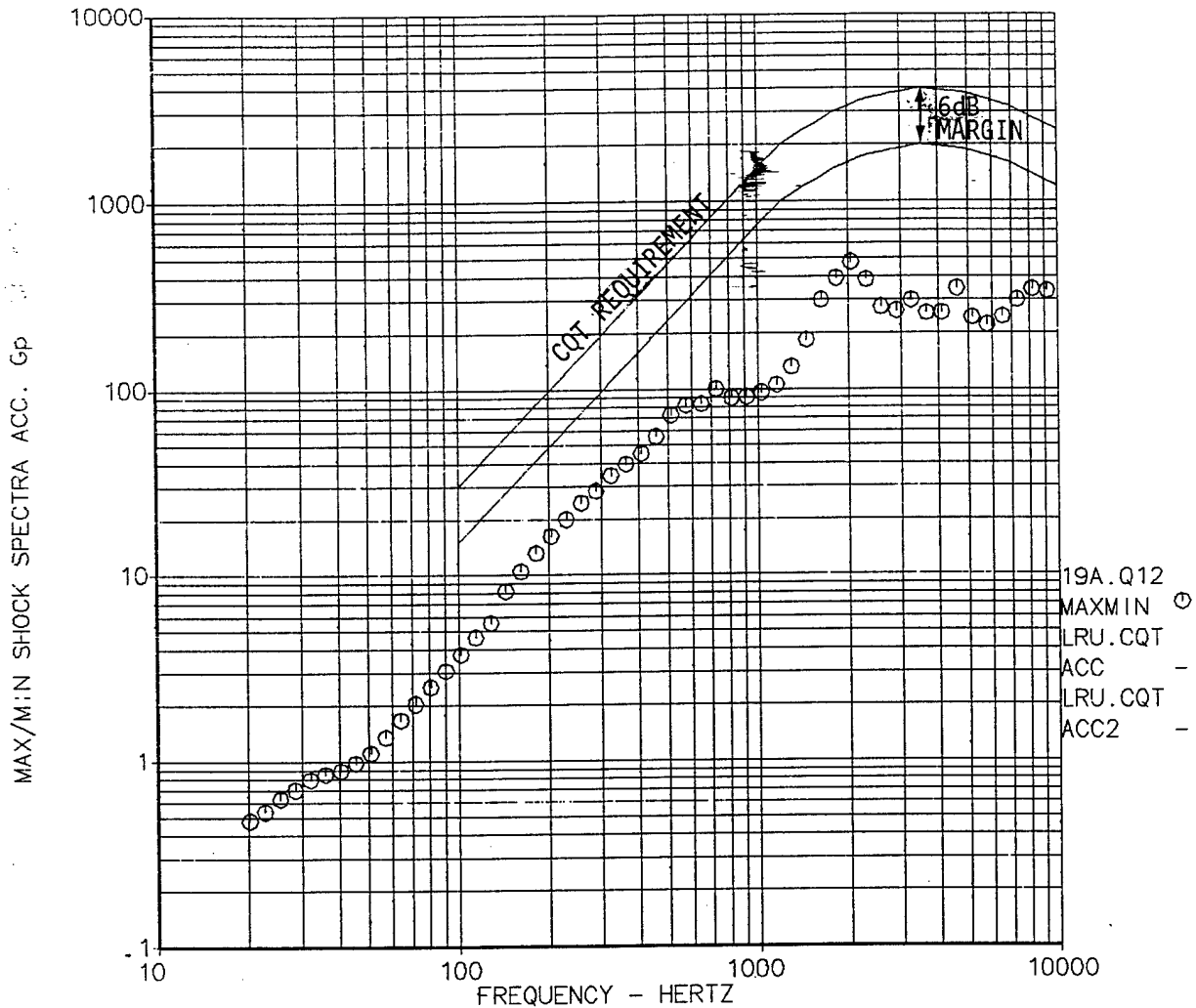


28-MAY-82 15:53:32

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CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19A
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FIGURE 2-138
SHOCK SPECTRA (Q = 10)
H19A QTV PYROSHOCK TEST 1 PULSE 2



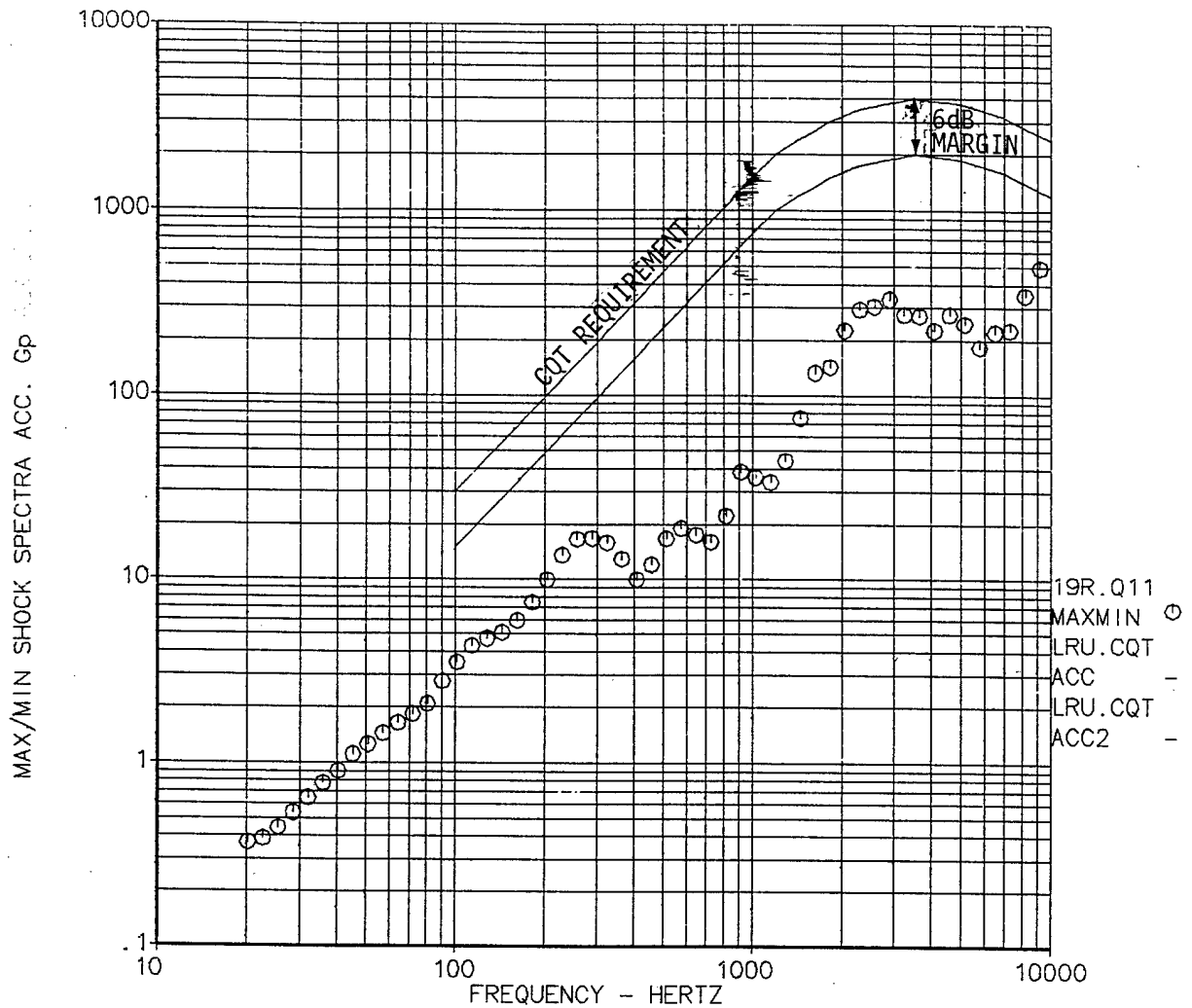
28-MAY-82 15:57:20

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CALC		28MAY82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19A
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FIGURE 2-139
SHOCK SPECTRA (Q = 10)
H19R QTV PYROSHOCK TEST 1 PULSE 1

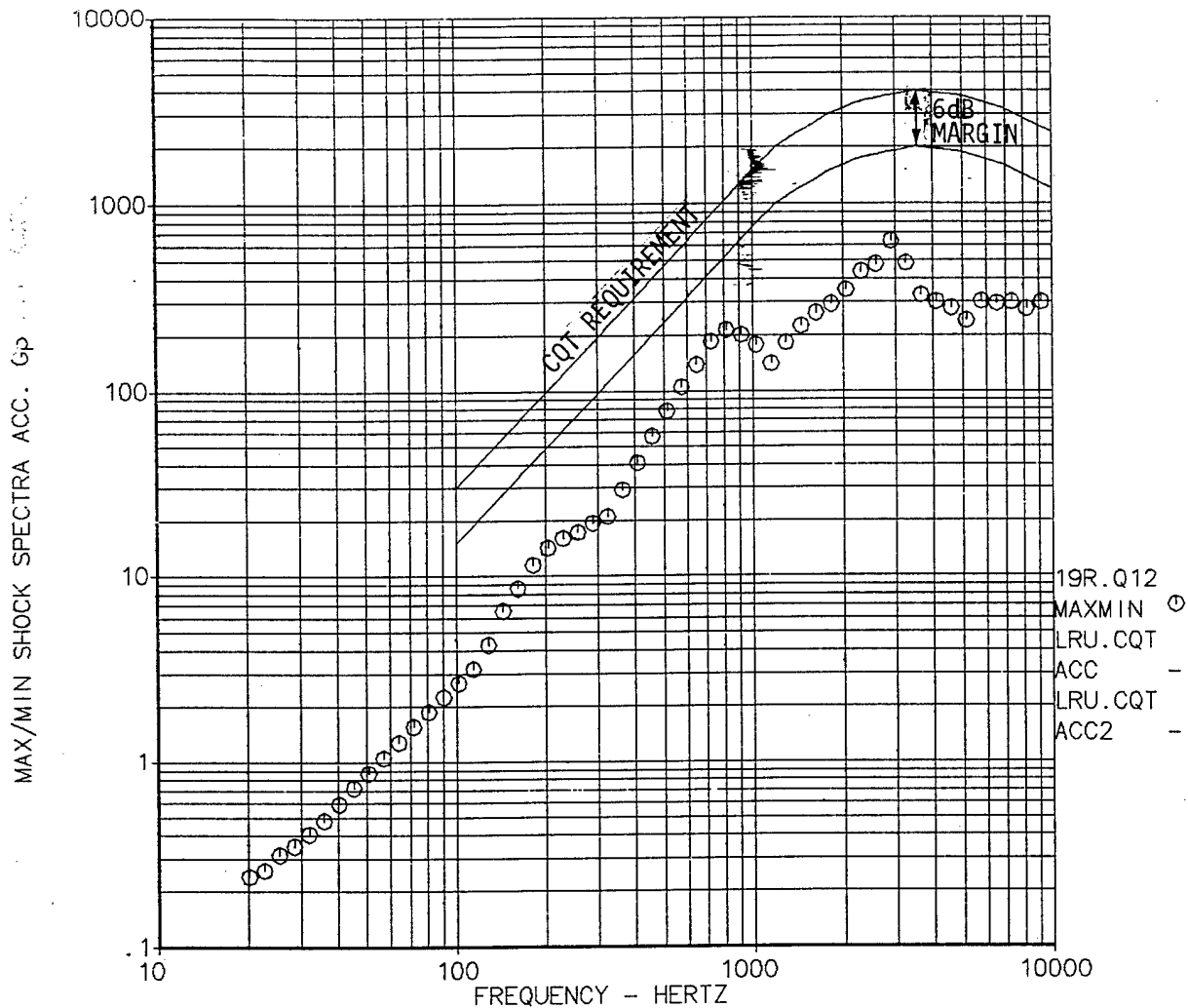


1-JUN-82 07:43:04

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-140
SHOCK SPECTRA (Q = 10)
H19R QTV PYROSHOCK TEST 1 PULSE 2

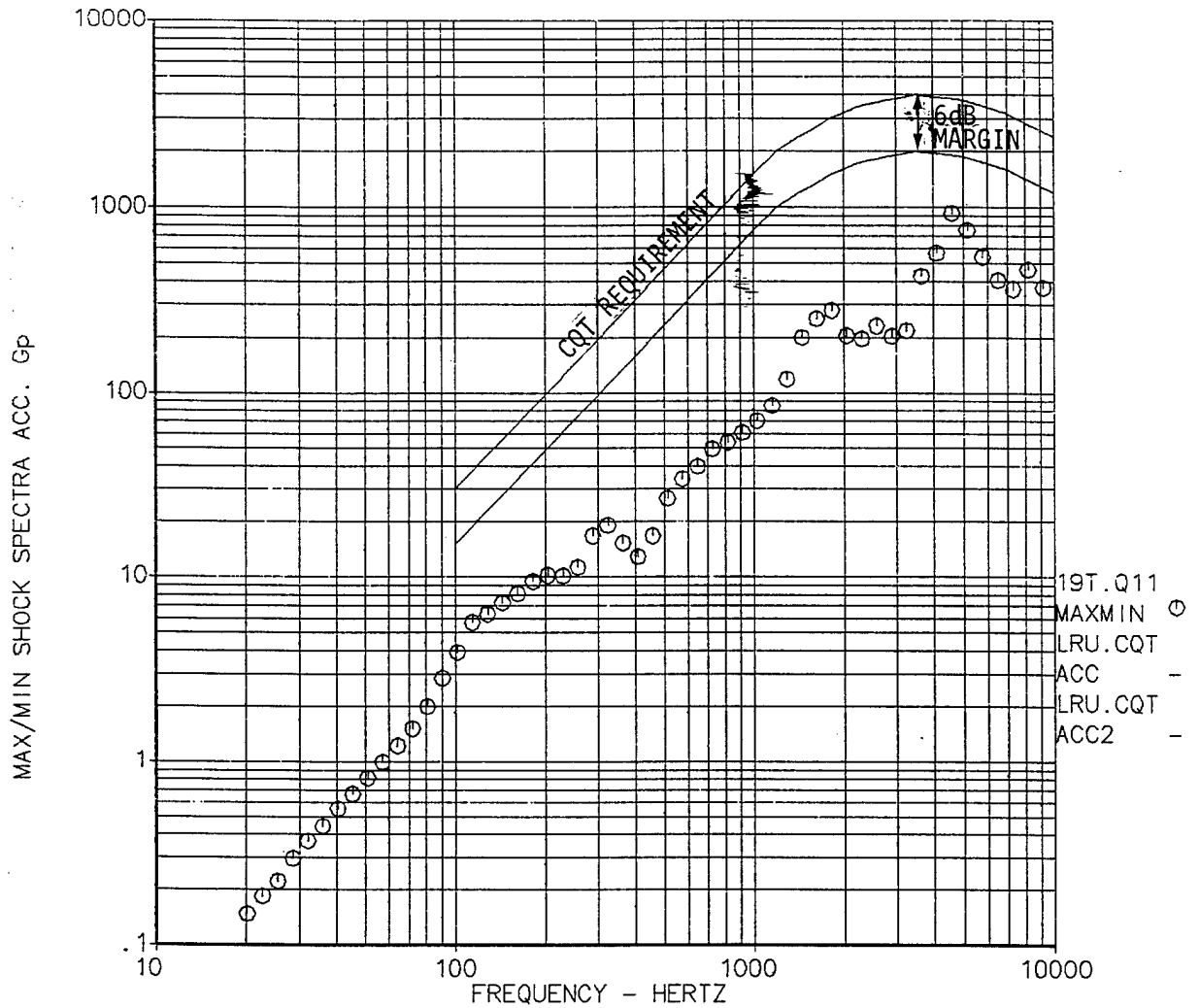


1-JUN-82 07:43:41

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-141
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 1 PULSE 1



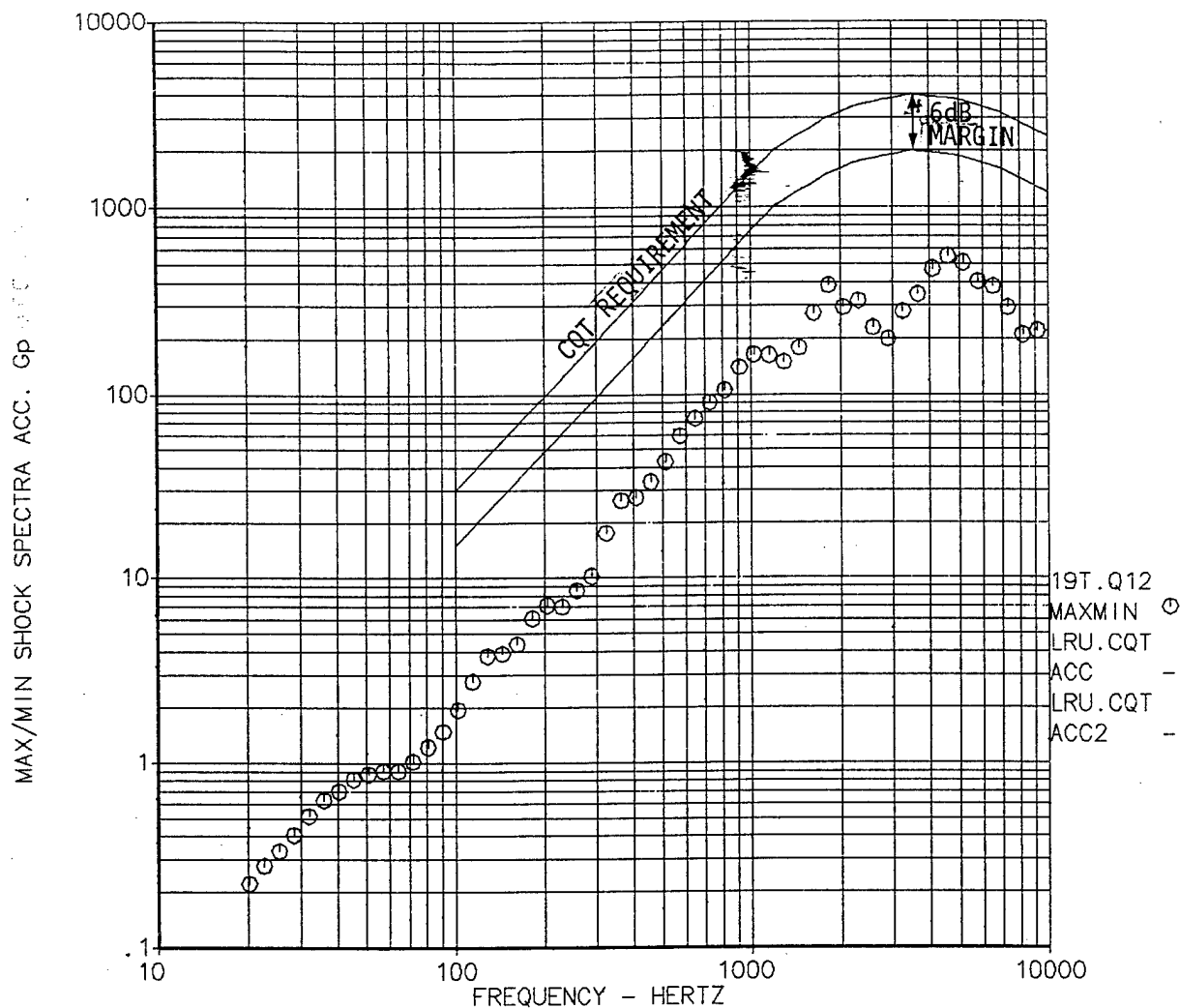
1-JUN-82 07:48:18

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19T
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FIGURE 2-142
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 1 PULSE 2

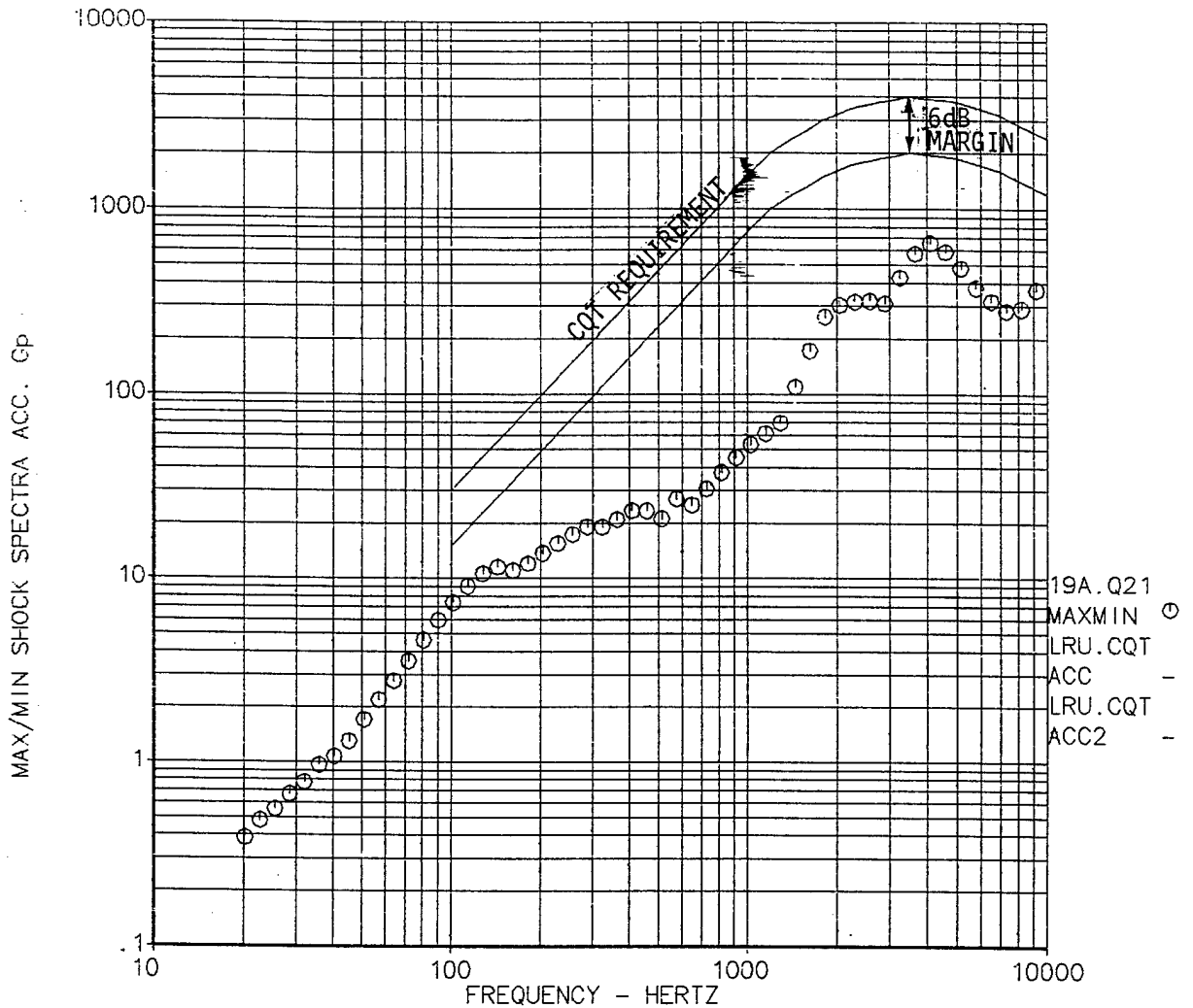


1-JUN-82 07:48:55

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19T
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FIGURE 2-143
SHOCK SPECTRA ($Q = 10$)
H19A QTV PYROSHOCK TEST 2 PULSE 1

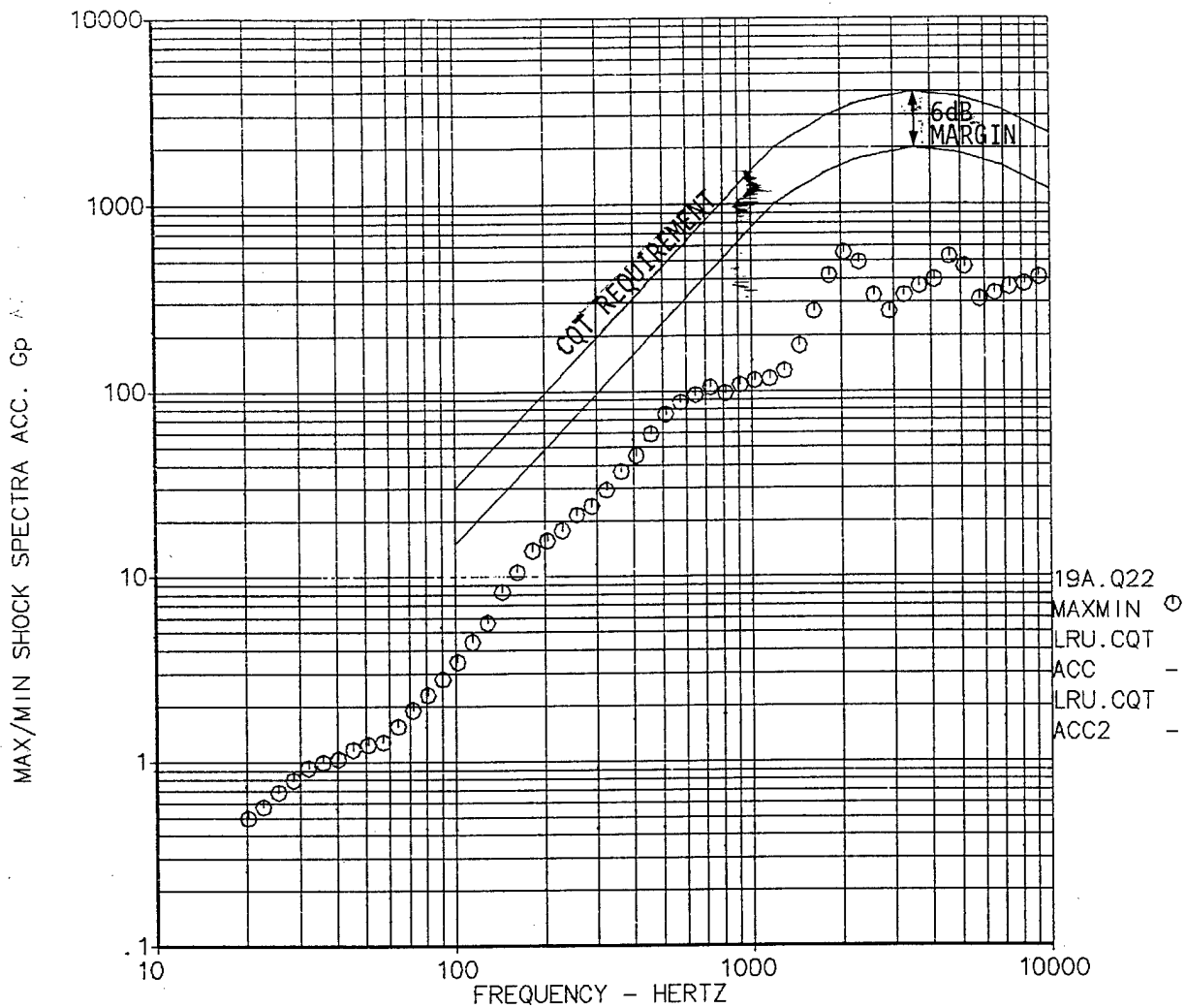


1-JUN-82 07:40:14

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 19A
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FIGURE 2-144
SHOCK SPECTRA (Q = 10)
H19A QTV PYROSHOCK TEST 2 PULSE 2



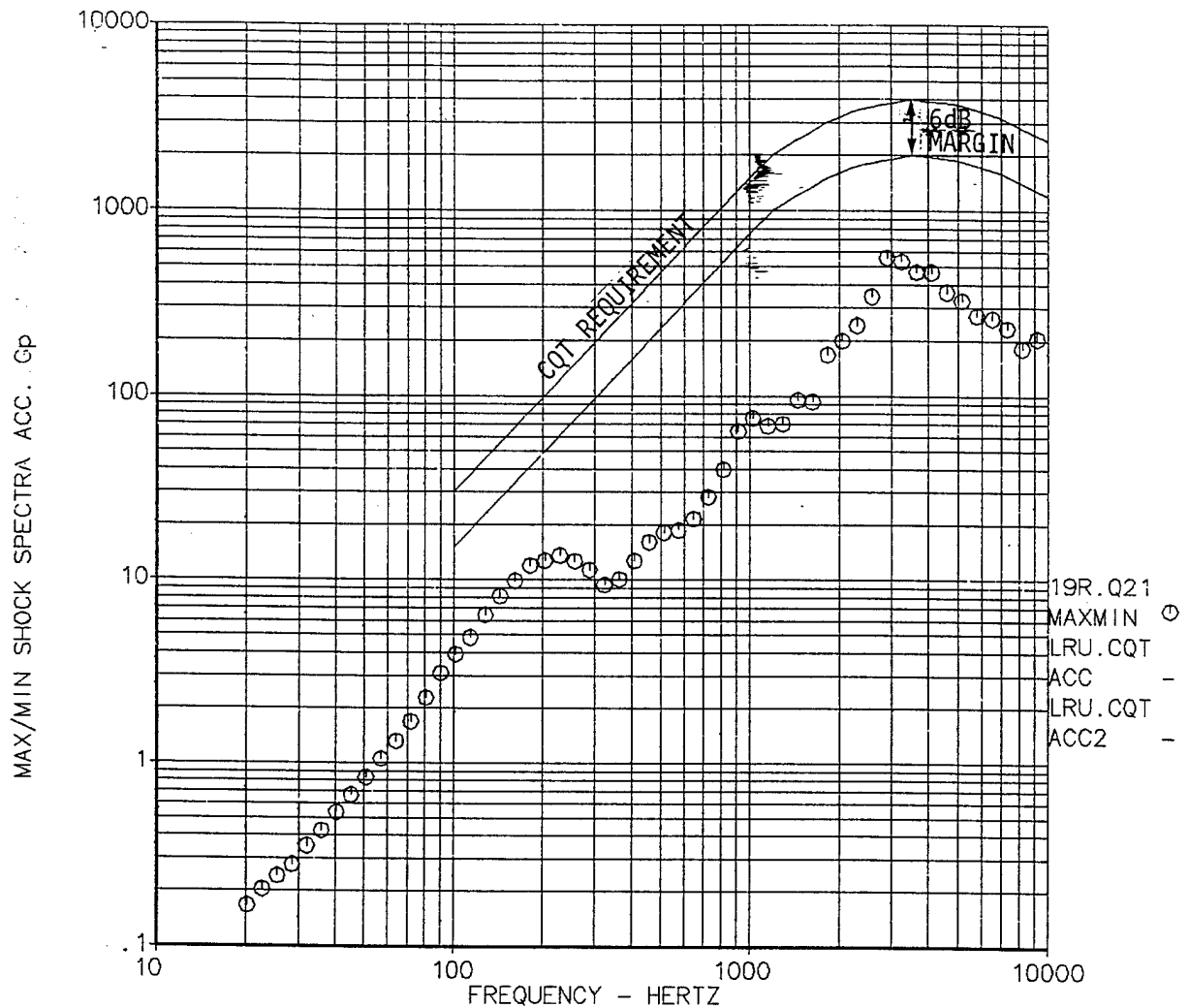
1-JUN-82 07:40:53

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 19A
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FIGURE 2-145
SHOCK SPECTRA ($Q = 10$)
H19R QTV PYROSHOCK TEST 2 PULSE 1

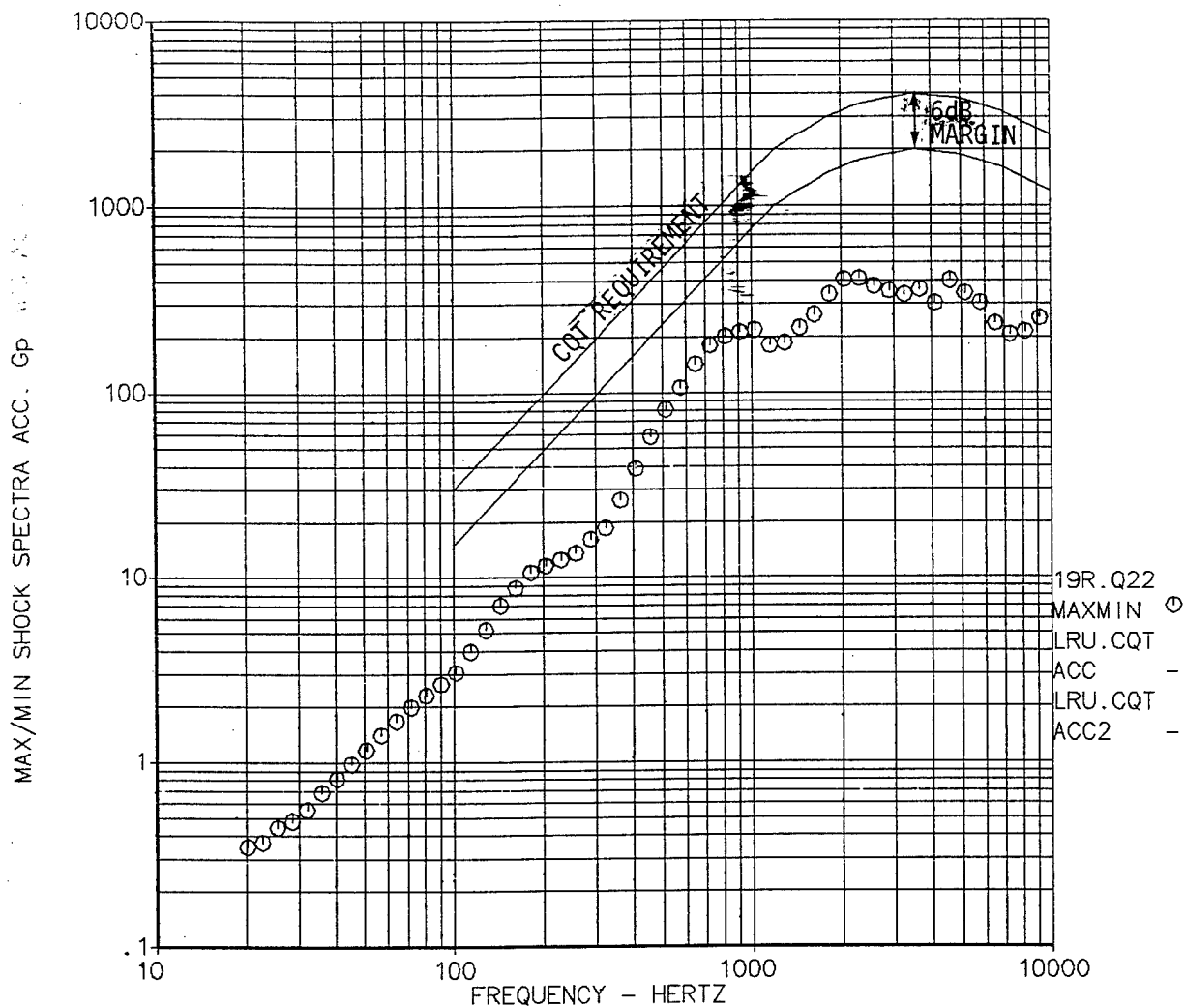


1-JUN-82 07:44:20

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-146
SHOCK SPECTRA (Q = 10)
H19R QTV PYROSHOCK TEST 2 PULSE 2



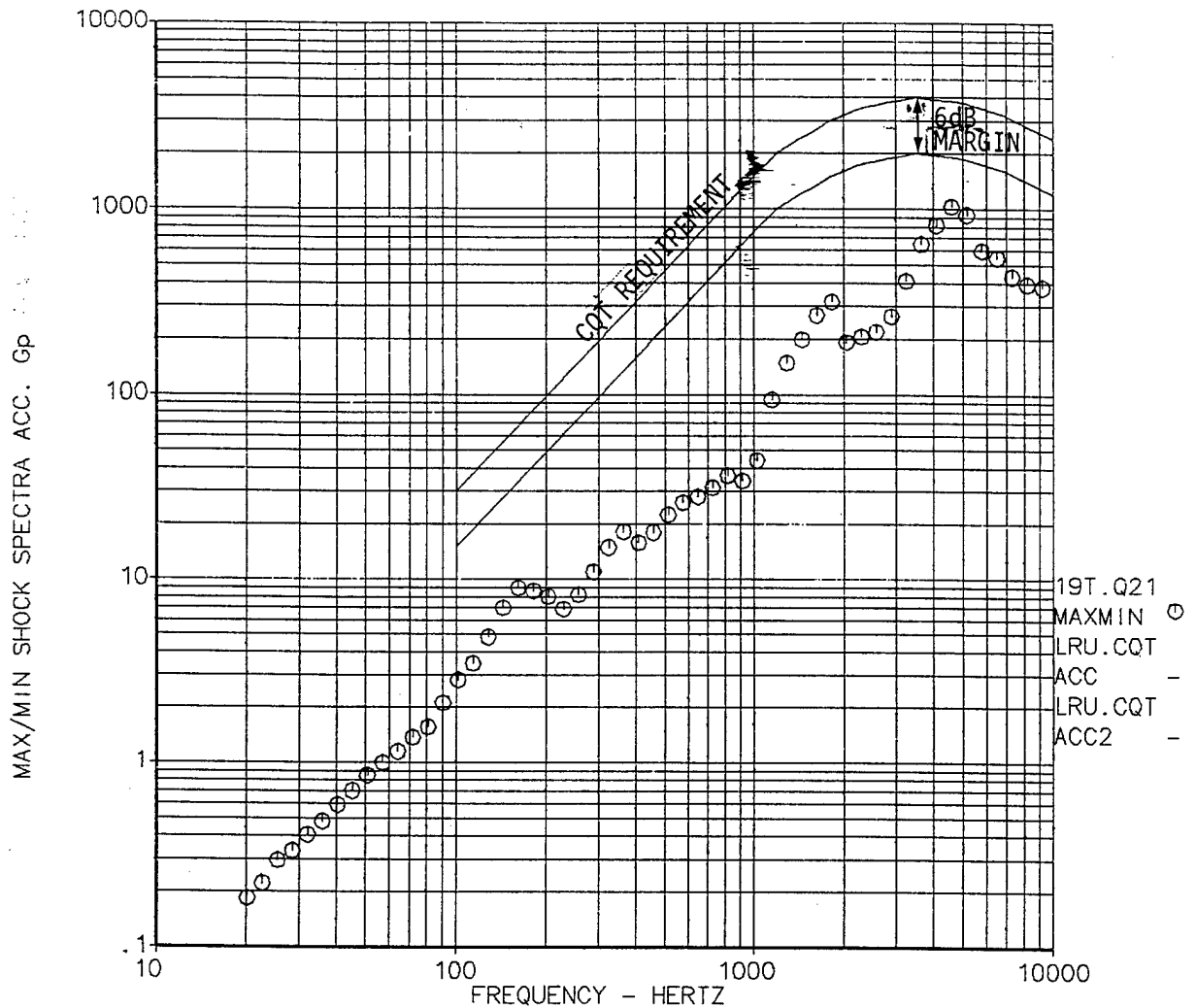
1-JUN-82 07:45:19

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-147
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 2 PULSE 1

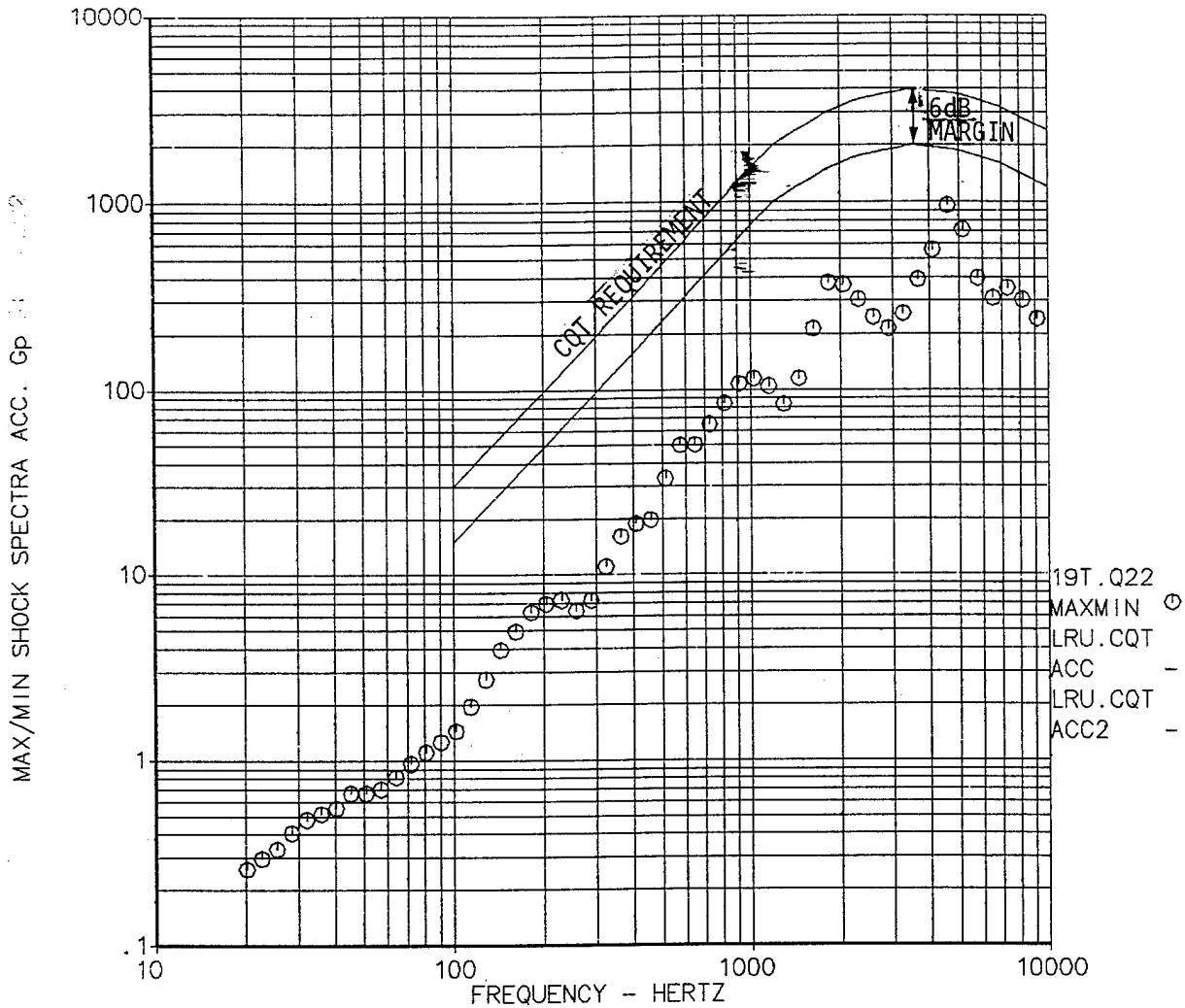


1-JUN-82 07:49:51

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement THE BOEING COMPANY	Acc 19T
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FIGURE 2-148
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 2 PULSE 2

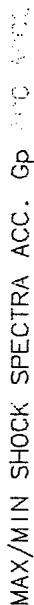


1-JUN-82 07:50:33

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19T
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H19A QTV PYROSHOCK TEST 3 PULSE 1



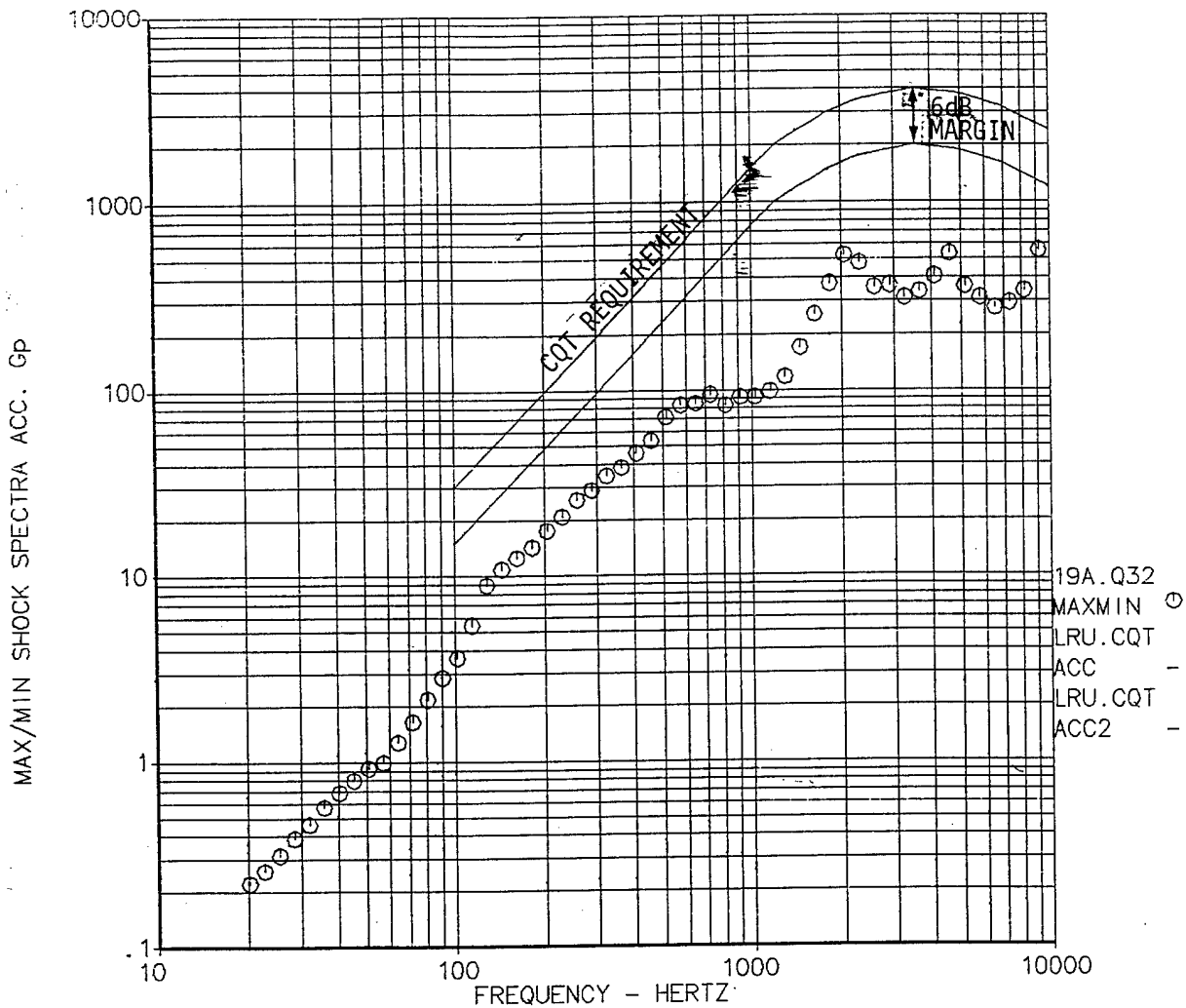
1-JUN-82 07:41:47

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19A
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FIGURE 2-150
SHOCK SPECTRA (Q = 10)
H19A QTV PYROSHOCK TEST 3 PULSE 2

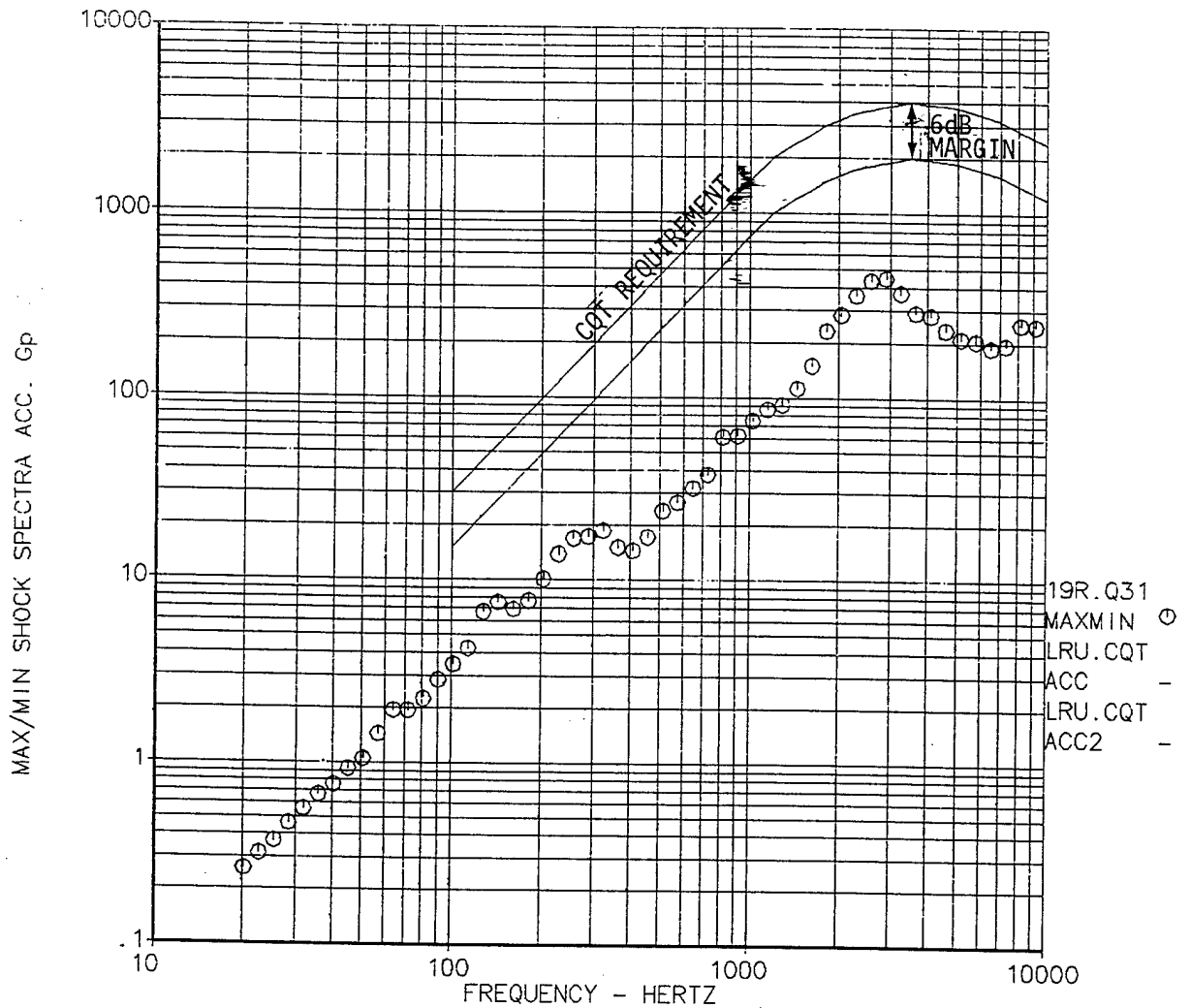


1-JUN-82 07:42:27

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CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 19A
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FIGURE 2-151
SHOCK SPECTRA ($Q = 10$)
H19R QTV PYROSHOCK TEST 3 PULSE 1

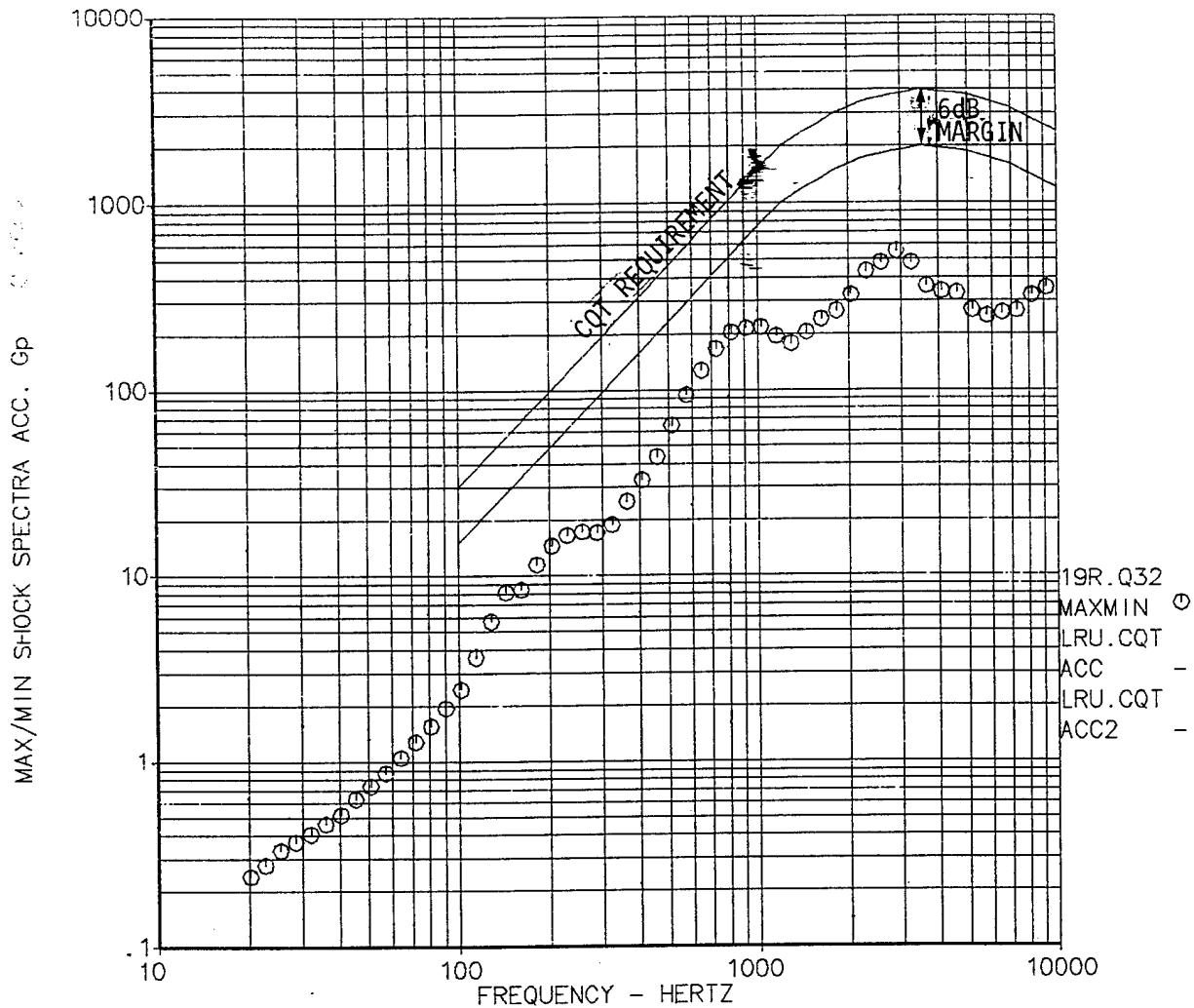


1-JUN-82 07:46:56

PSU

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-152
SHOCK SPECTRA (Q = 10)
H19R QTV PYROSHOCK TEST 3 PULSE 2

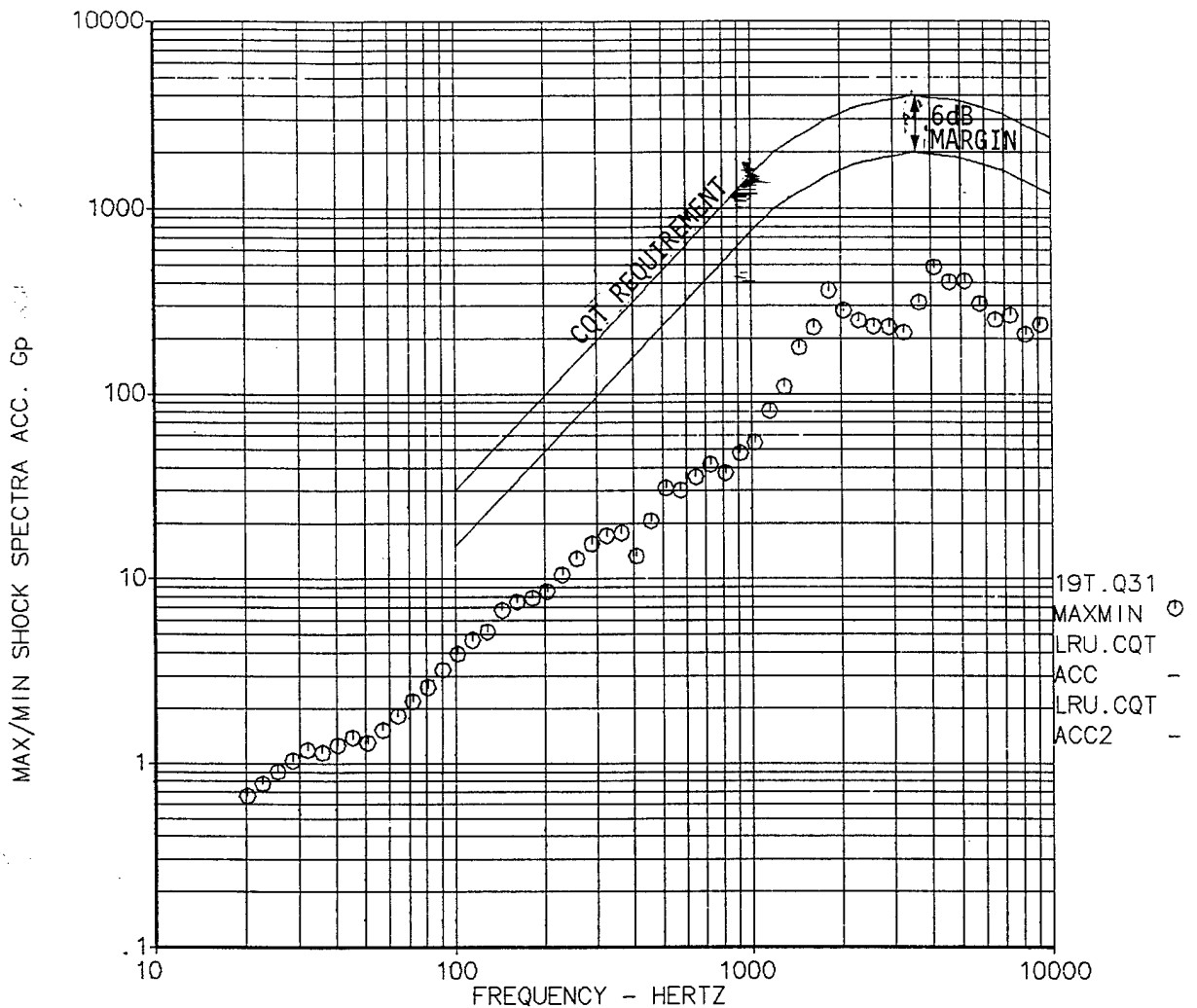


1-JUN-82 07:47:49

PSU

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19R
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FIGURE 2-153
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 3 PULSE 1

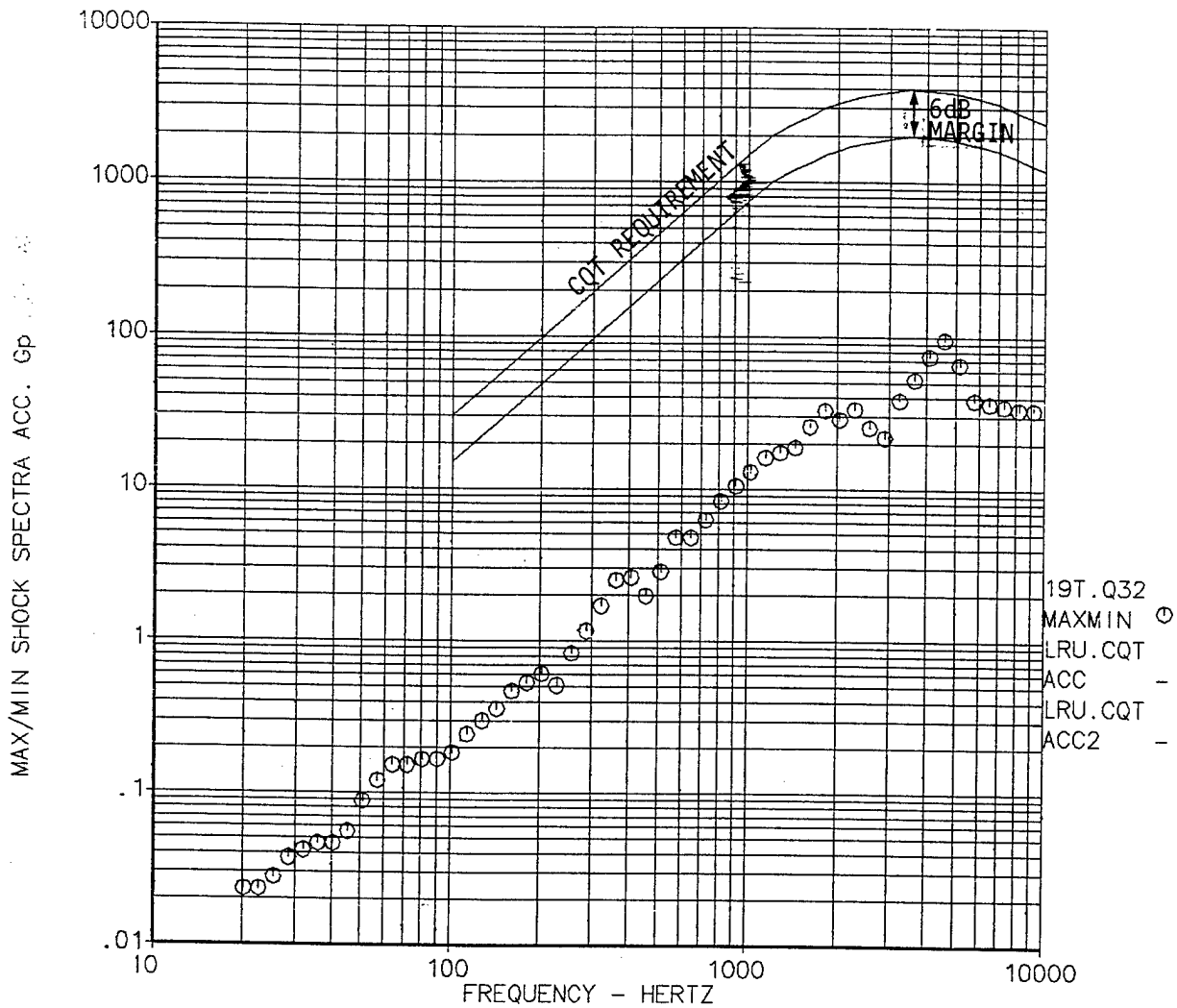


1-JUN-82 07:51:33

PSU

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19T
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FIGURE 2-154
SHOCK SPECTRA (Q = 10)
H19T QTV PYROSHOCK TEST 3 PULSE 2



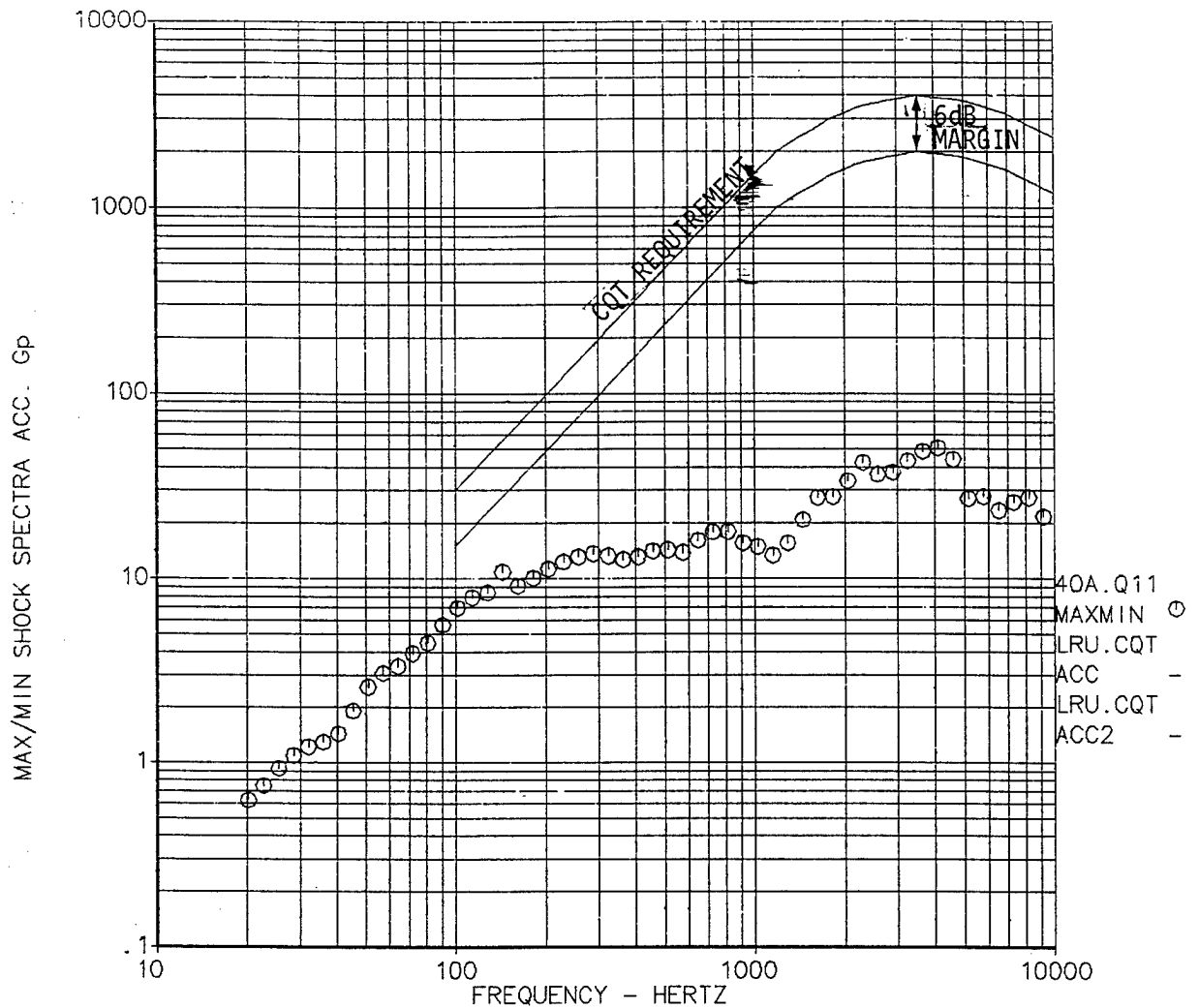
1-JUN-82 07:52:26

PSU

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 19T
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FIGURE 2-155:
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 1 PULSE 1



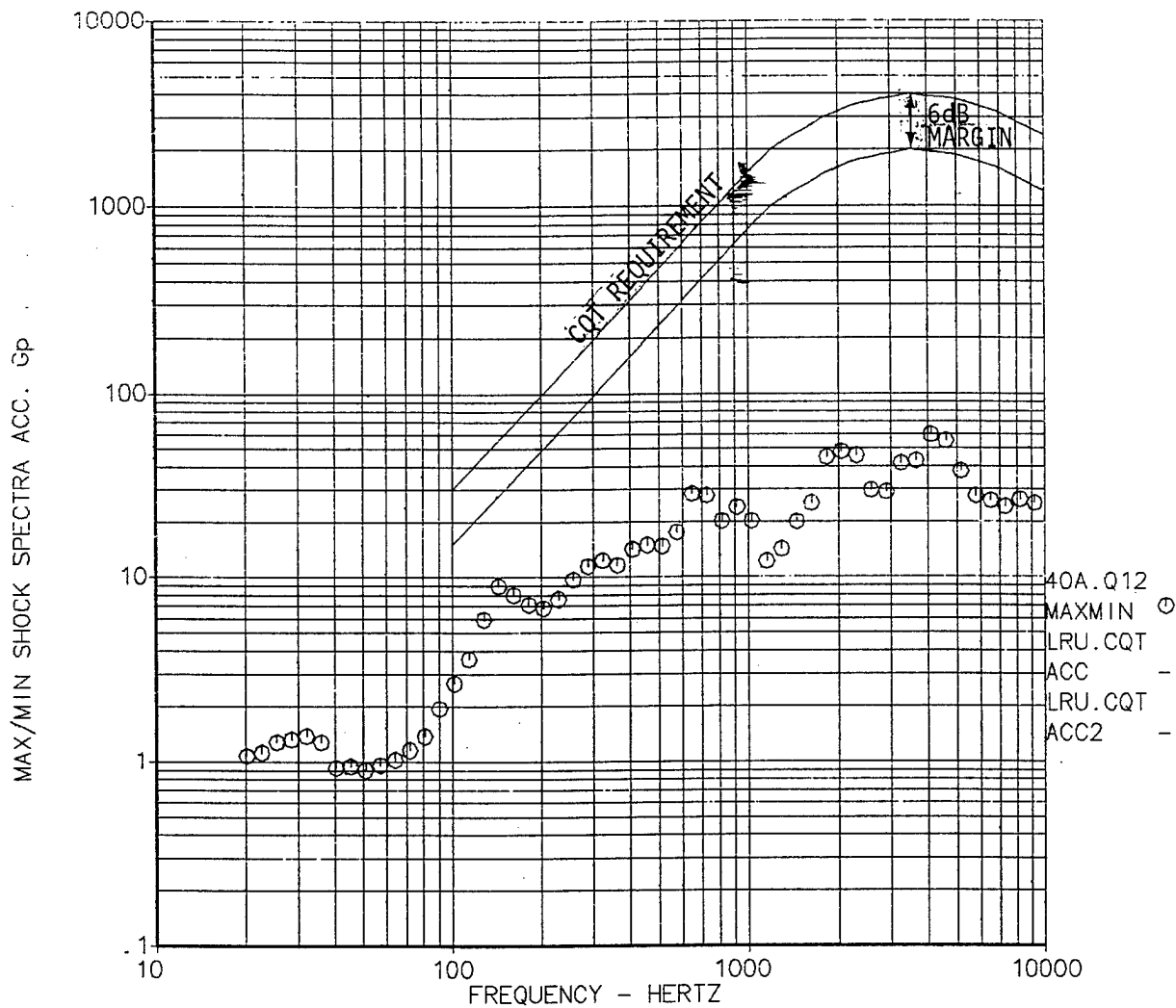
1-JUN-82 07:54:39

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 40A
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FIGURE 2-156
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 1 PULSE 2



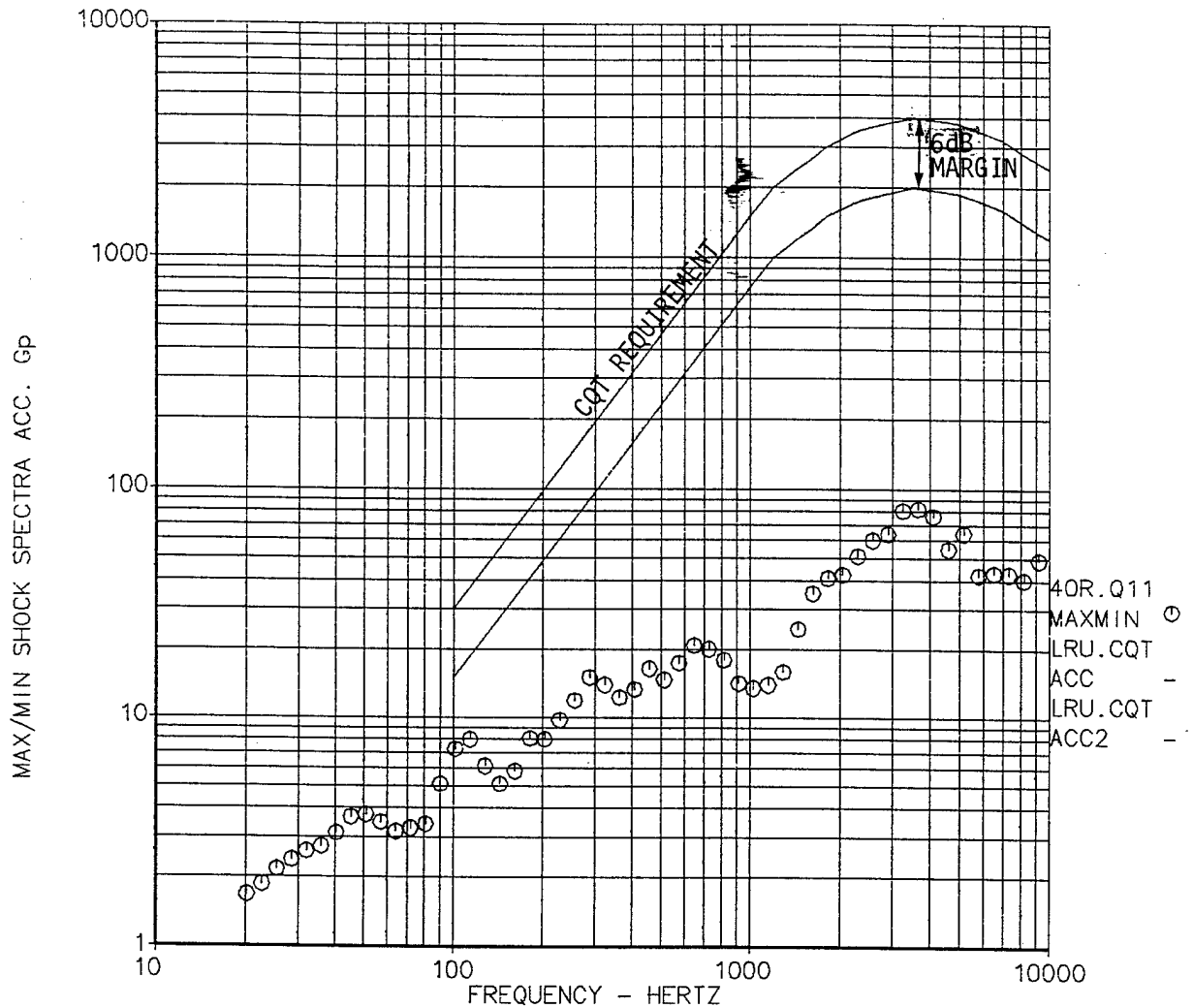
1-JUN-82 07:55:42

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 40A
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FIGURE 2-157
SHOCK SPECTRA (Q = 10)
H40R QTV PYROSHOCK TEST 1 PULSE 1

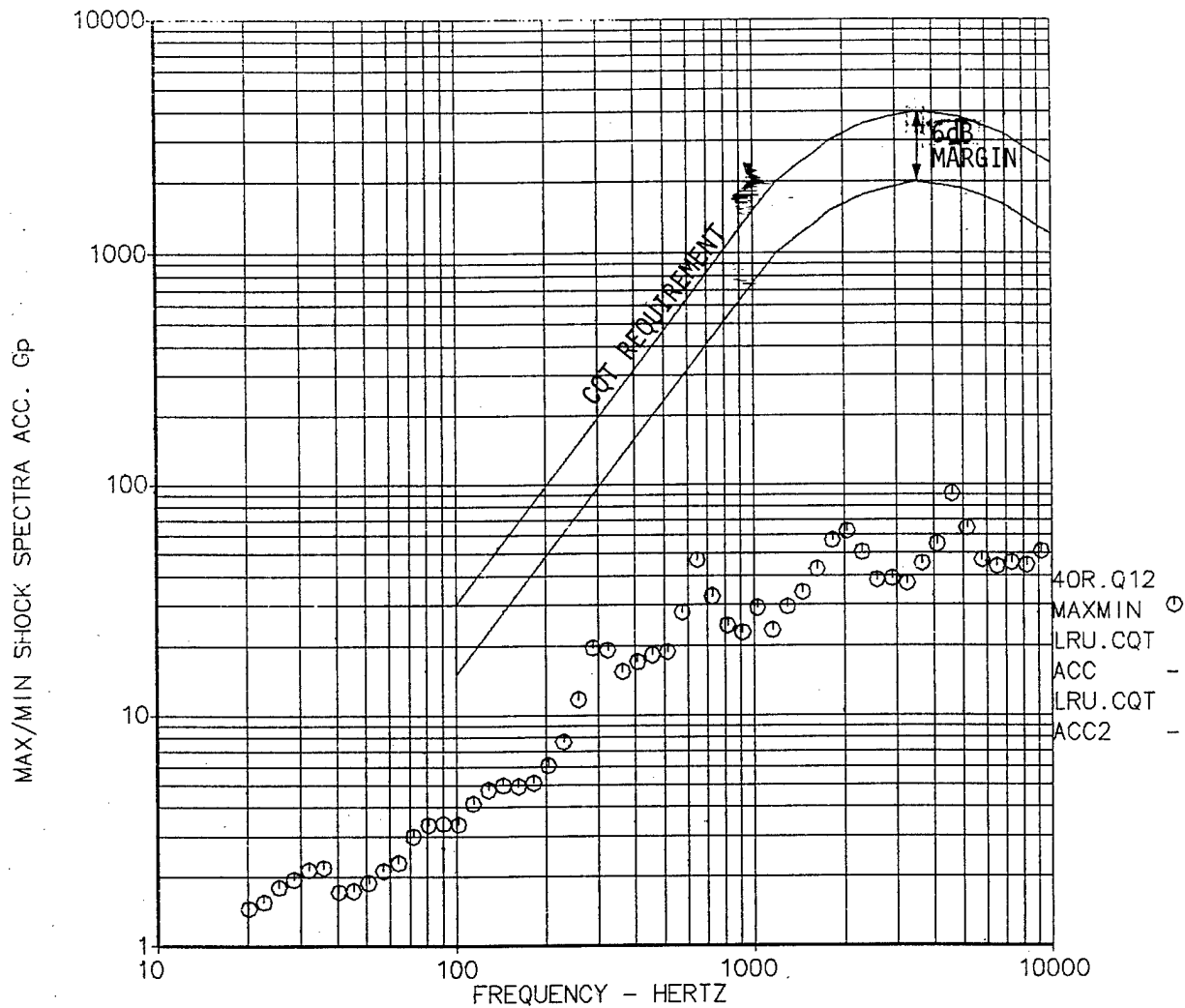


1-JUN-82 07:59:17

POWER AMP B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-158
SHOCK SPECTRA ($Q = 10$)
H40R QTV PYROSHOCK TEST 1 PULSE 2



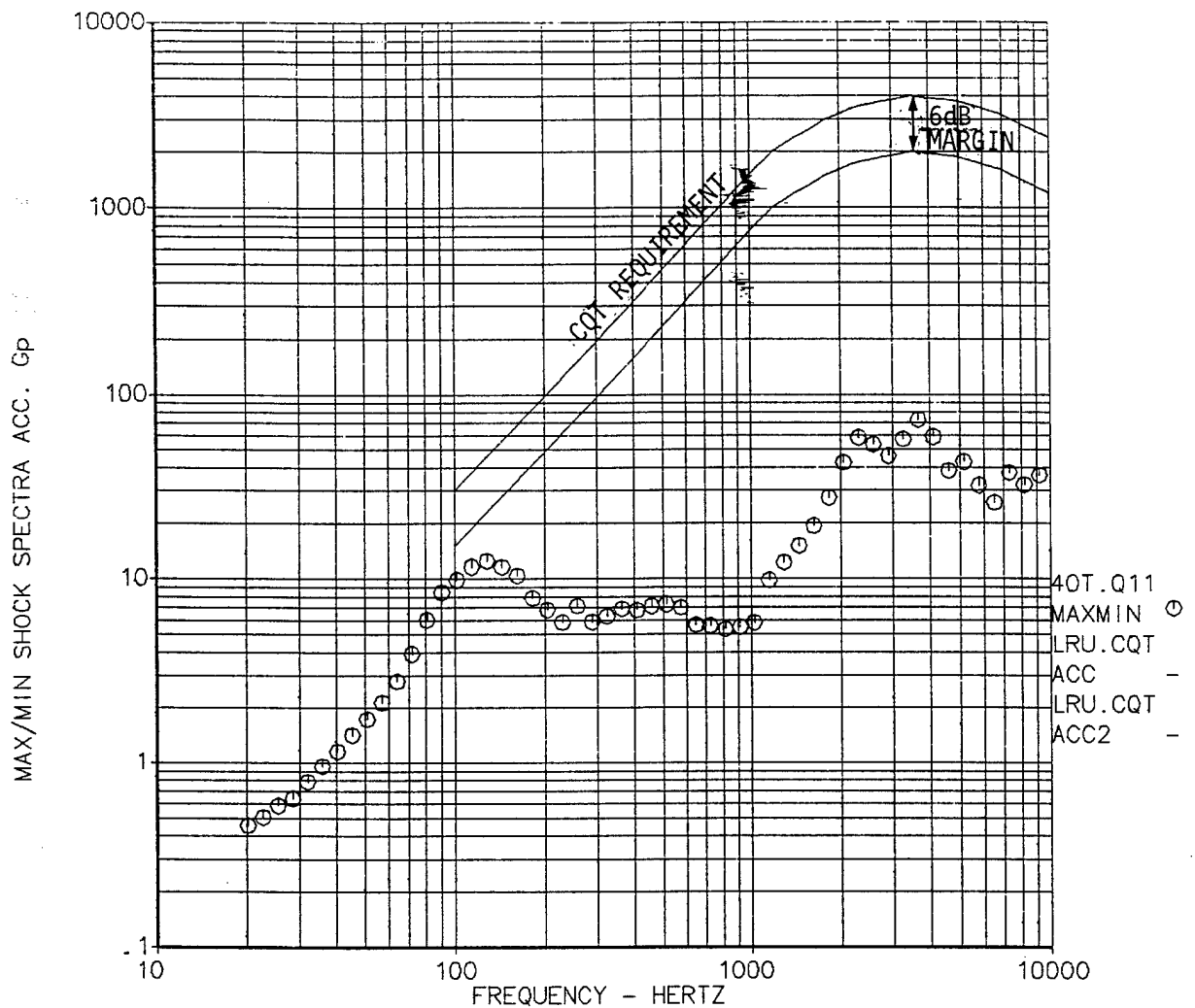
1-JUN-82 07:59:56

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-159
SHOCK SPECTRA (Q = 10)
H40T QTV PYROSHOCK TEST 1 PULSE 1



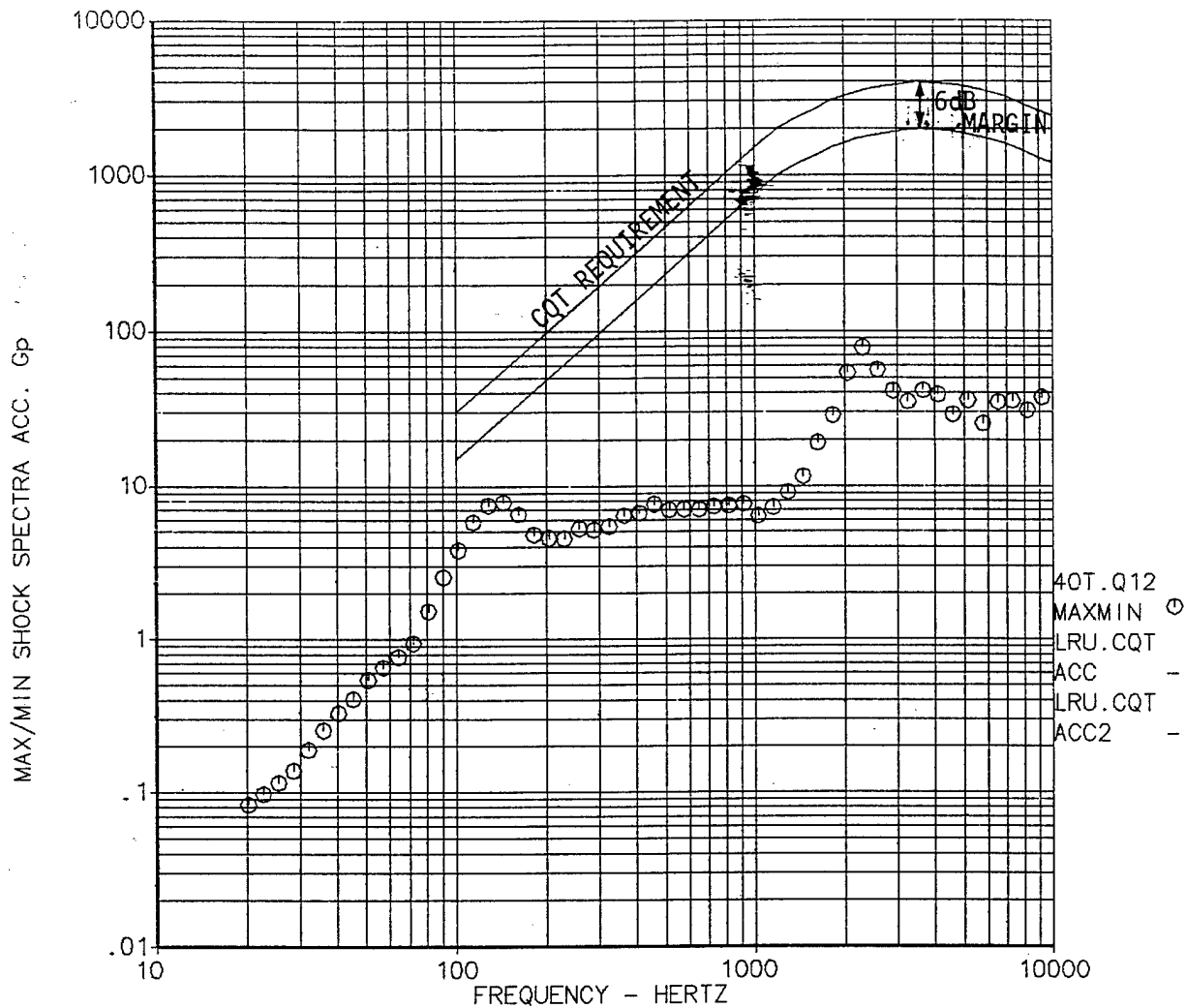
1-JUN-82 08:04:52

POWER AMP. B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirements	Acc 40T
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FIGURE 2-160
SHOCK SPECTRA ($Q = 10$)
H40T QTV PYROSHOCK TEST 1 PULSE 2

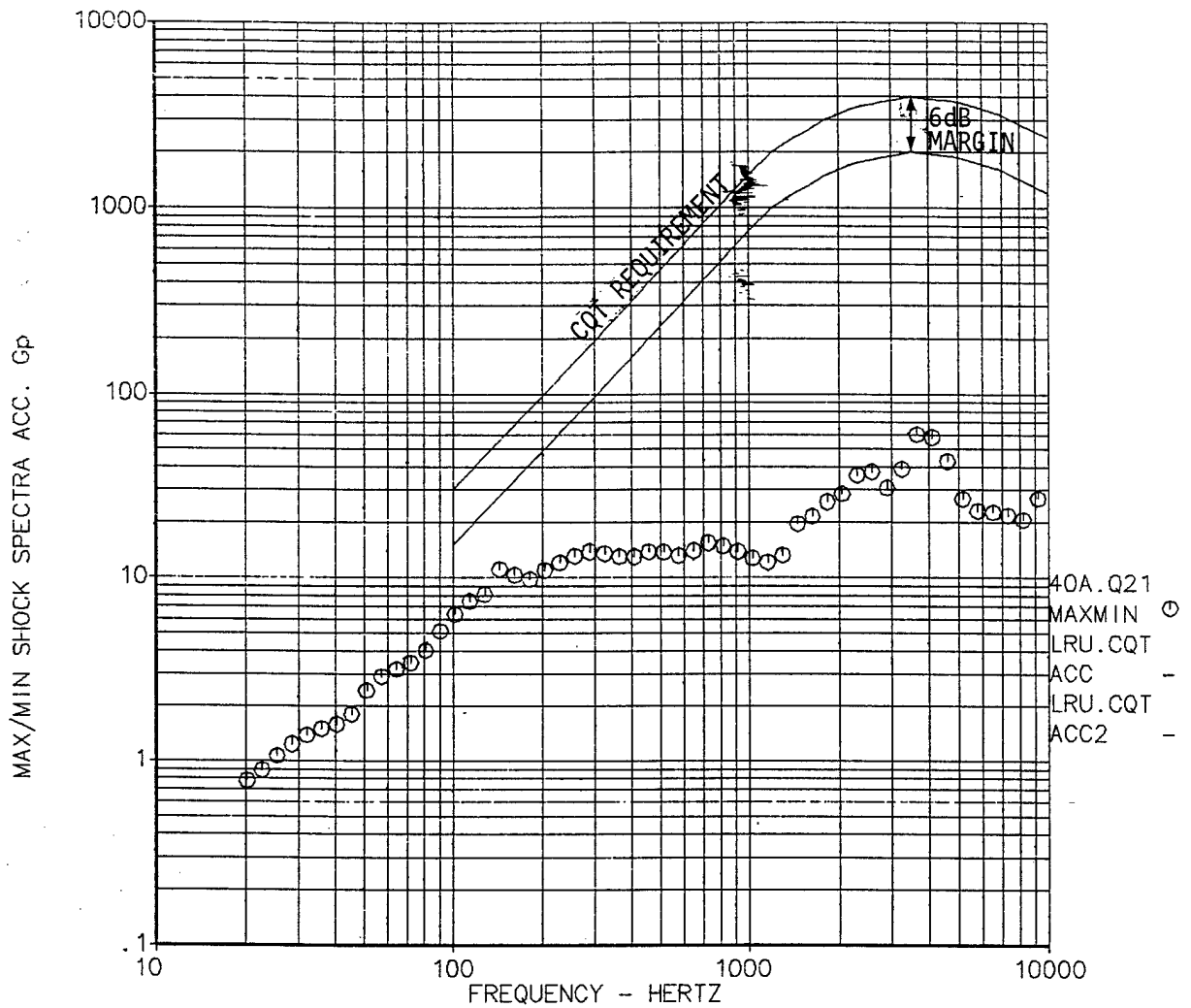


1-JUN-82 08:05:36

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 40T
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FIGURE 2-161
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 2 PULSE 1

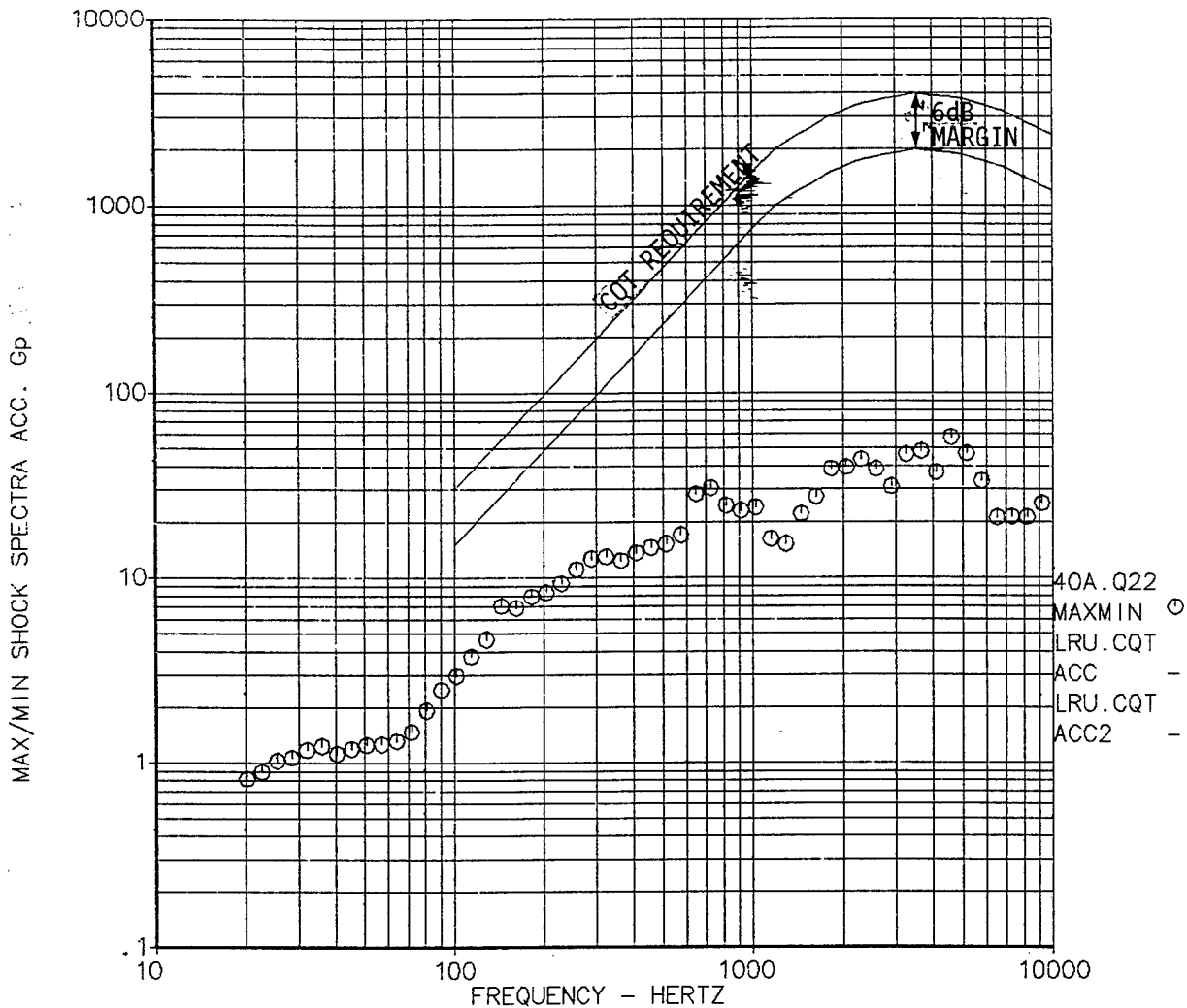


1-JUN-82 07:56:28

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 40A
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FIGURE 2-162
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 2 PULSE 2

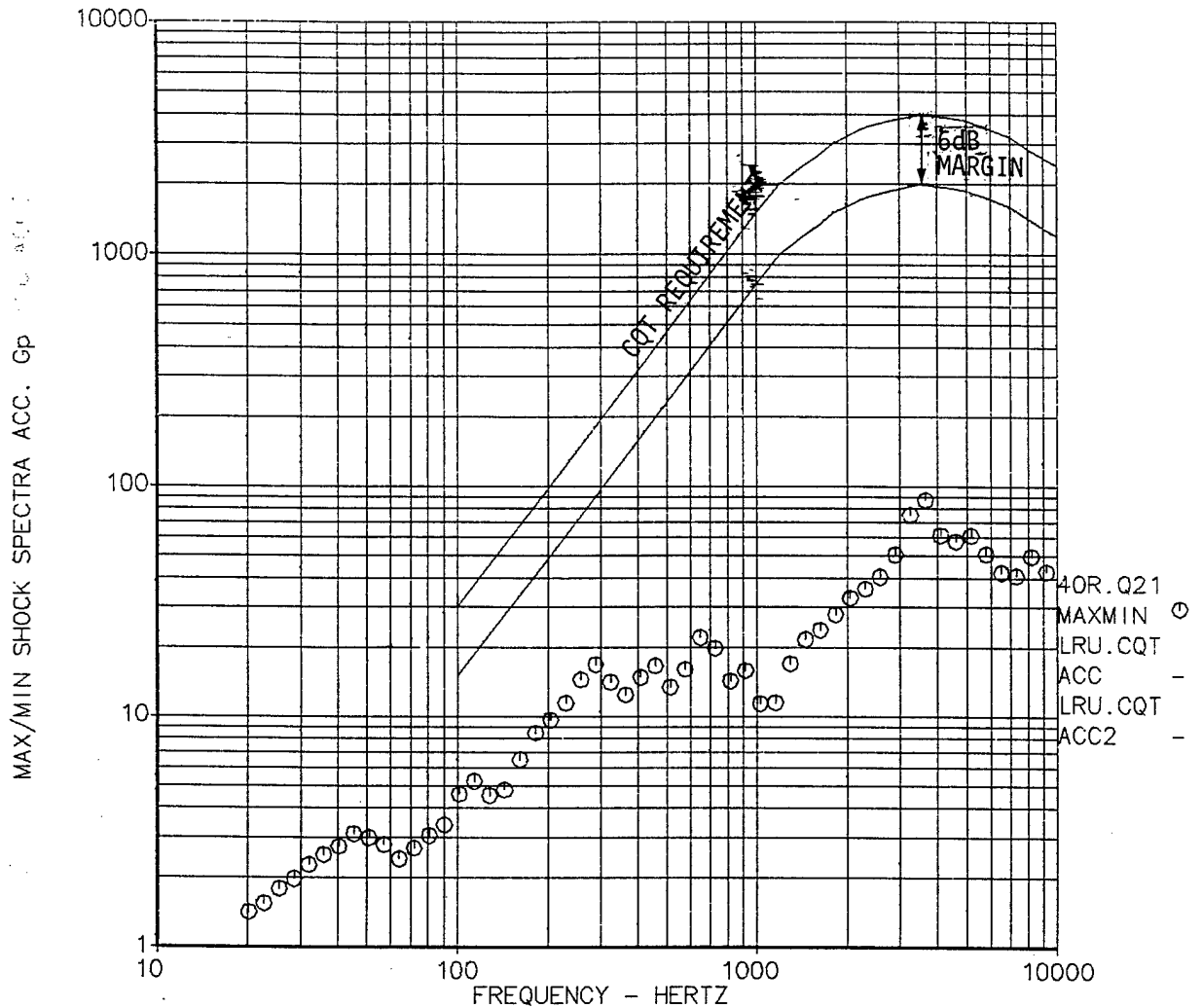


1-JUN-82 07:57:17

POWER AMP B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40A
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FIGURE 2-163
SHOCK SPECTRA ($Q = .10$)
H40R QTV PYROSHOCK TEST 2 PULSE 1

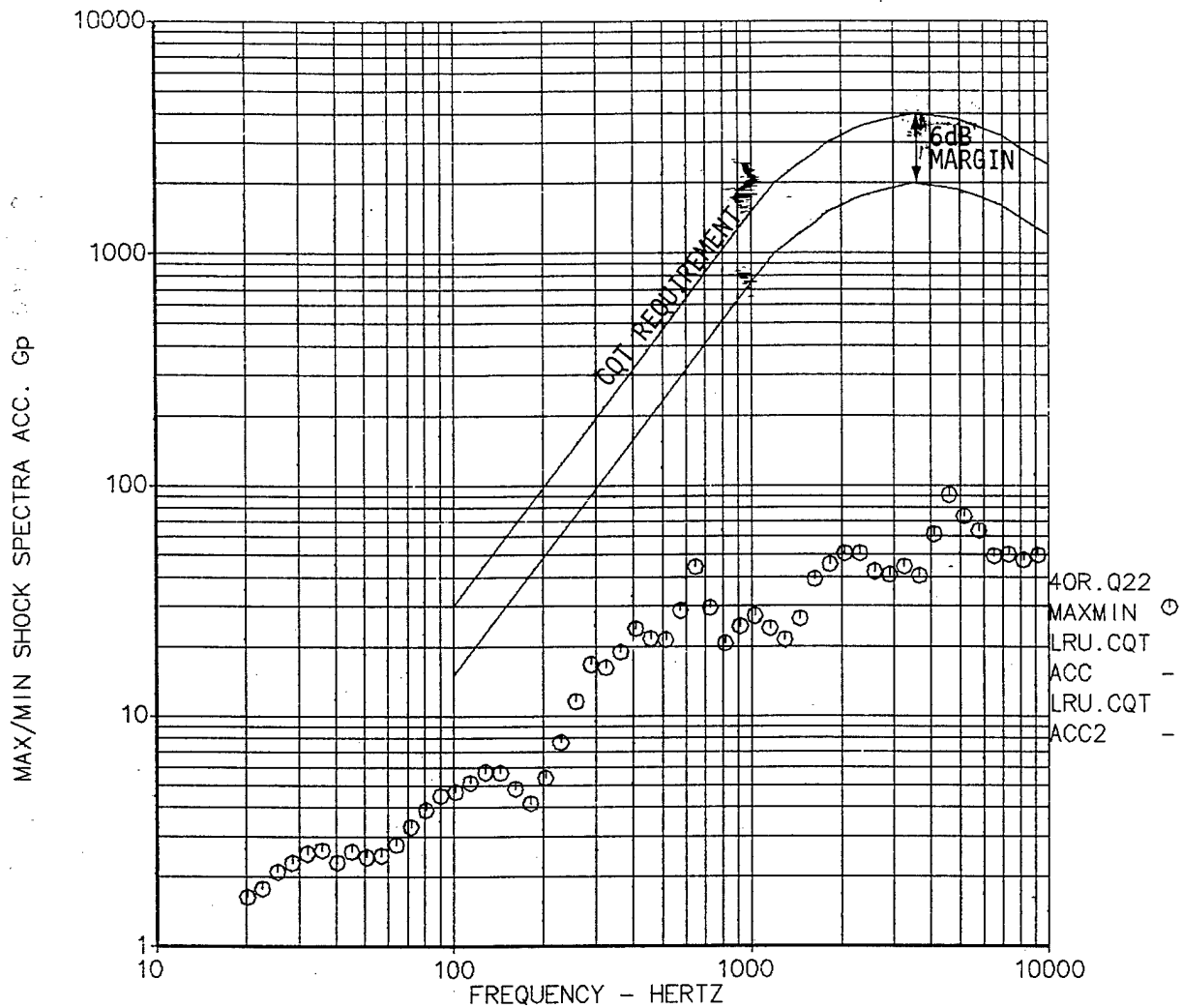


1-JUN-82 08:02:01

POWER AMP. B.

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-164.
SHOCK SPECTRA (Q = 10)
H40R QTV PYROSHOCK TEST 2 PULSE 2

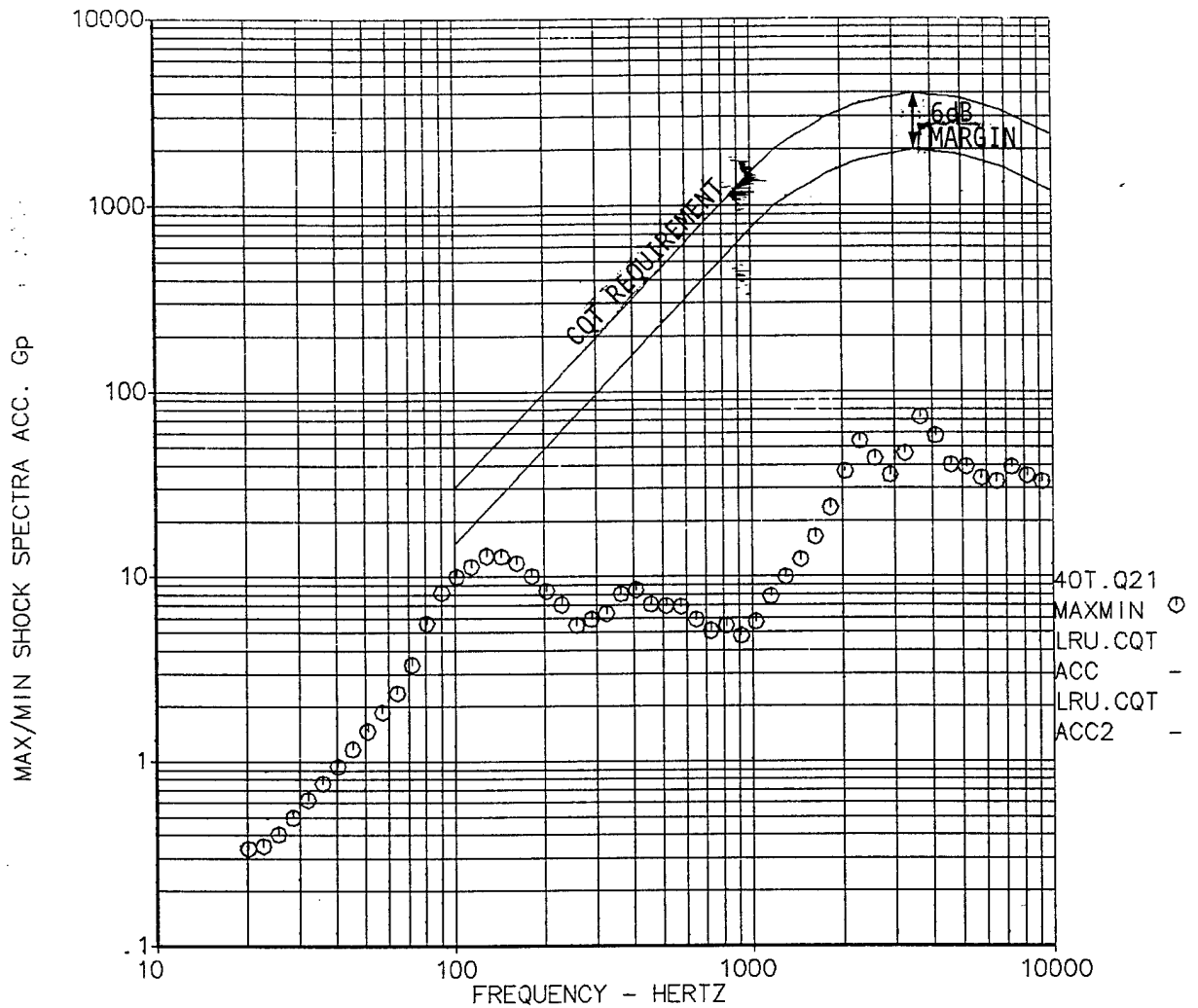


1-JUN-82 08:02:40

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-165
SHOCK SPECTRA (Q = 10)
H40T QTV PYROSHOCK TEST 2 PULSE 1

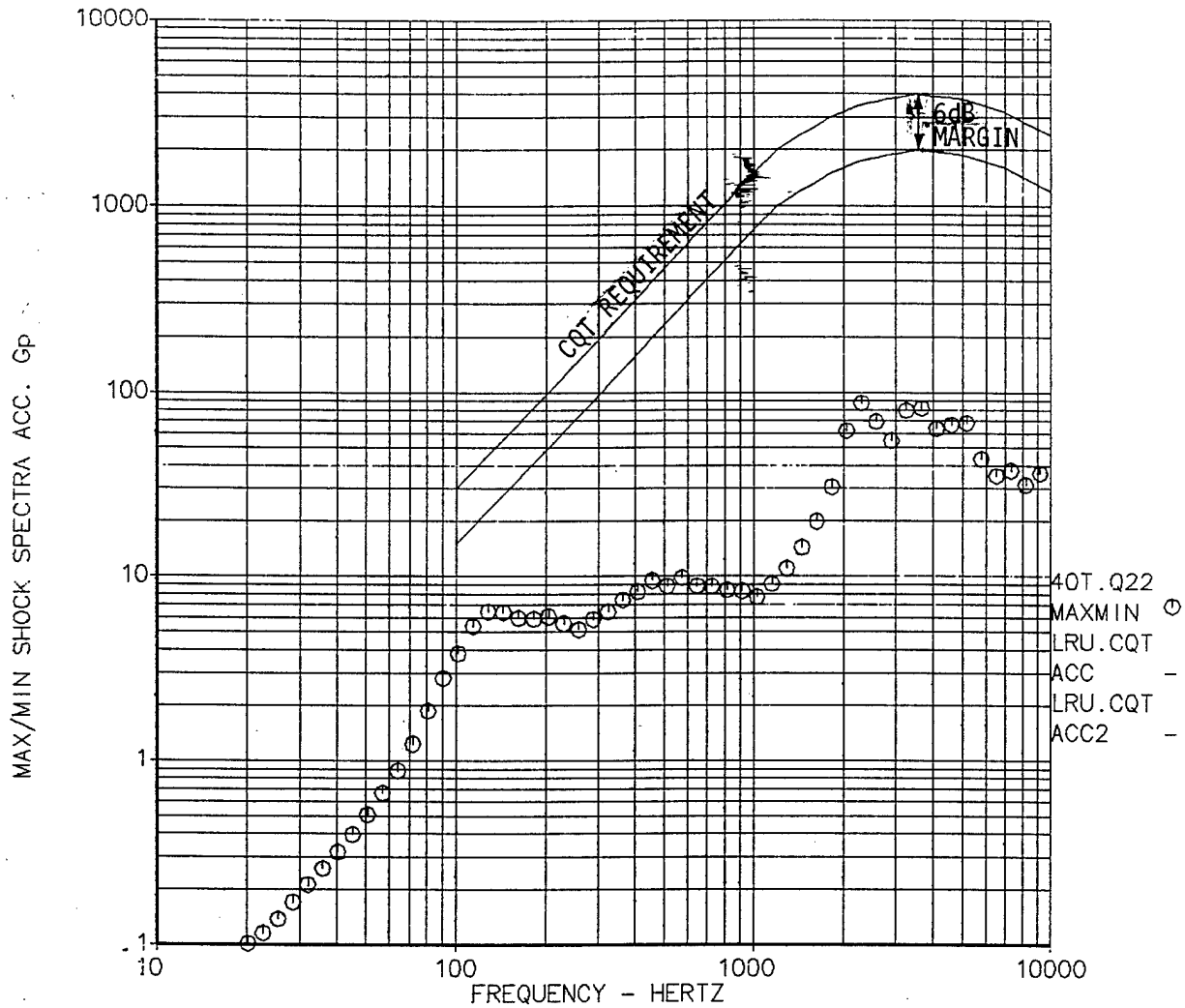


1-JUN-82 08:06:21

POWER AMP B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement ? THE BOEING COMPANY	Acc 40T
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FIGURE 2-166
SHOCK SPECTRA (Q = 10)
H40T QTV PYROSHOCK TEST 2 PULSE 2



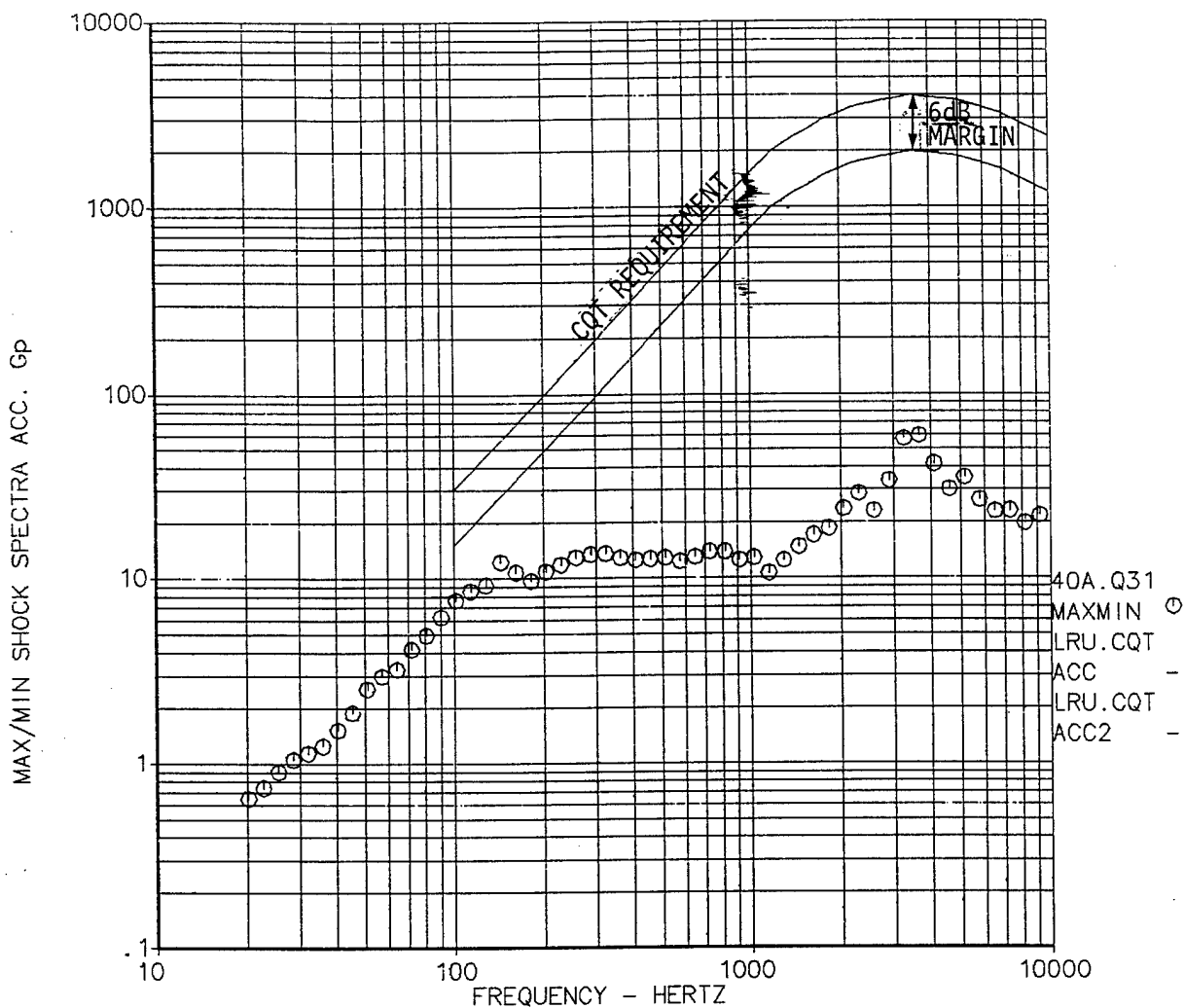
1-JUN-82 08:07:04

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40T
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FIGURE 2-167
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 3 PULSE 1

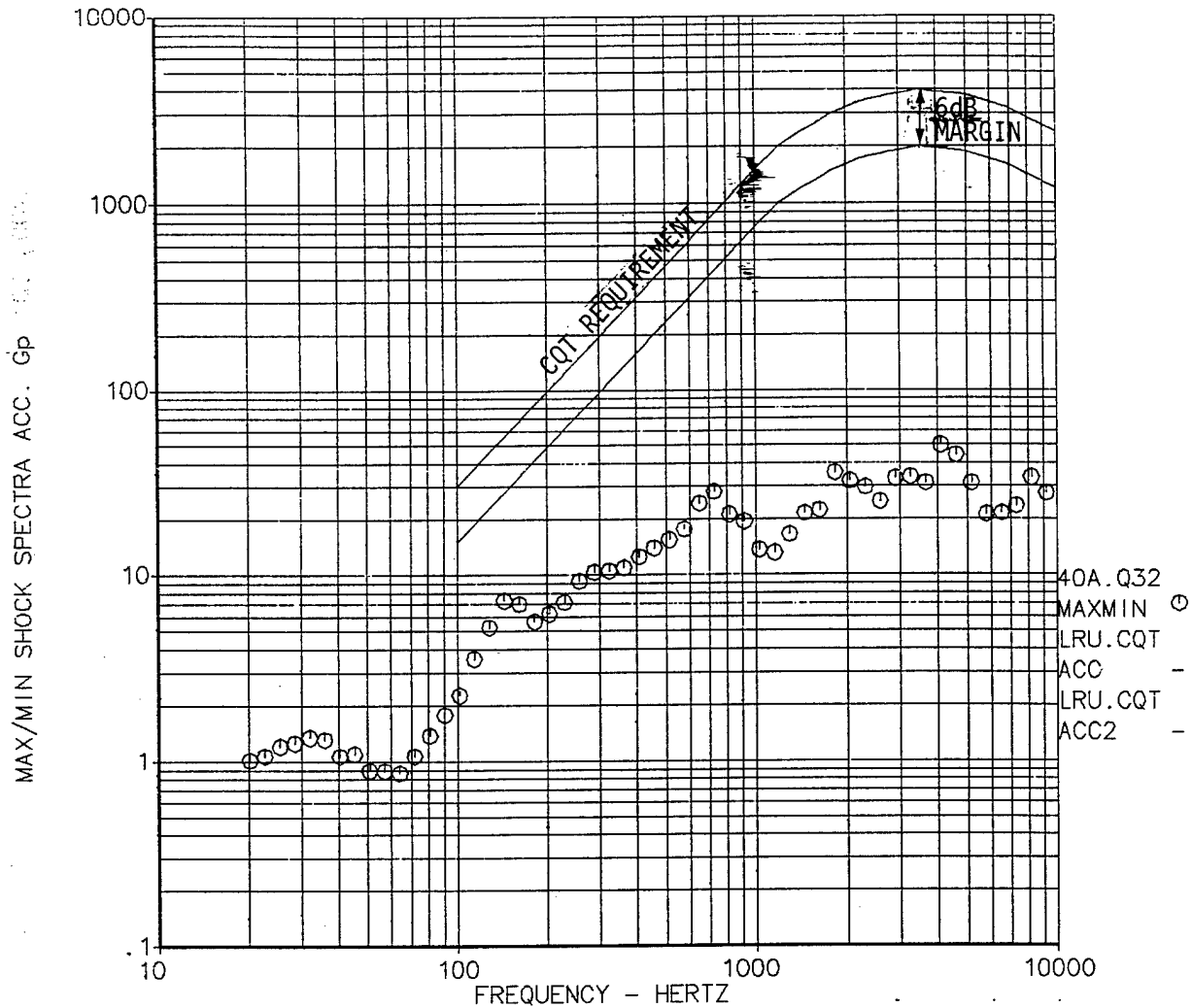


1-JUN-82 07:57:57

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 40A
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FIGURE 2-168
SHOCK SPECTRA (Q = 10)
H40A QTV PYROSHOCK TEST 3 PULSE 2



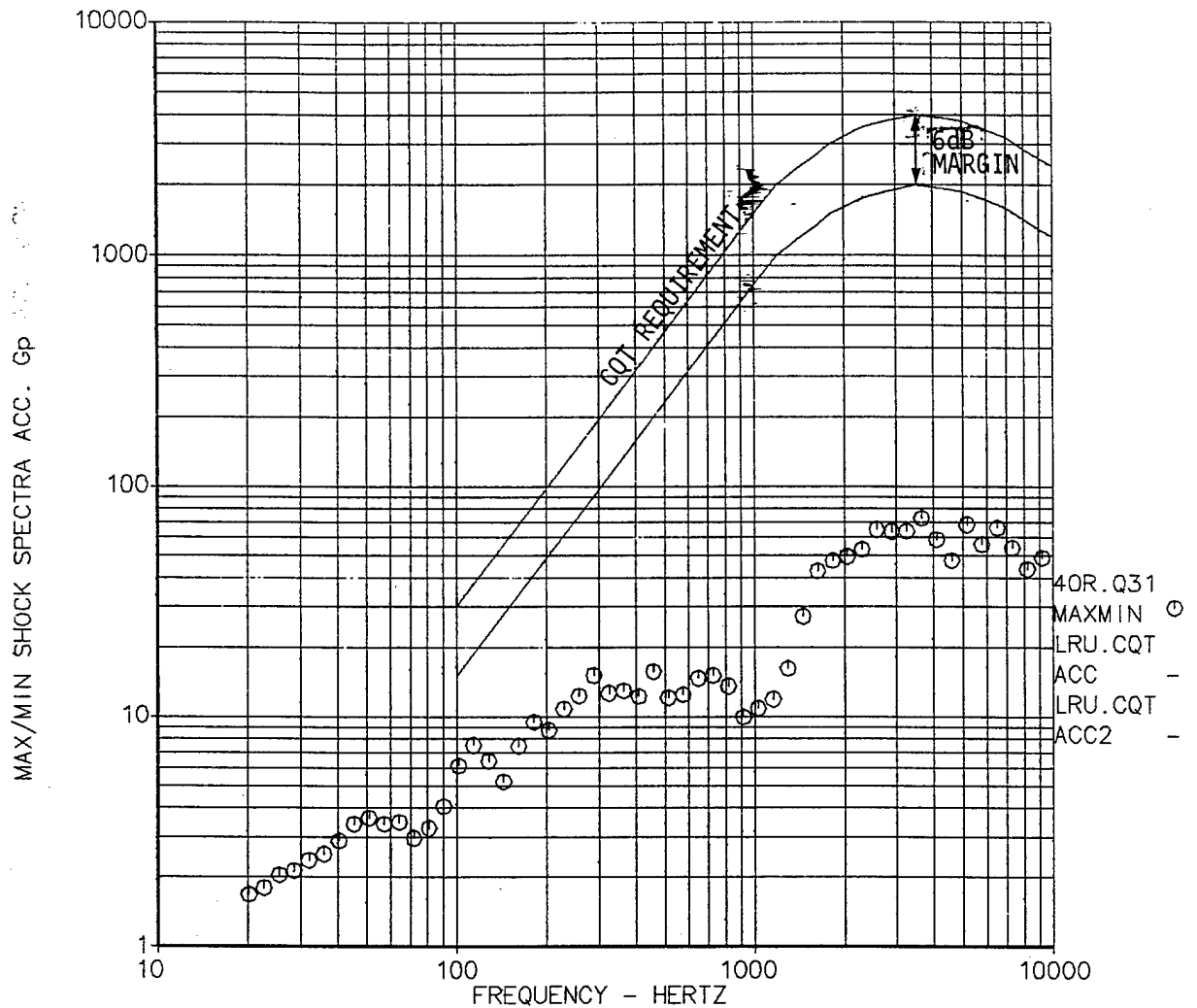
1-JUN-82 07:58:35

POWER AMP B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40A
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FIGURE 2-169
SHOCK SPECTRA (Q = 10)
H40R QTV PYROSHOCK TEST 3 PULSE 1



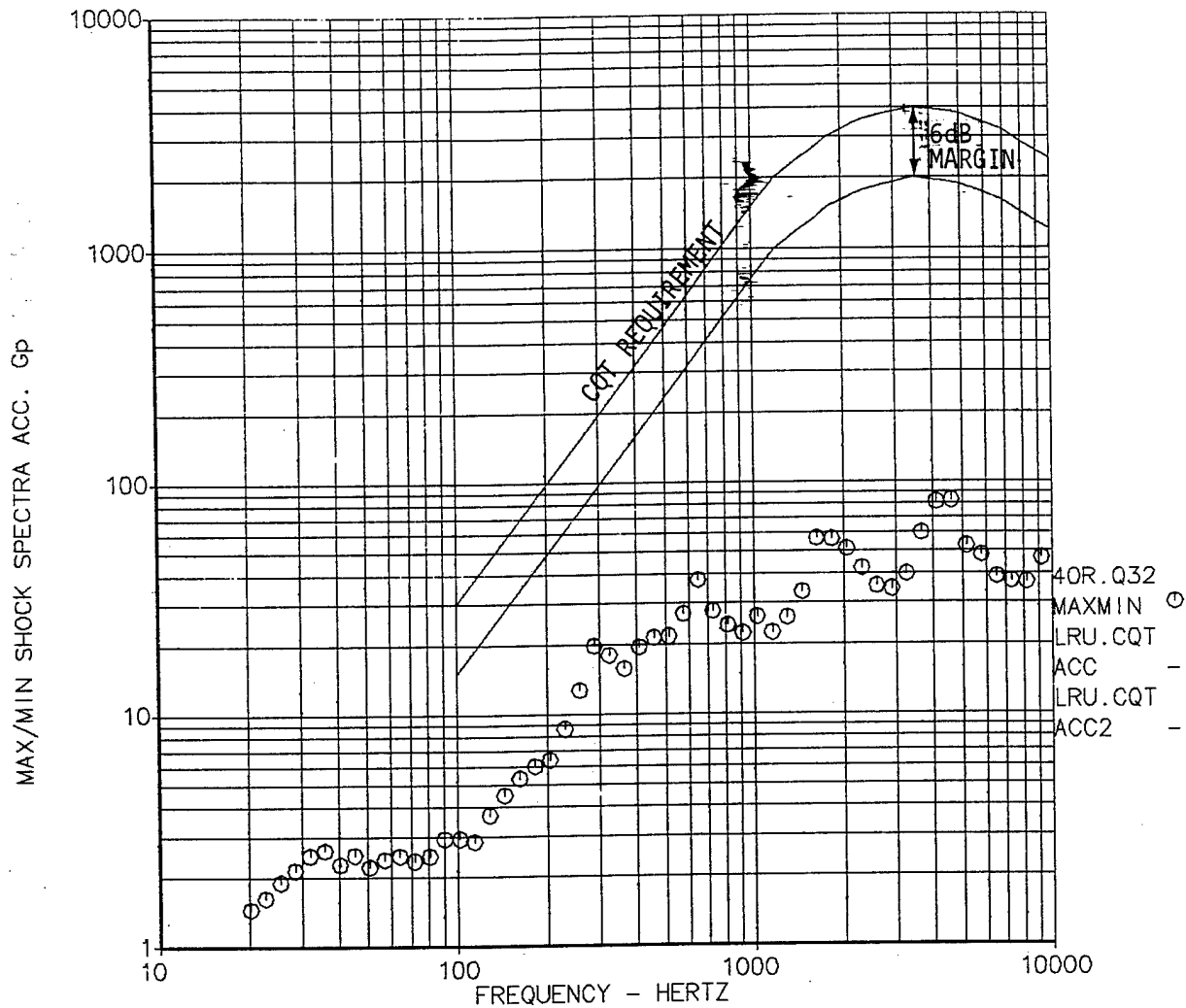
1-JUN-82 08:03:30

POWER AMP: B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-170
SHOCK SPECTRA (Q = 10)
H40R QTV PYROSHOCK TEST 3 PULSE 2

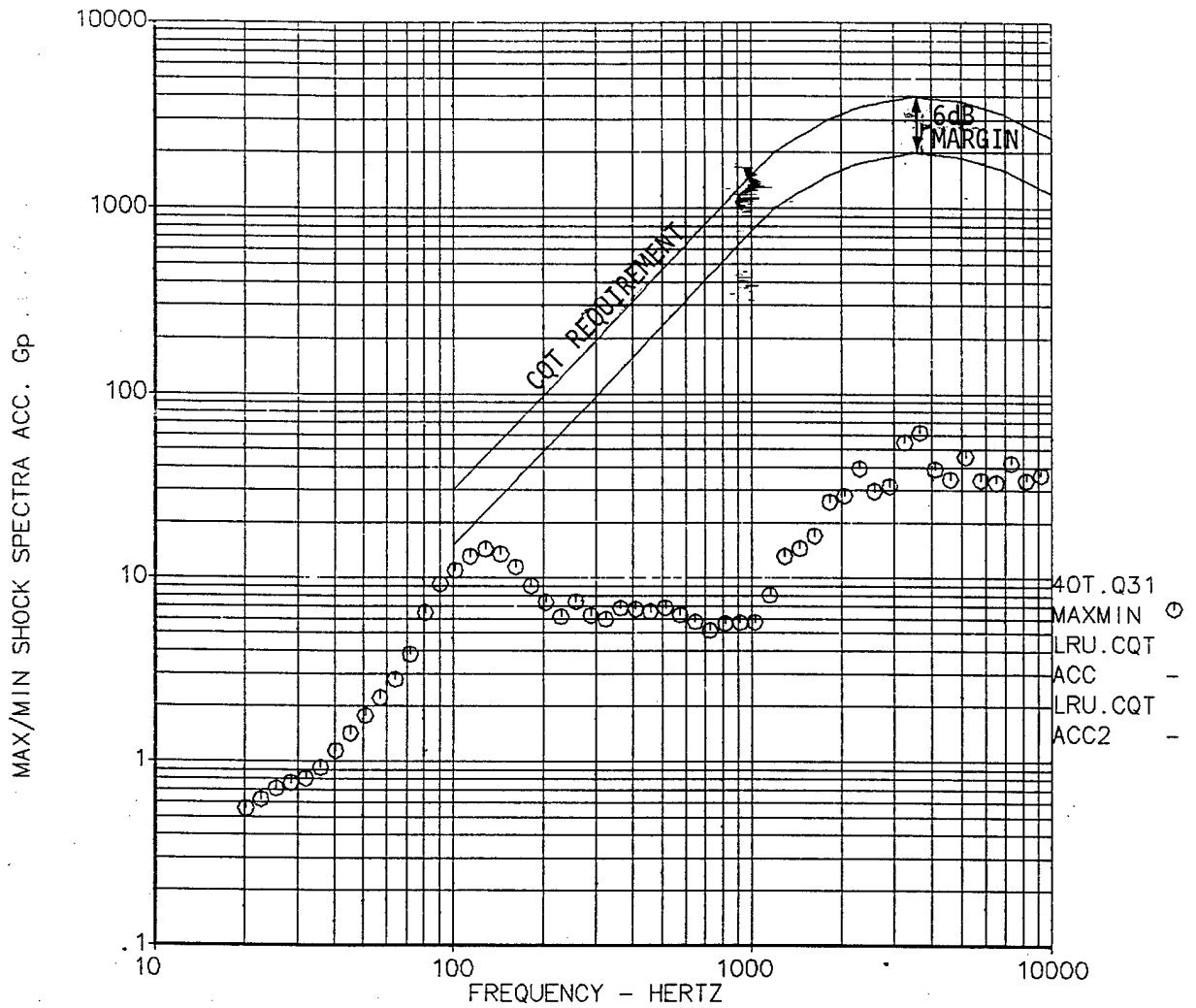


1-JUN-82 08:04:08

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40R
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FIGURE 2-171
SHOCK SPECTRA (Q = 10)
H40T QTV PYROSHOCK TEST 3 PULSE 1



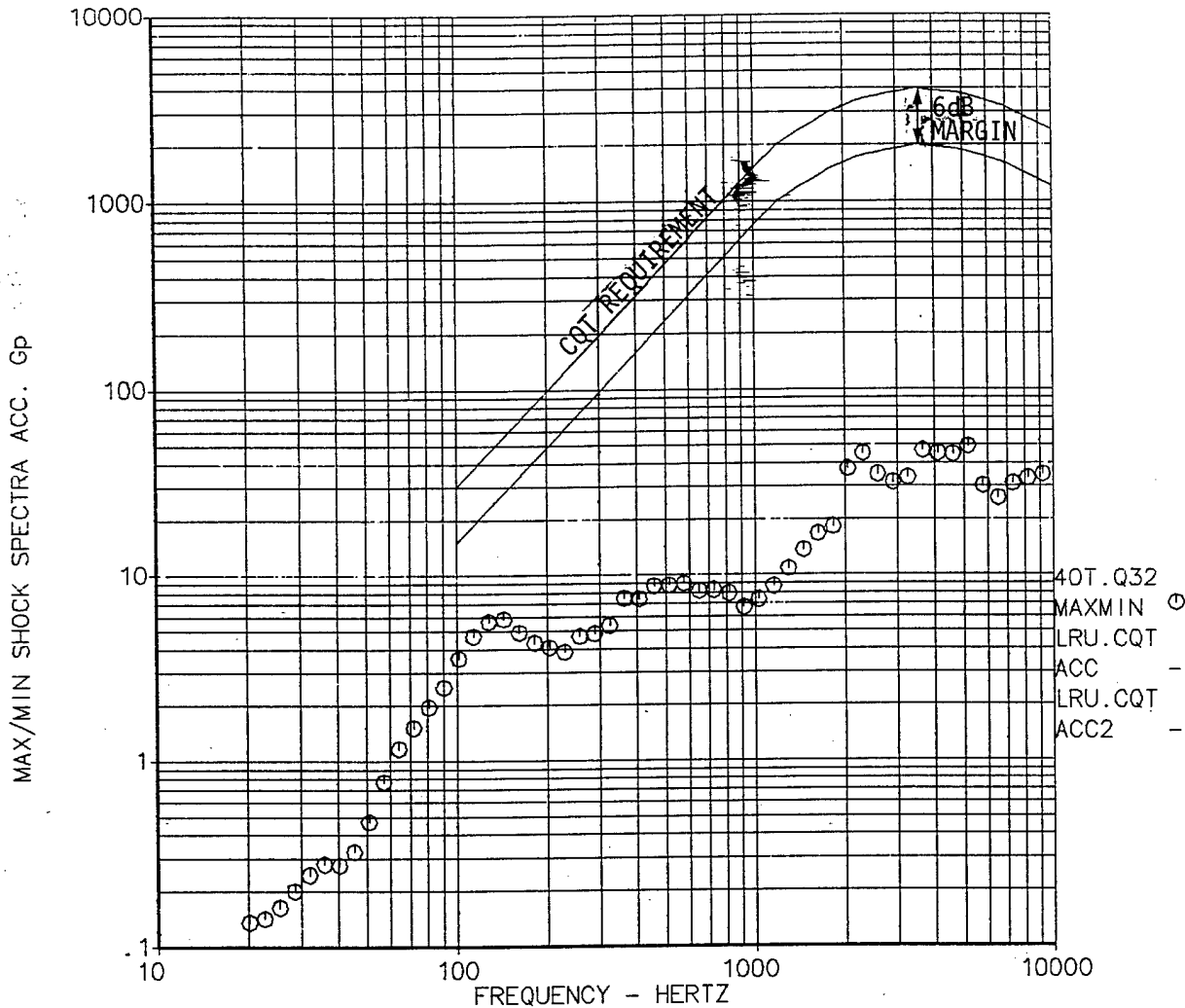
1-JUN-82 08:07:44

POWER AMP B

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40T
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FIGURE 2-172
SHOCK SPECTRA (Q = 10)
H40T QTV PYROSHOCK TEST 3 PULSE 2

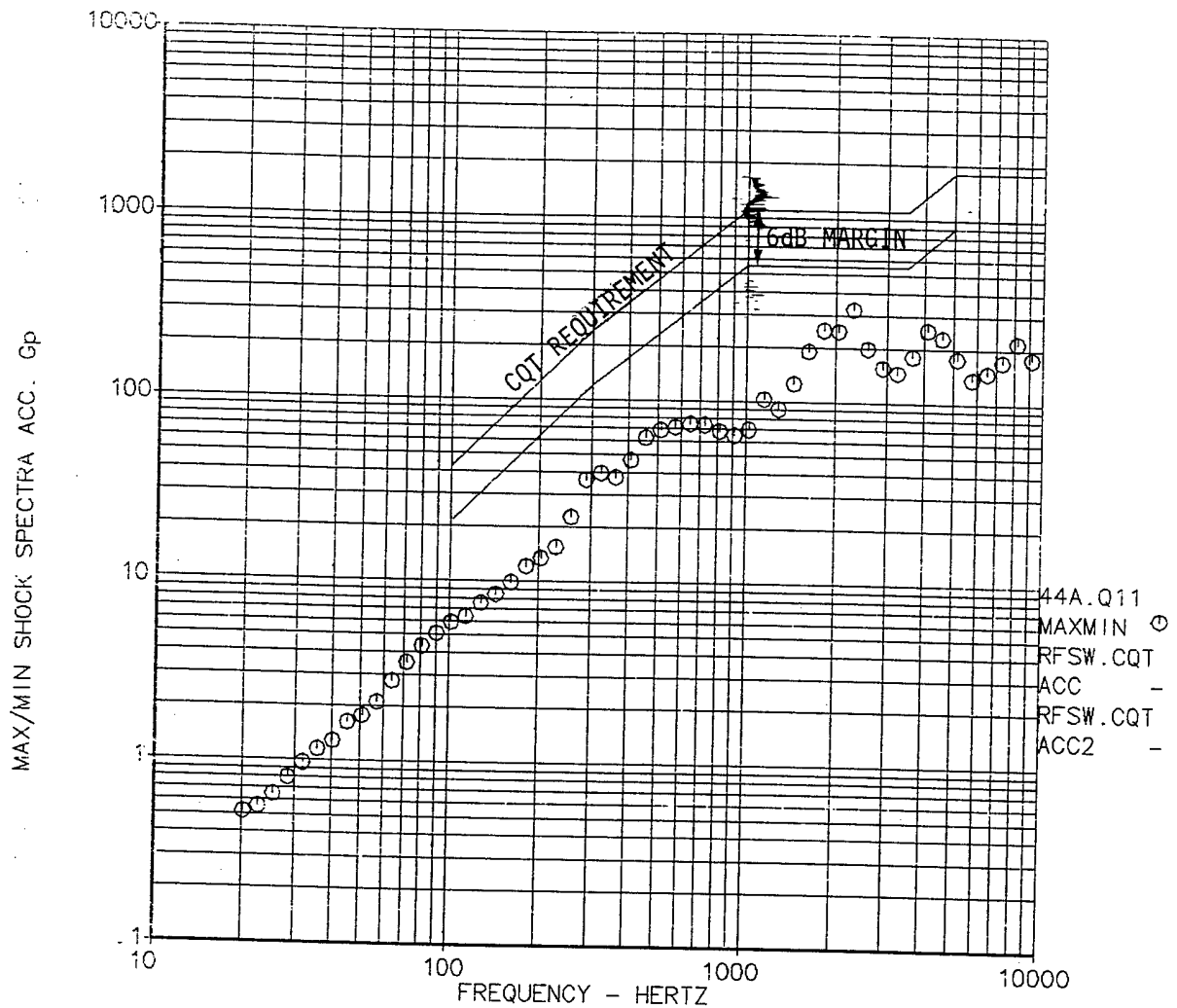


1-JUN-82 08:08:24

POWER AMP B

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 40T
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FIGURE 2-173
SHOCK SPECTRA (Q = 10)
H44A QTV PYROSHOCK TEST 1 PULSE 1



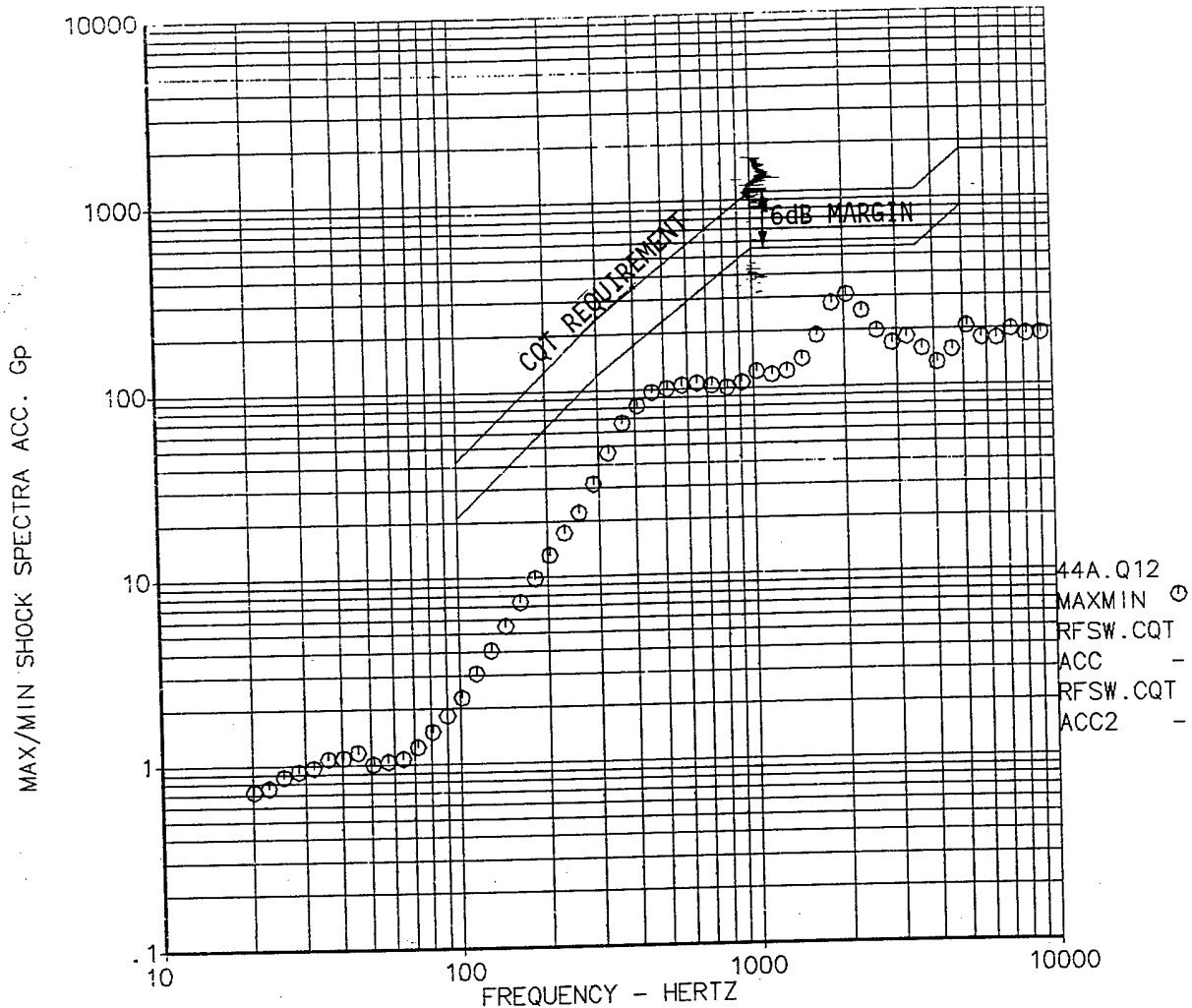
1-JUN-82 10:26:05

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44A
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FIGURE 2-174.
SHOCK SPECTRA (Q = 10)
H44A QTV PYROSHOCK TEST 1 PULSE 2



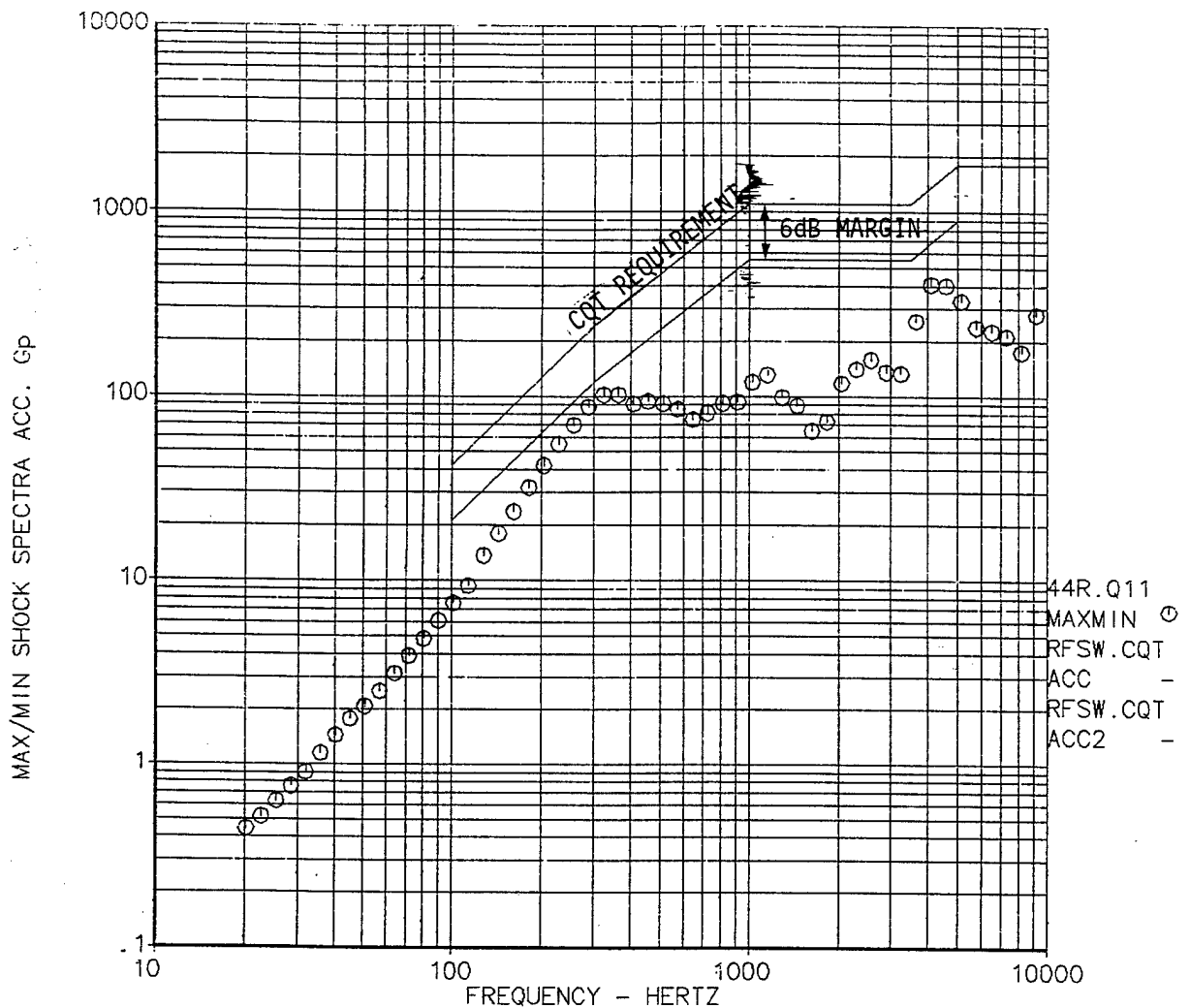
1-JUN-82 10:27:20

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44A
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FIGURE 2-175
SHOCK SPECTRA (Q = 10)
H44R QTV PYROSHOCK TEST 1 PULSE 1

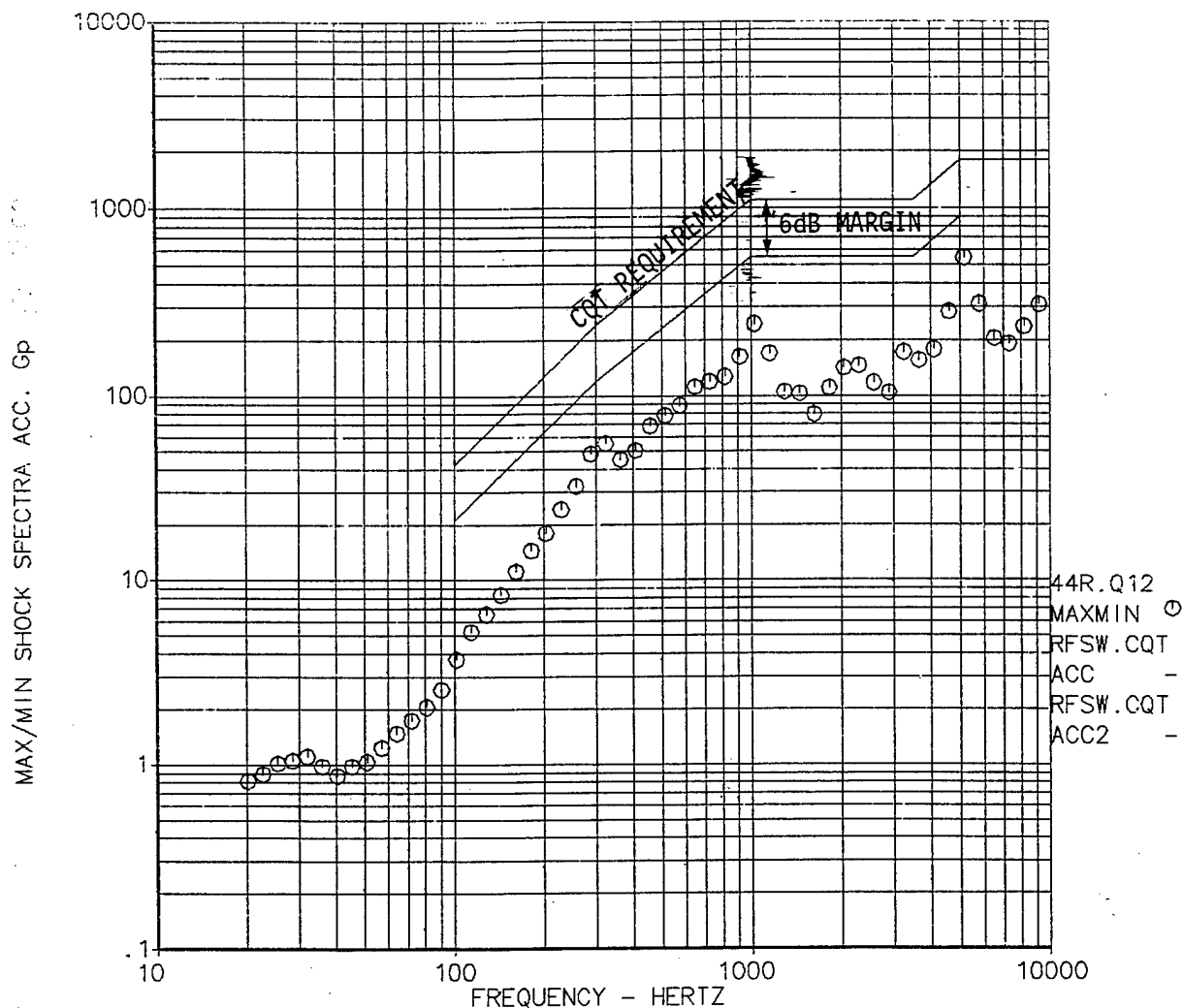


1-JUN-82 10:32:34

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 44R
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FIGURE 2-176
SHOCK SPECTRA (Q = 10)
H44R QTV PYROSHOCK TEST 1 PULSE 2



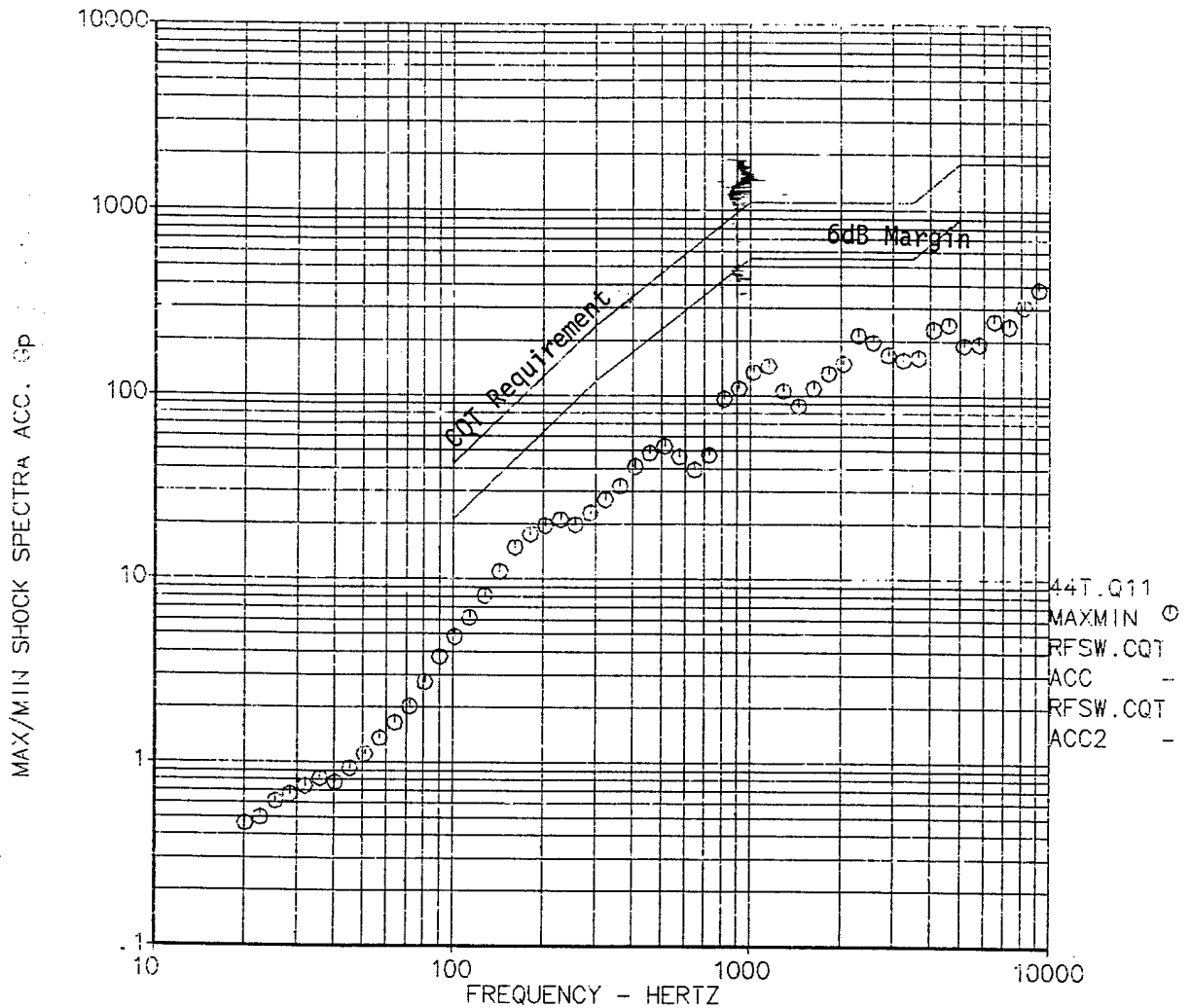
1-JUN-82 10:33:55

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44R
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FIGURE 2-177
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 1 PULSE 1

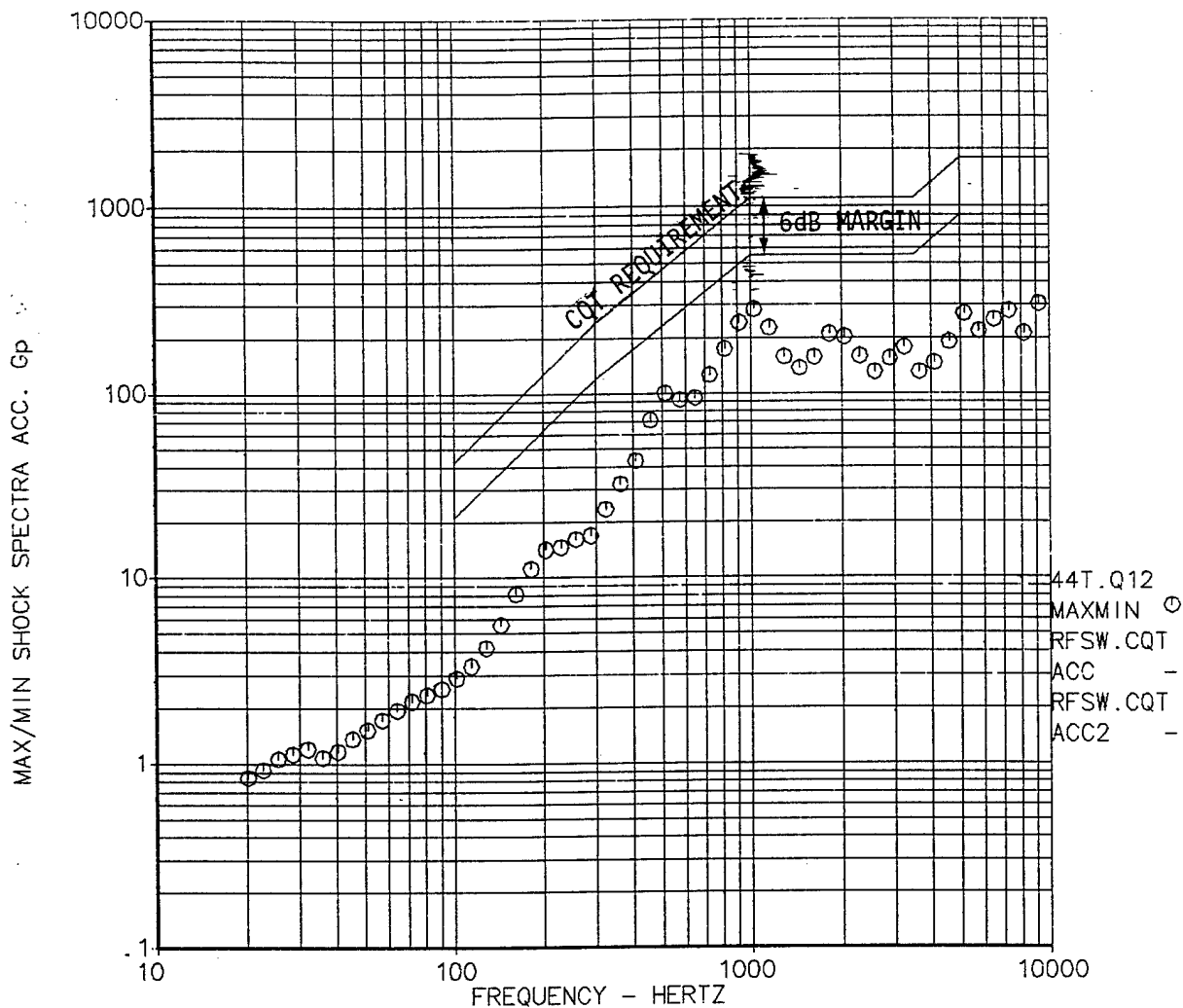


14-JUN-82 09:28:17

RF SWITCH

CALC	14JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44T
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FIGURE 2-178
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 1 PULSE 2

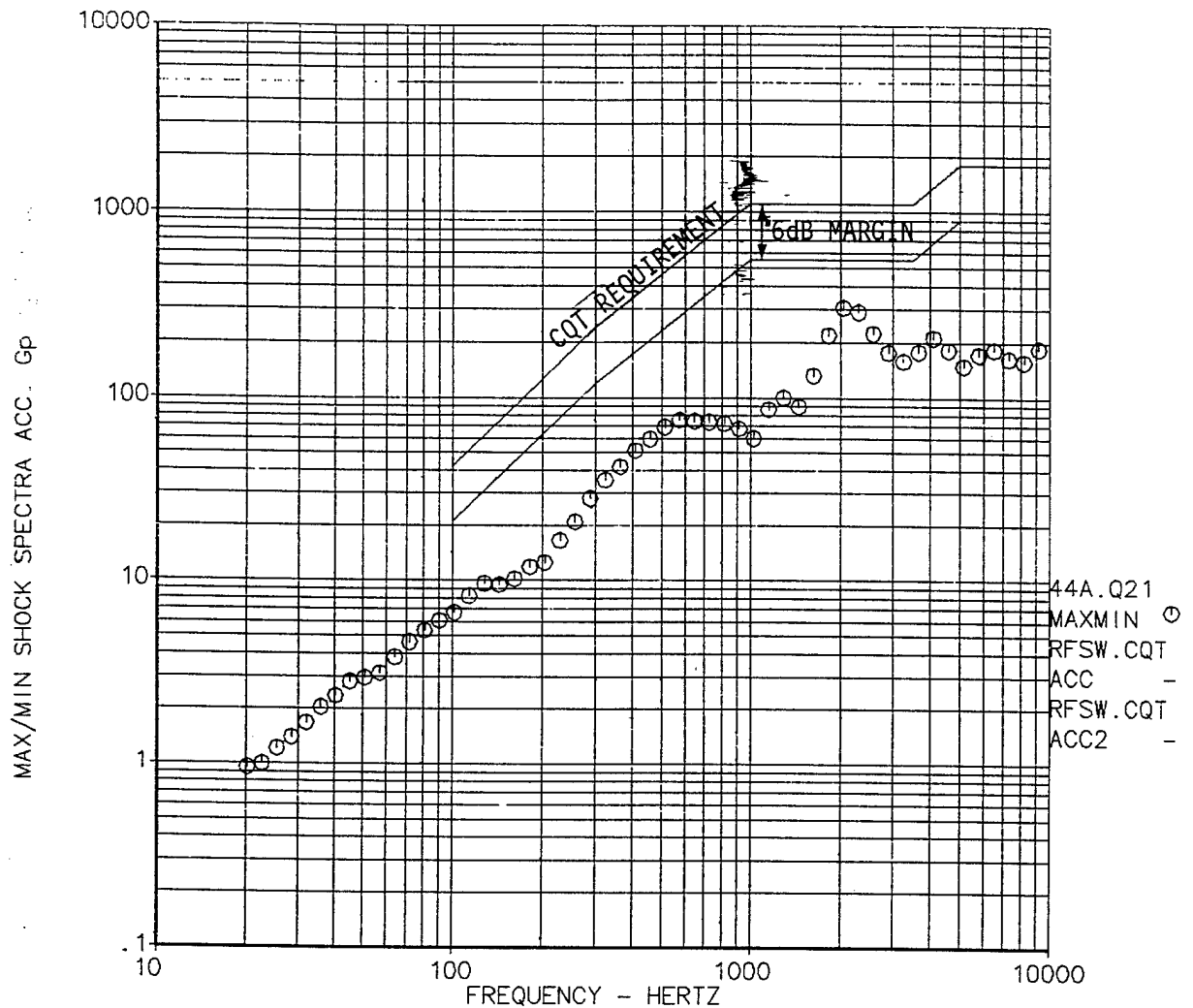


1-JUN-82 10:42:43

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44T
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FIGURE 2-179
SHOCK SPECTRA ($Q = 10$)
H44A QTV PYROSHOCK TEST 2 PULSE 1

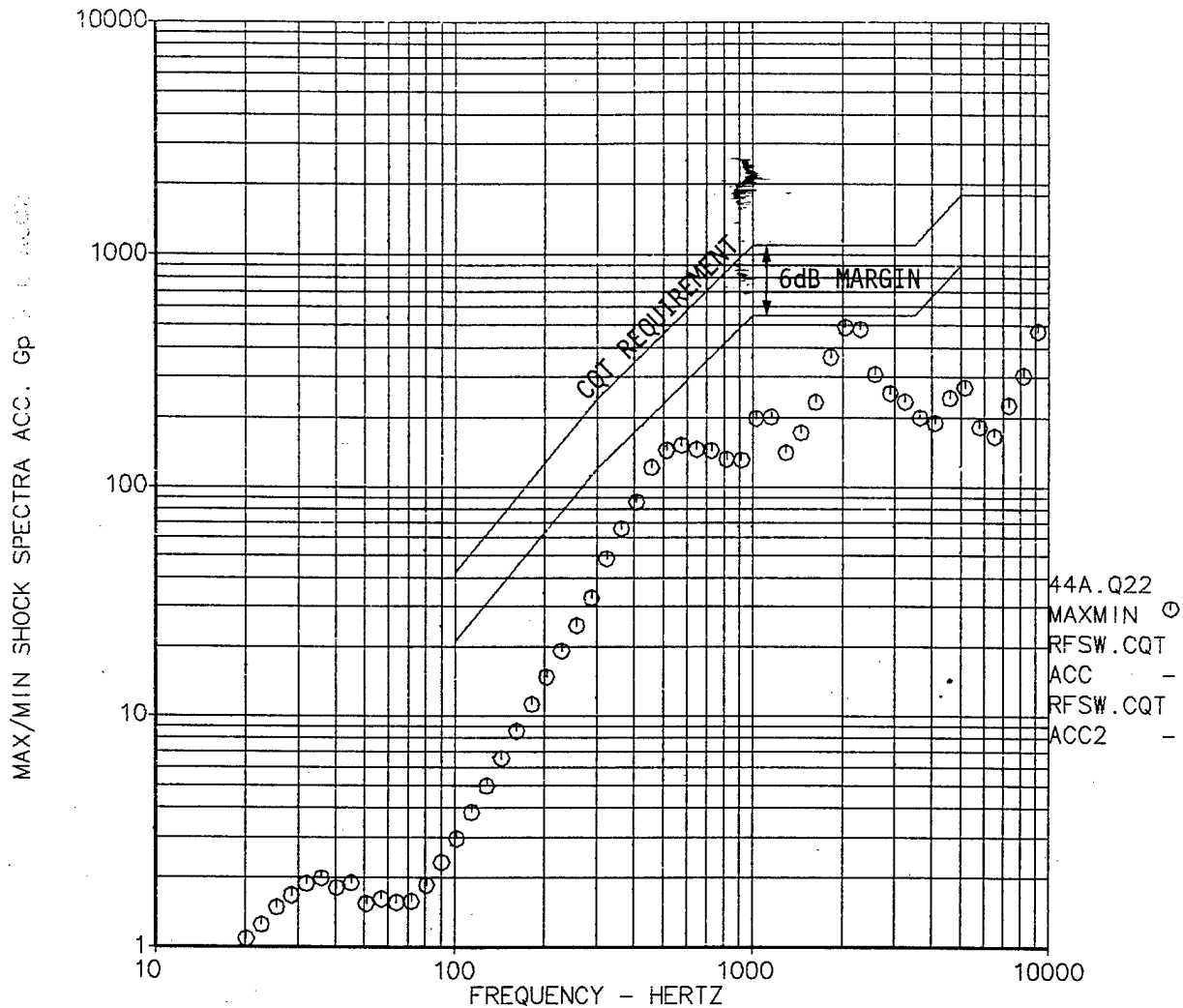


1-JUN-82 10:28:29

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44A
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FIGURE 2-180
SHOCK SPECTRA (Q = 10)
H44A QTV PYROSHOCK TEST 2 PULSE 2

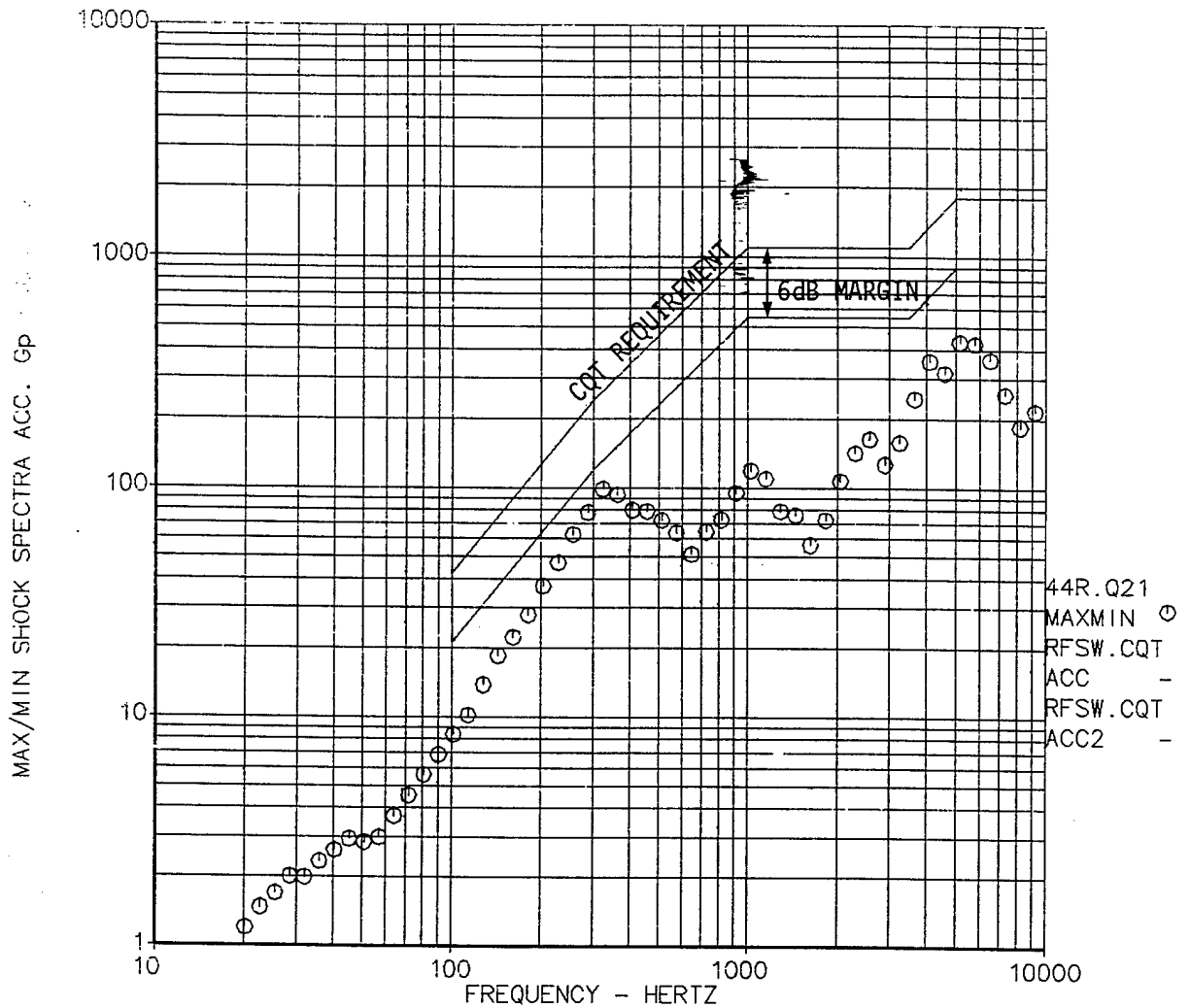


1-JUN-82 10:29:49

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44A
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FIGURE 2-181
SHOCK SPECTRA ($Q = 10$)
H44R QTV PYROSHOCK TEST 2 PULSE 1

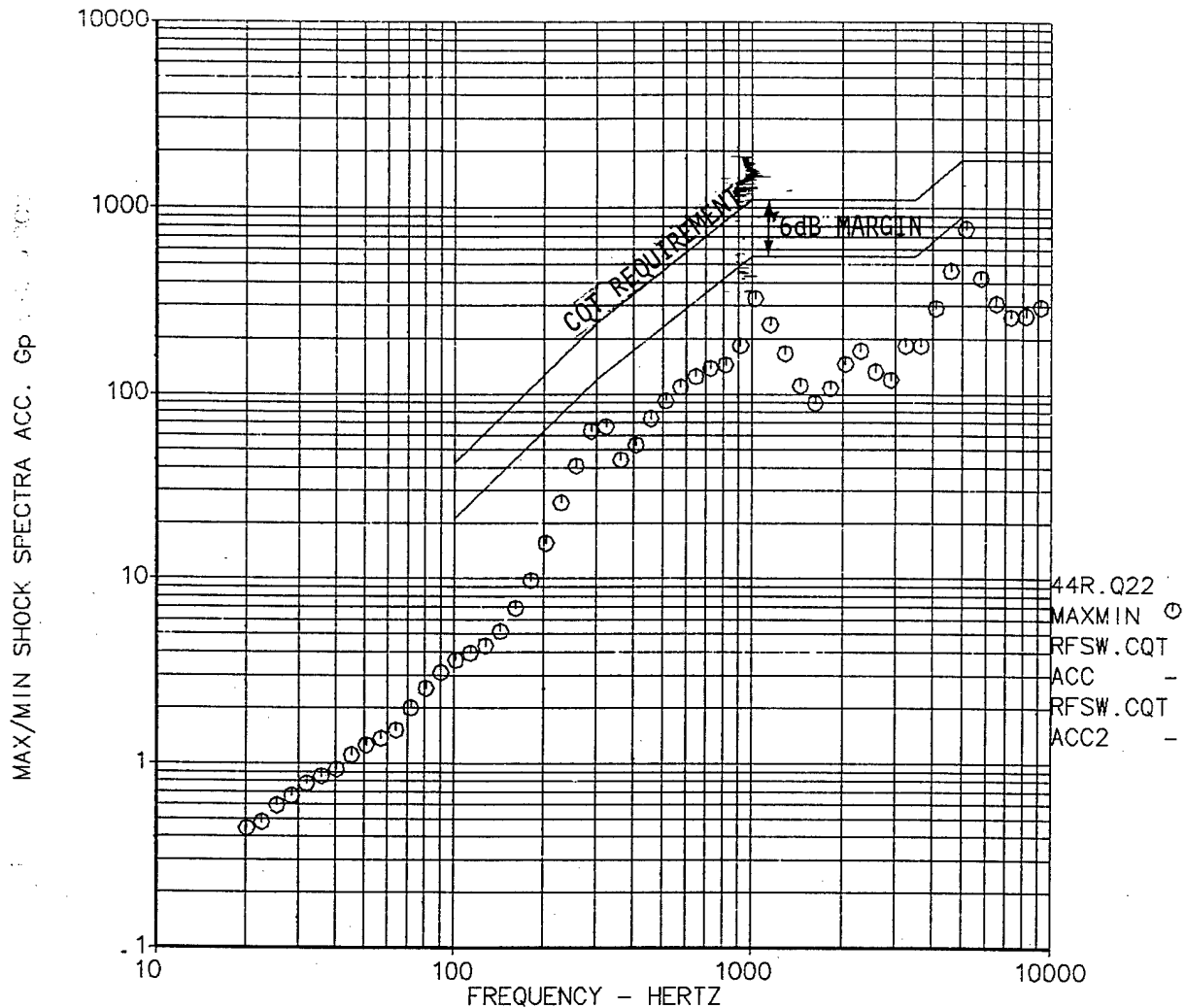


1-JUN-82 10:35:20

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44R
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FIGURE 2-182
SHOCK SPECTRA ($Q = 10$)
H44R QTV PYROSHOCK TEST 2 PULSE 2



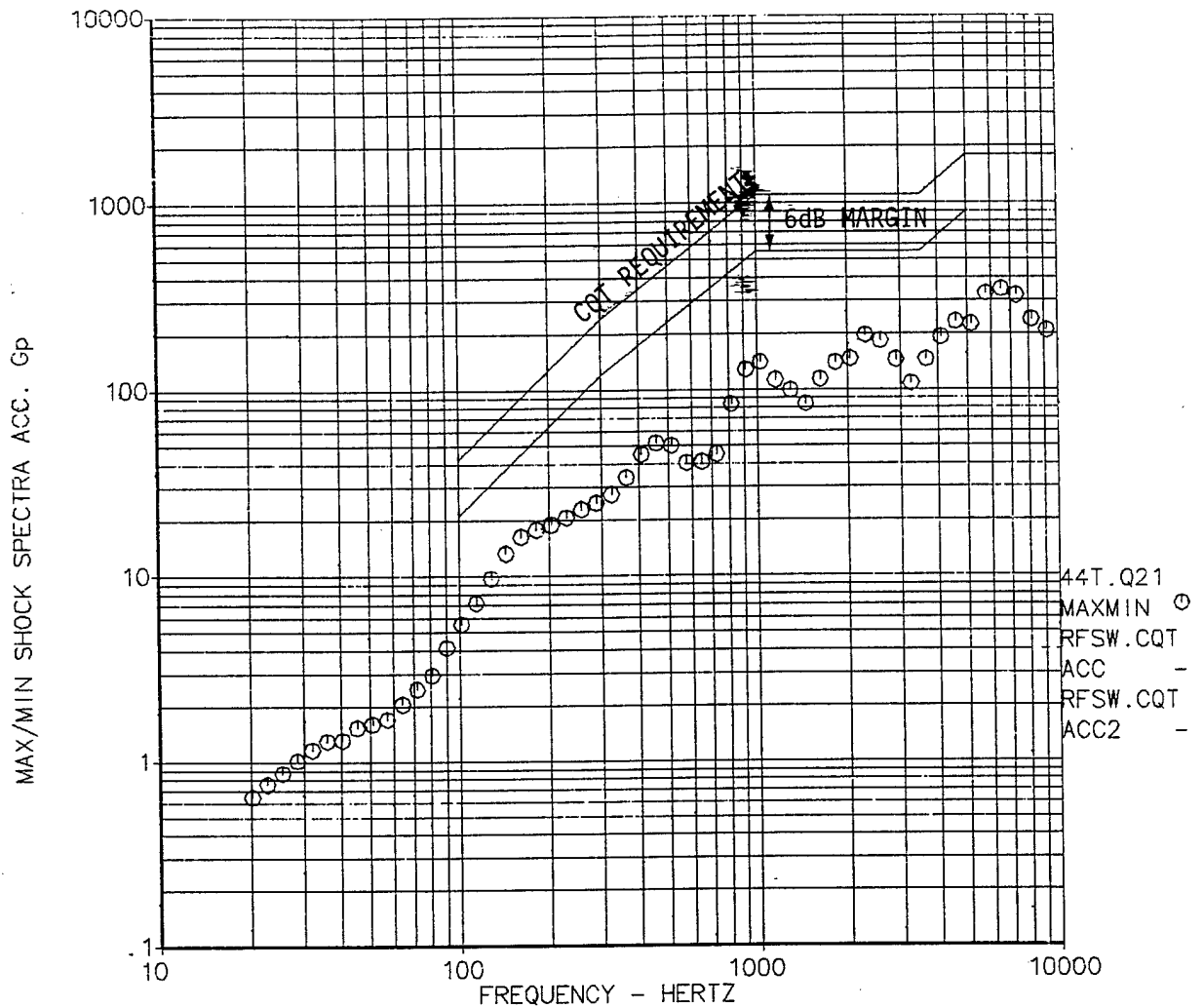
1-JUN-82 10:36:52

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44R
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FIGURE 2-183
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 2 PULSE 1

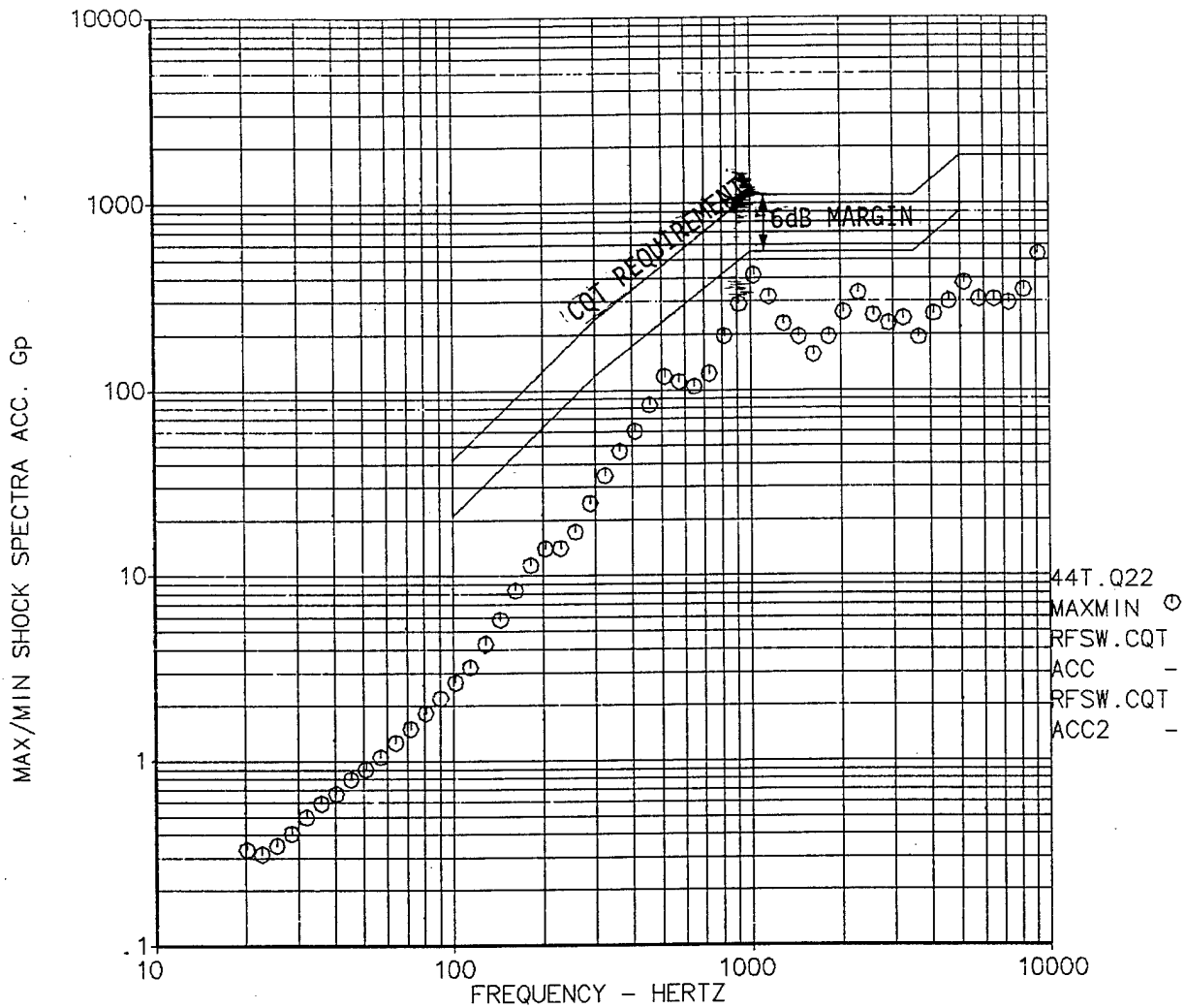


1-JUN-82 10:43:23

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 44T
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FIGURE 2-184
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 2 PULSE 2

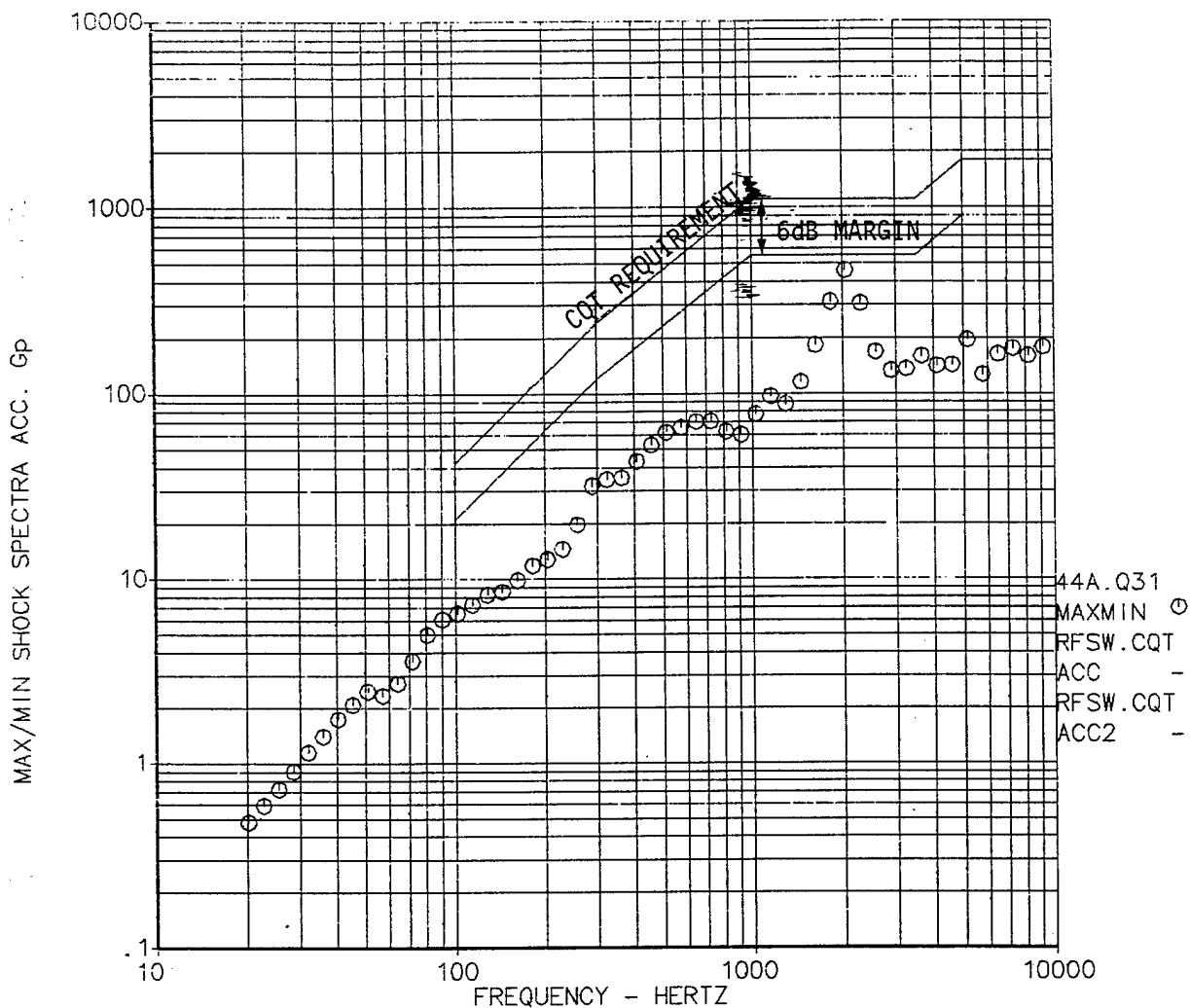


1-JUN-82 10:44:07

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44T
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FIGURE 2-185
SHOCK SPECTRA (Q = 10)
H44A QTV PYROSHOCK TEST 3 PULSE 1

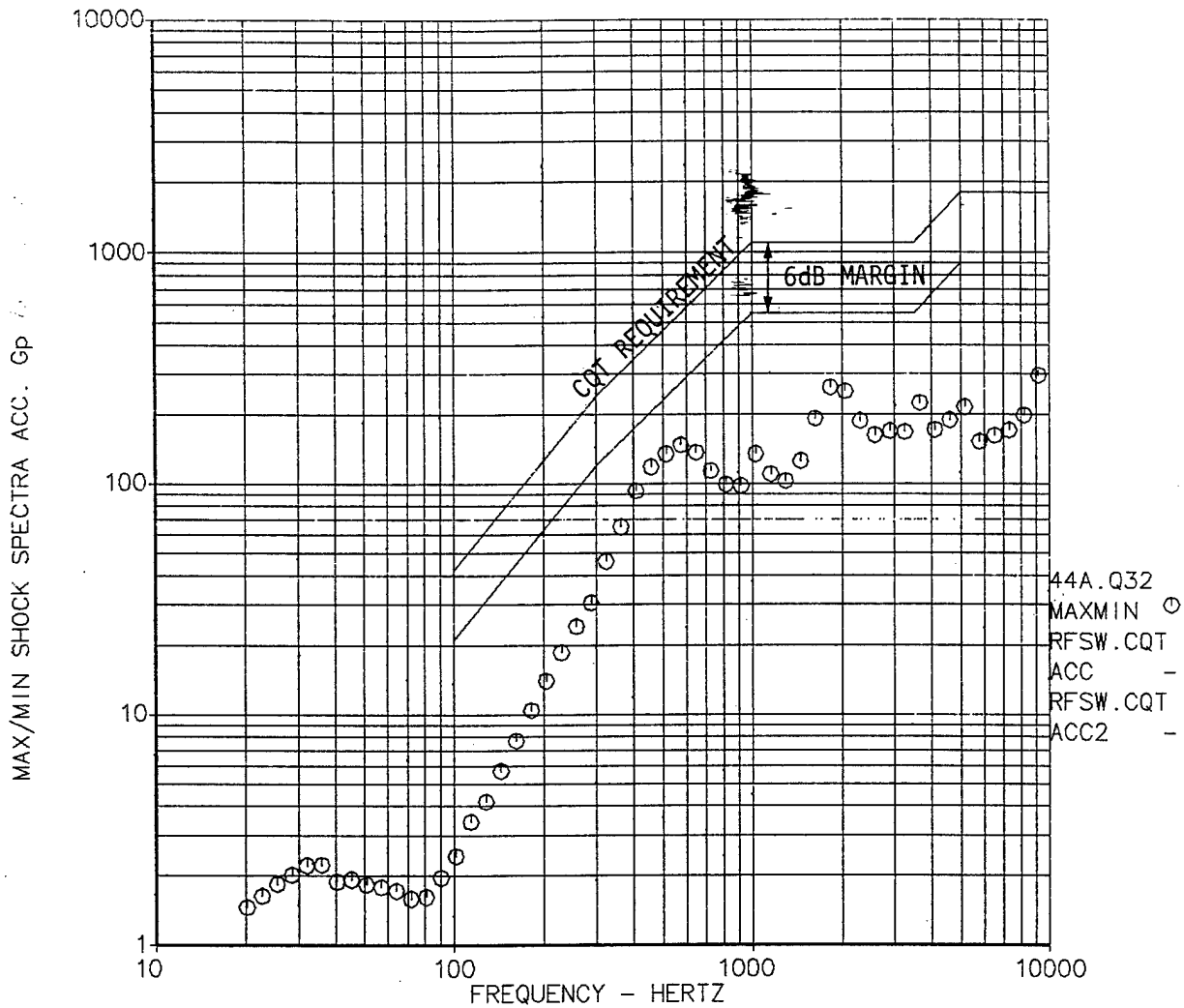


1-JUN-82 10:30:37

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44A
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FIGURE 2-186
SHOCK SPECTRA (Q = 10)
H44A QTV PYROSHOCK TEST 3 PULSE 2

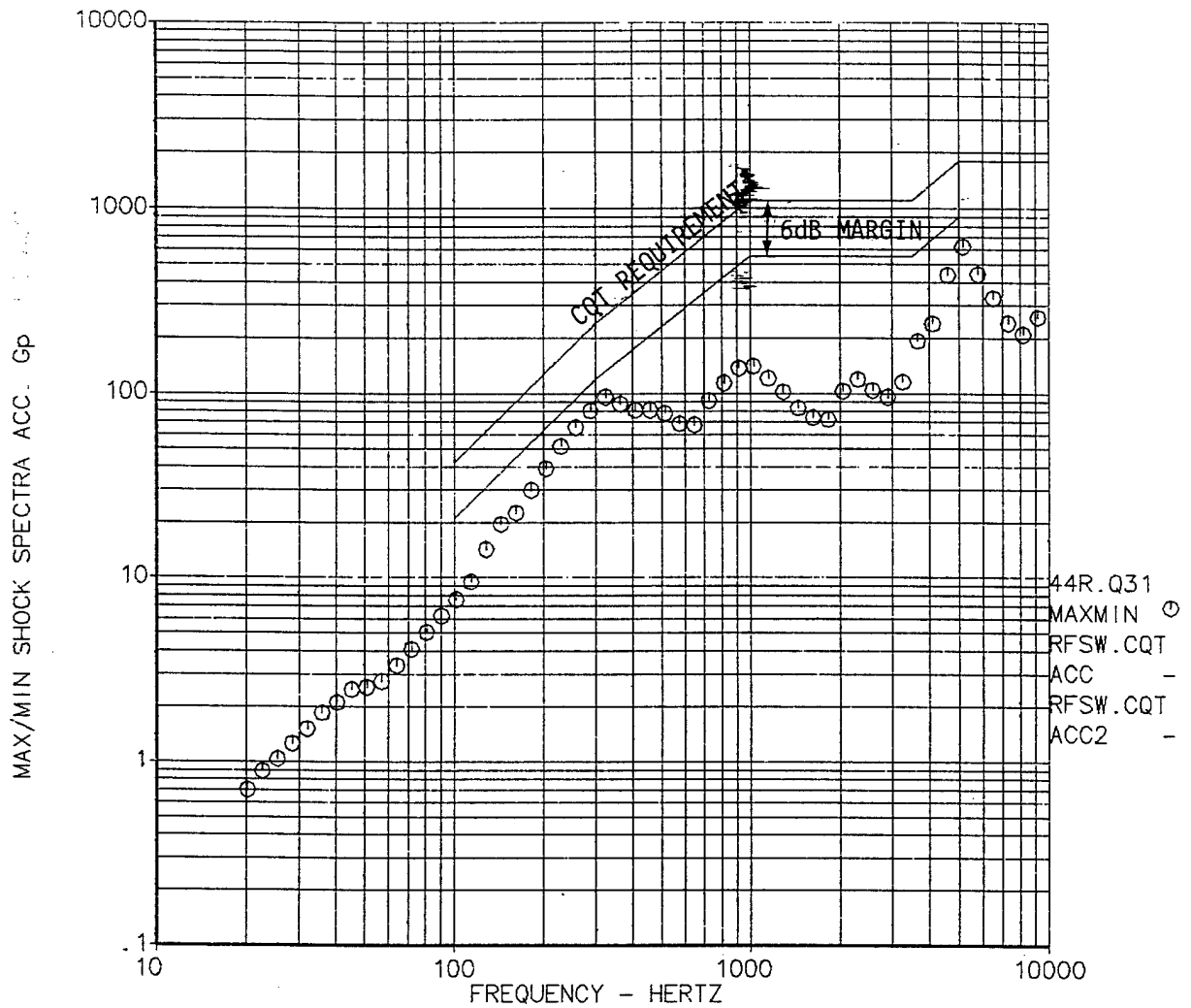


1-JUN-82 10:31:25

RF SWITCH

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44A
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FIGURE 2-187
SHOCK SPECTRA (Q = 10)
H44R QTV PYROSHOCK TEST 3 PULSE 1

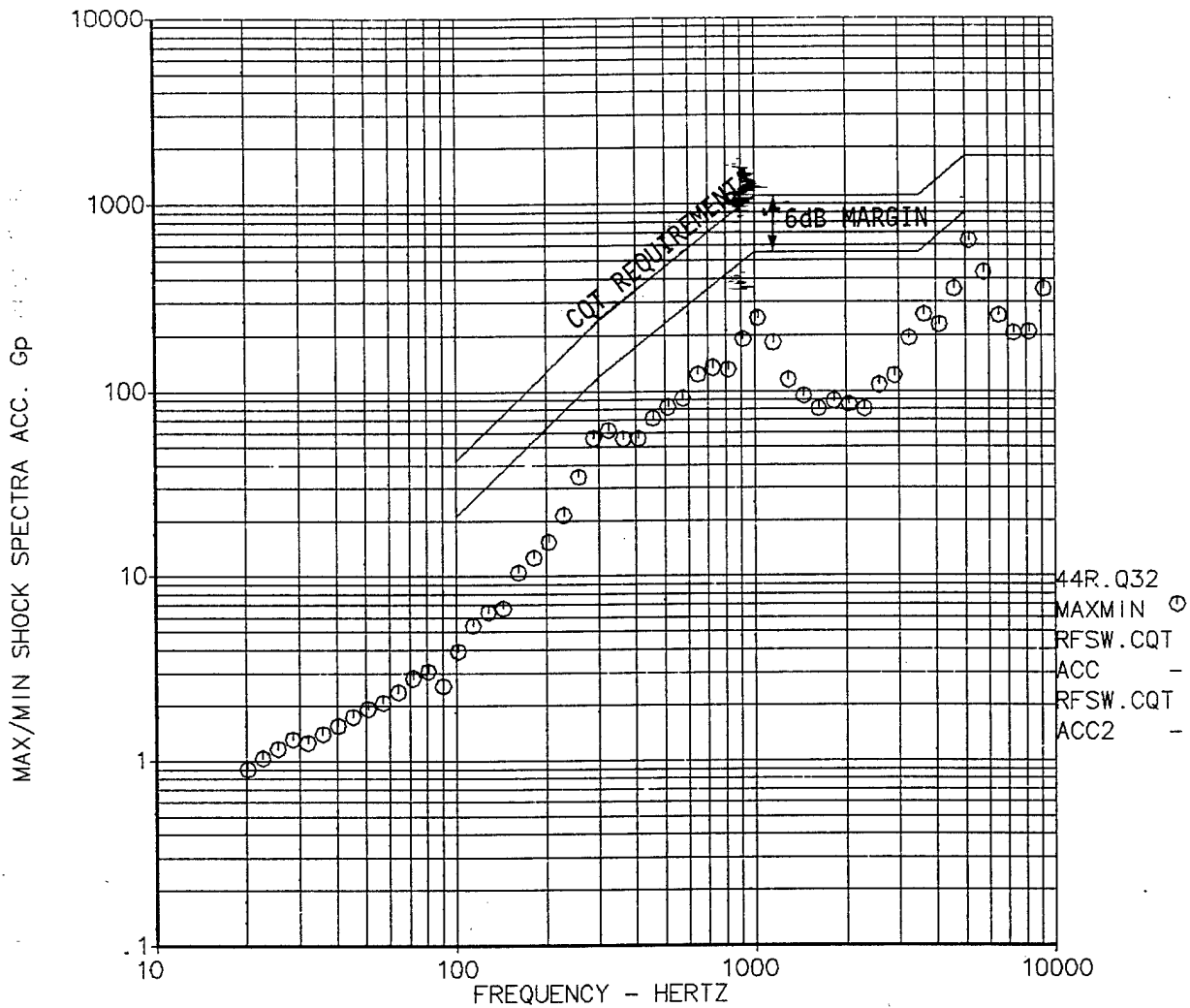


1-JUN-82 10:38:24

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44R
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FIGURE 2-188
SHOCK SPECTRA (Q = 10)
H44R QTV PYROSHOCK TEST 3 PULSE 2

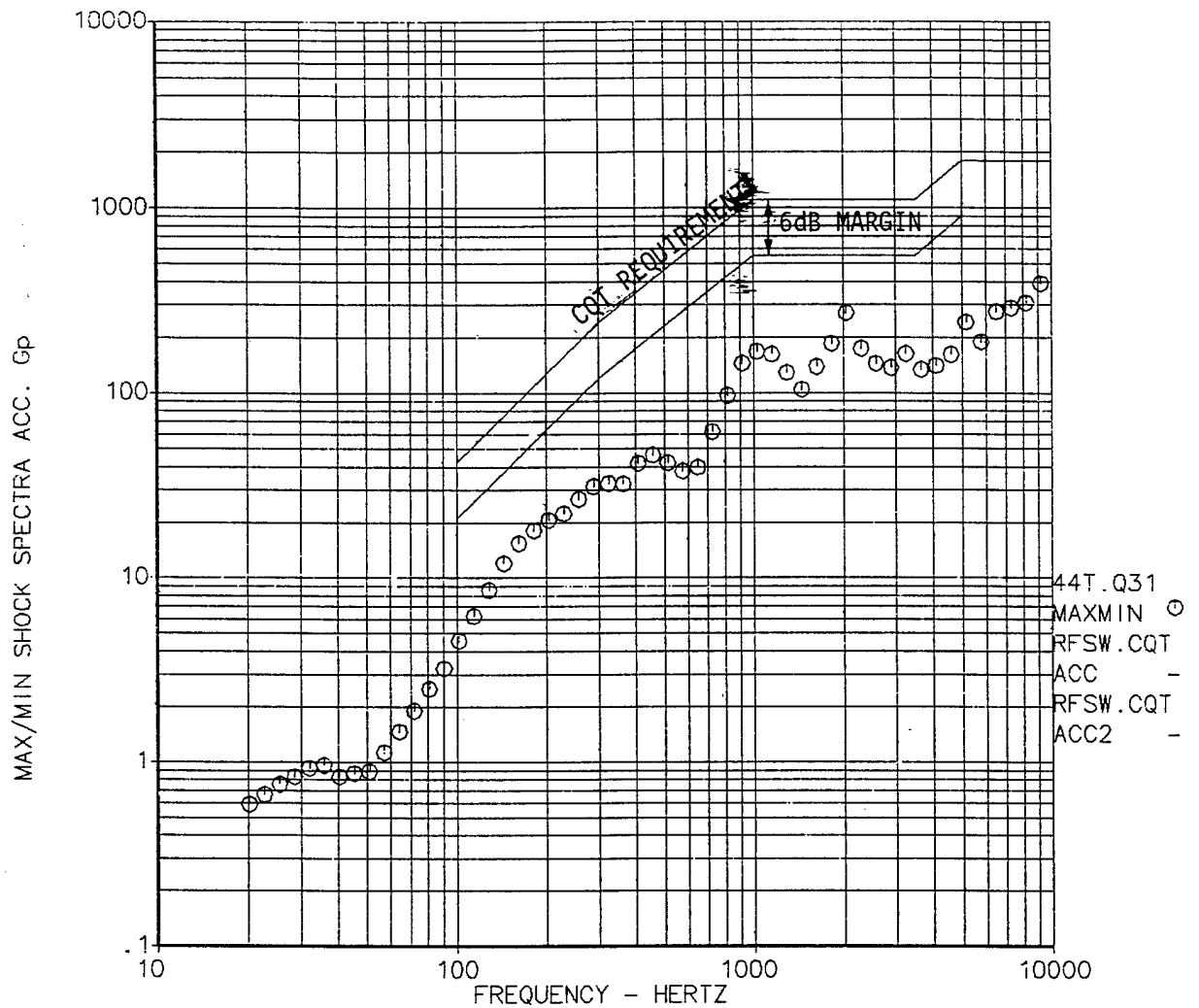


1-JUN-82 10:39:45

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44R
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FIGURE 2-189
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 3 PULSE 1

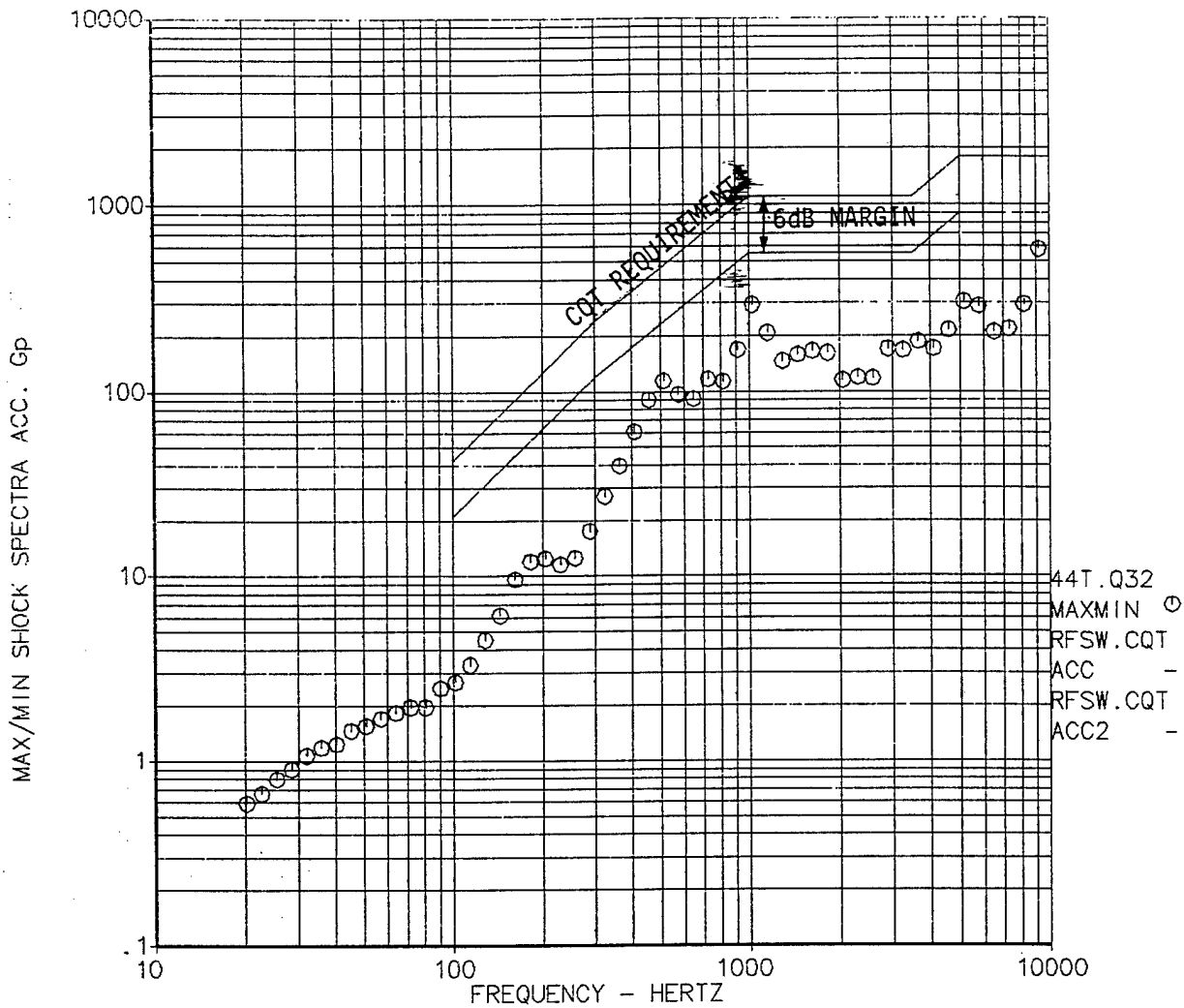


1-JUN-82 10:44:54

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 44T
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FIGURE 2-190
SHOCK SPECTRA (Q = 10)
H44T QTV PYROSHOCK TEST 3 PULSE 2



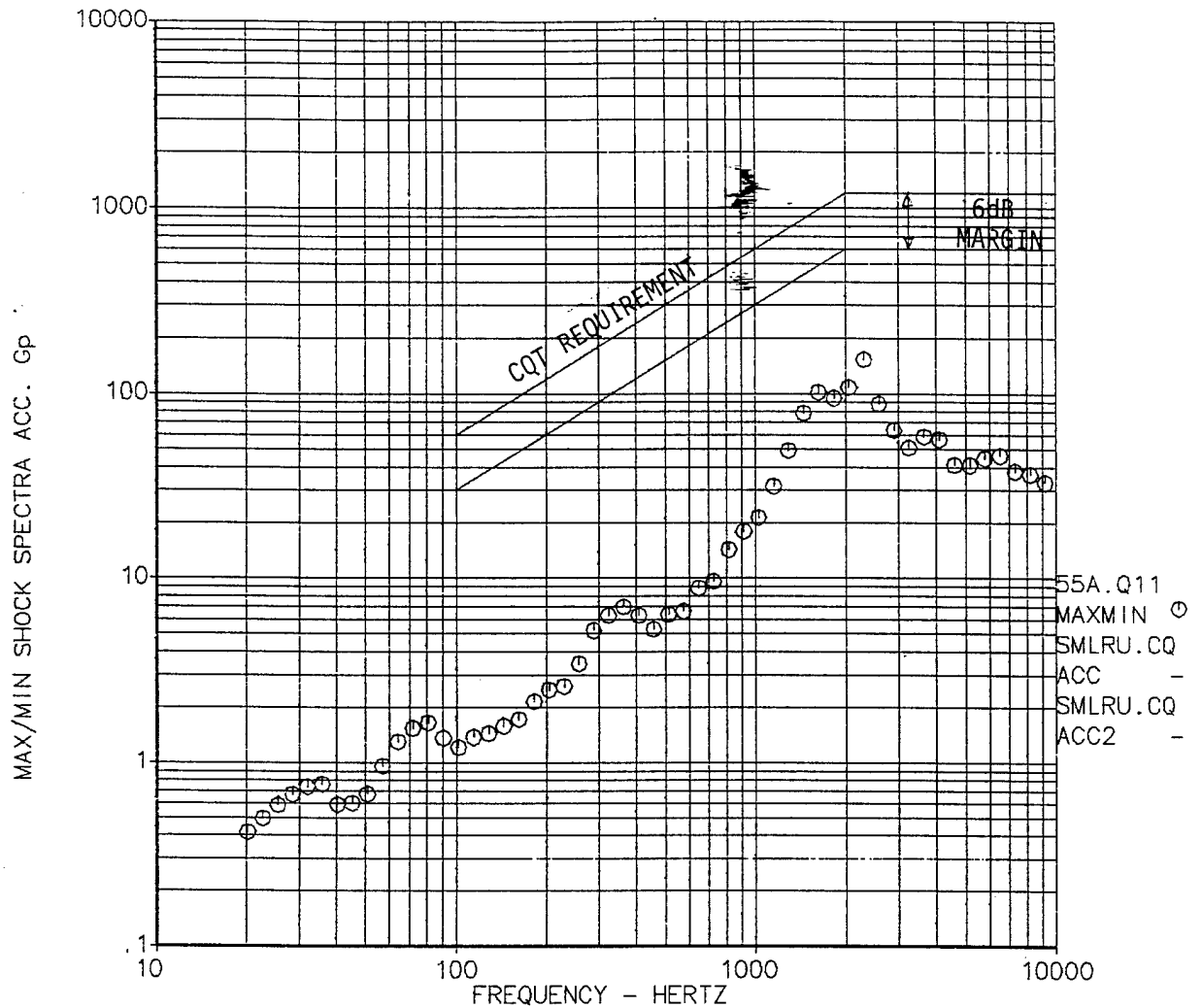
1-JUN-82 10:45:57

RF SWITCH

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 44T
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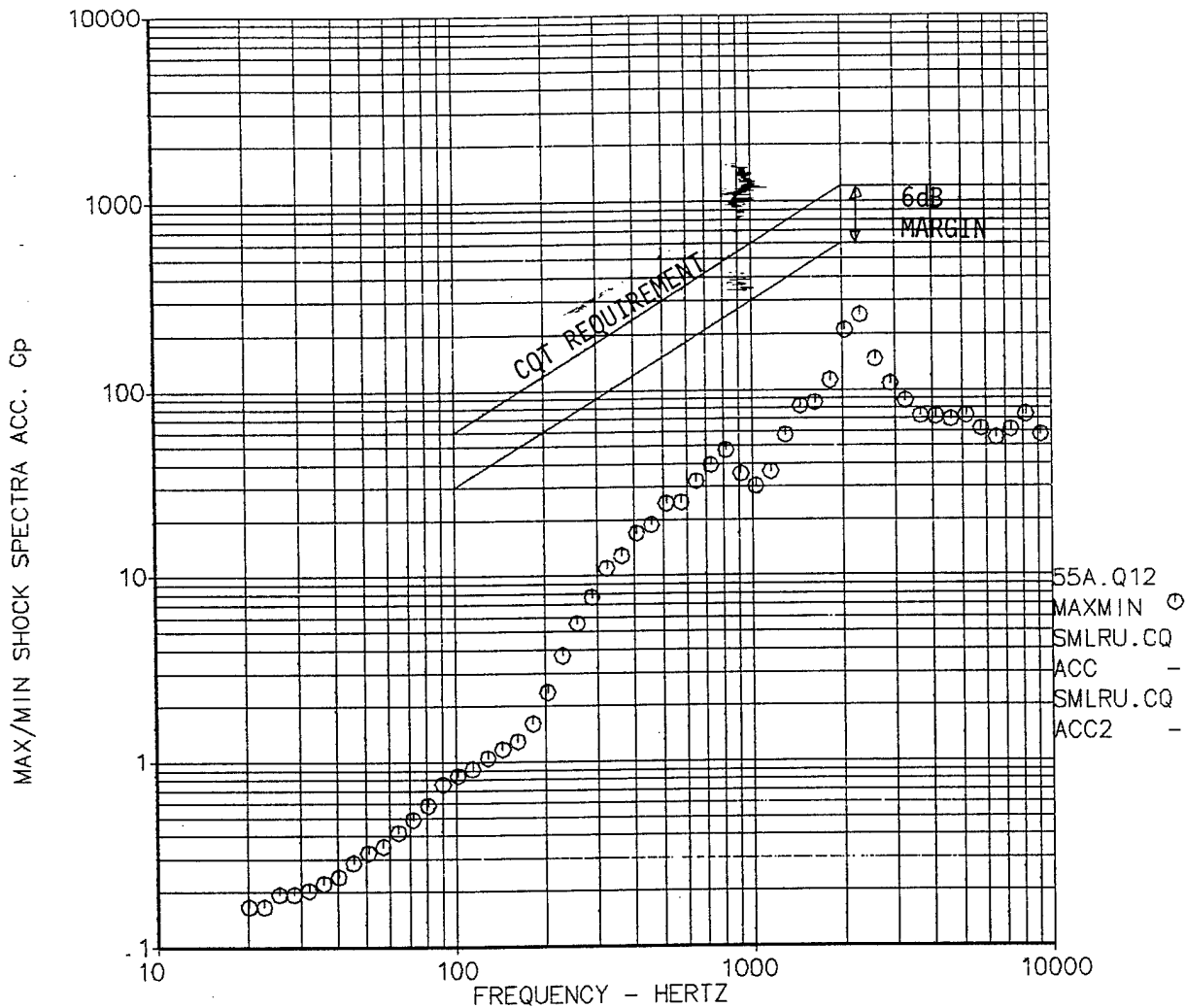
FIGURE 2-191
SHOCK SPECTRA (Q = 10)
H55A QTV PYROSHOCK TEST 1 PULSE 1



25-JUN-82 12:46:38

CALC		25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 55A
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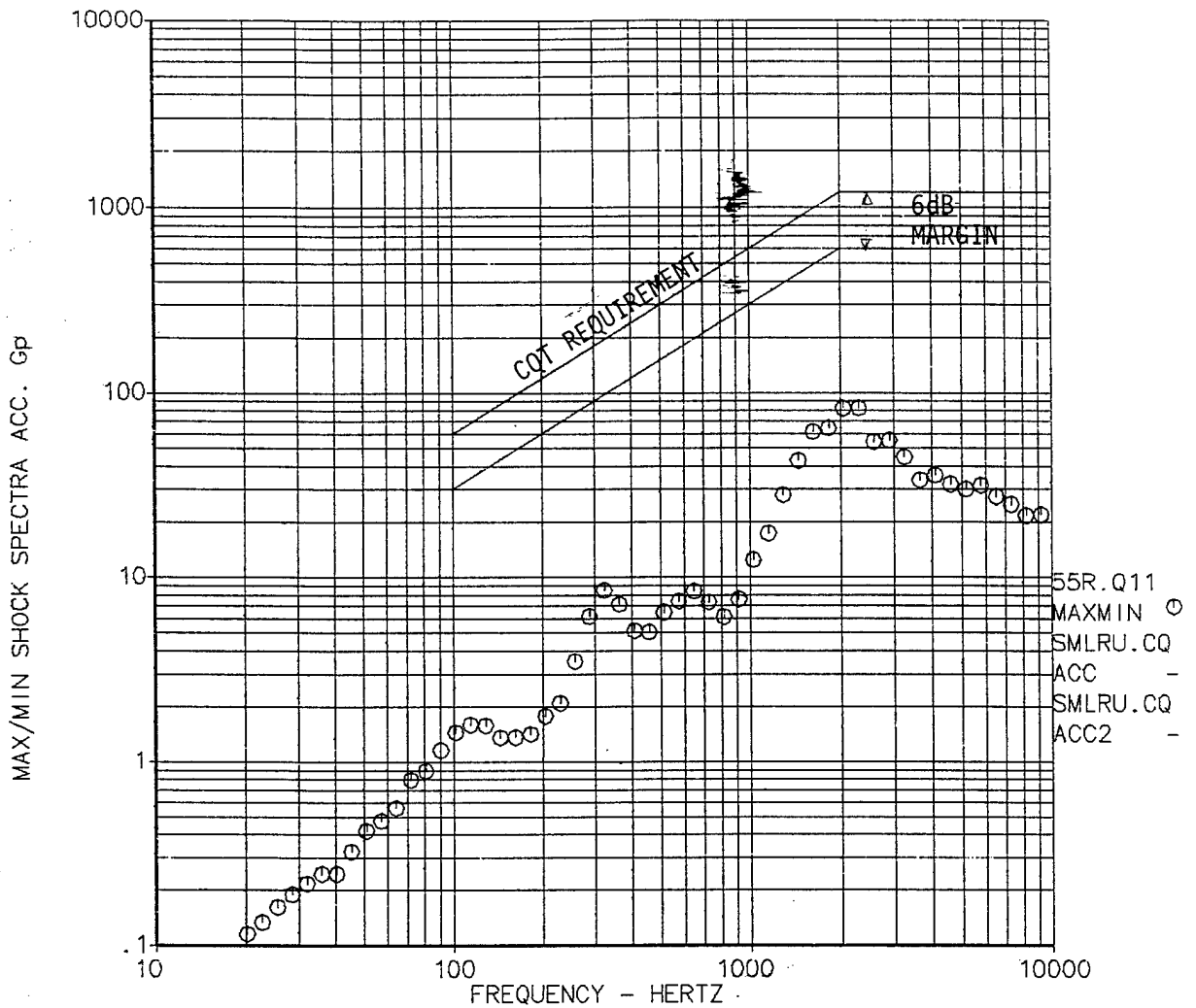
FIGURE 2-192
SHOCK SPECTRA (Q = 10)
H55A QTV PYROSHOCK TEST 1 PULSE 2



25-JUN-82 12:49:05

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	ACC 55A
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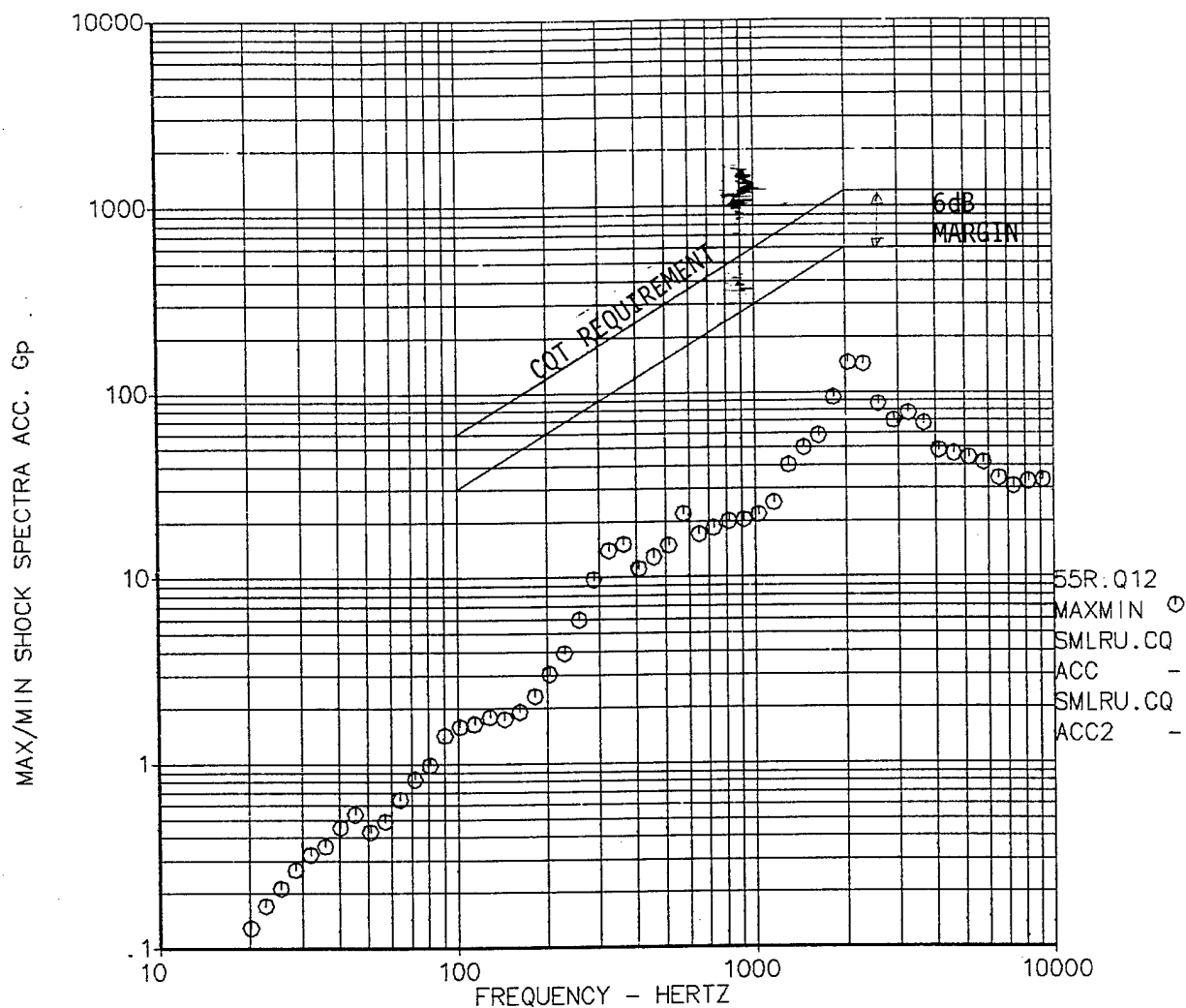
FIGURE 2-193
SHOCK SPECTRA (Q = 10)
H55R QTV PYROSHOCK TEST 1 PULSE 1



25-JUN-82 12:51:19

CALC		25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 55R
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APPD.						
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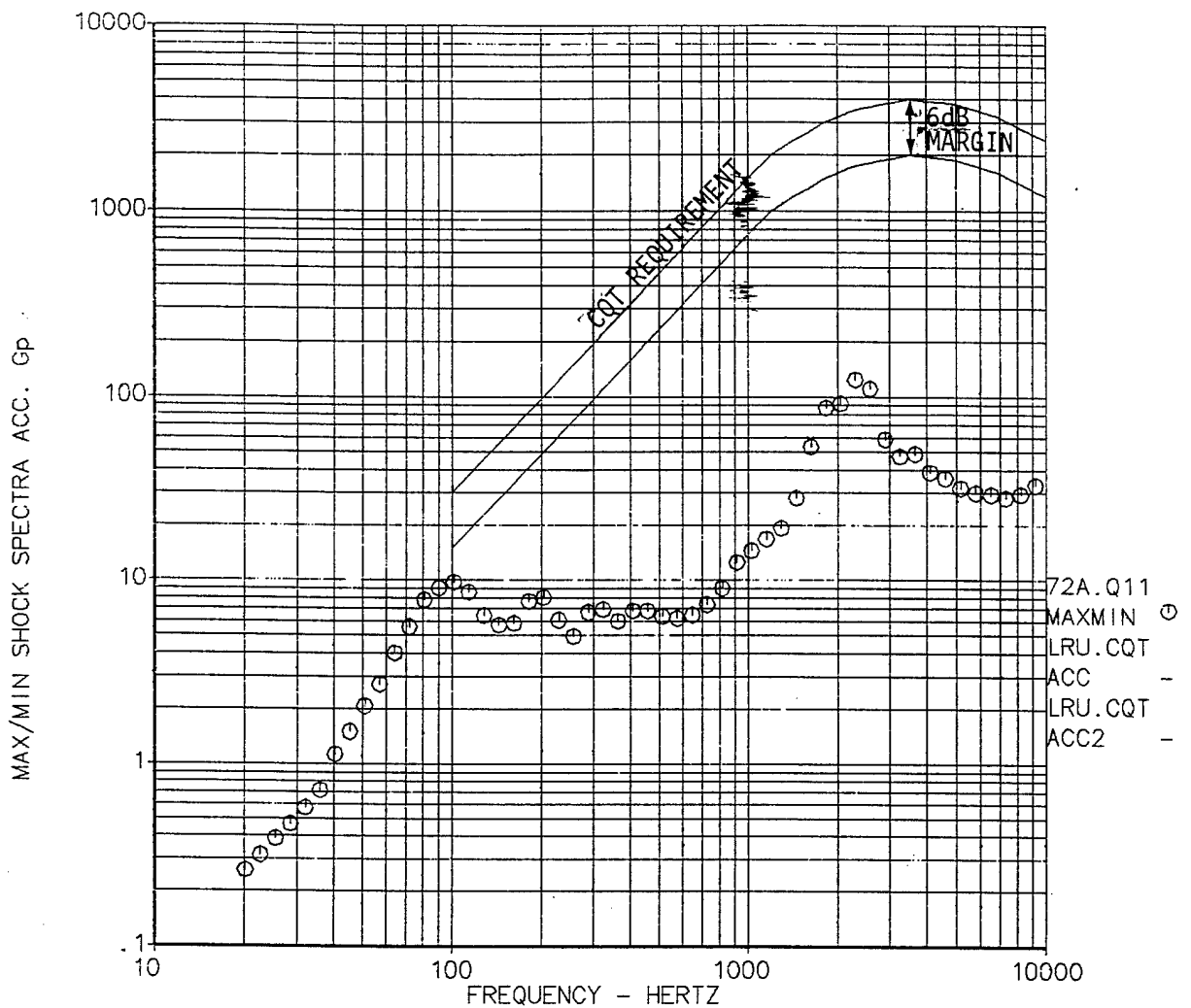
FIGURE 2-194
SHOCK SPECTRA (Q = 10)
H55R QTV PYROSHOCK TEST 1 PULSE 2



25-JUN-82 12:53:12

CALC	25JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 55R
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FIGURE 2-195
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 1 PULSE 1



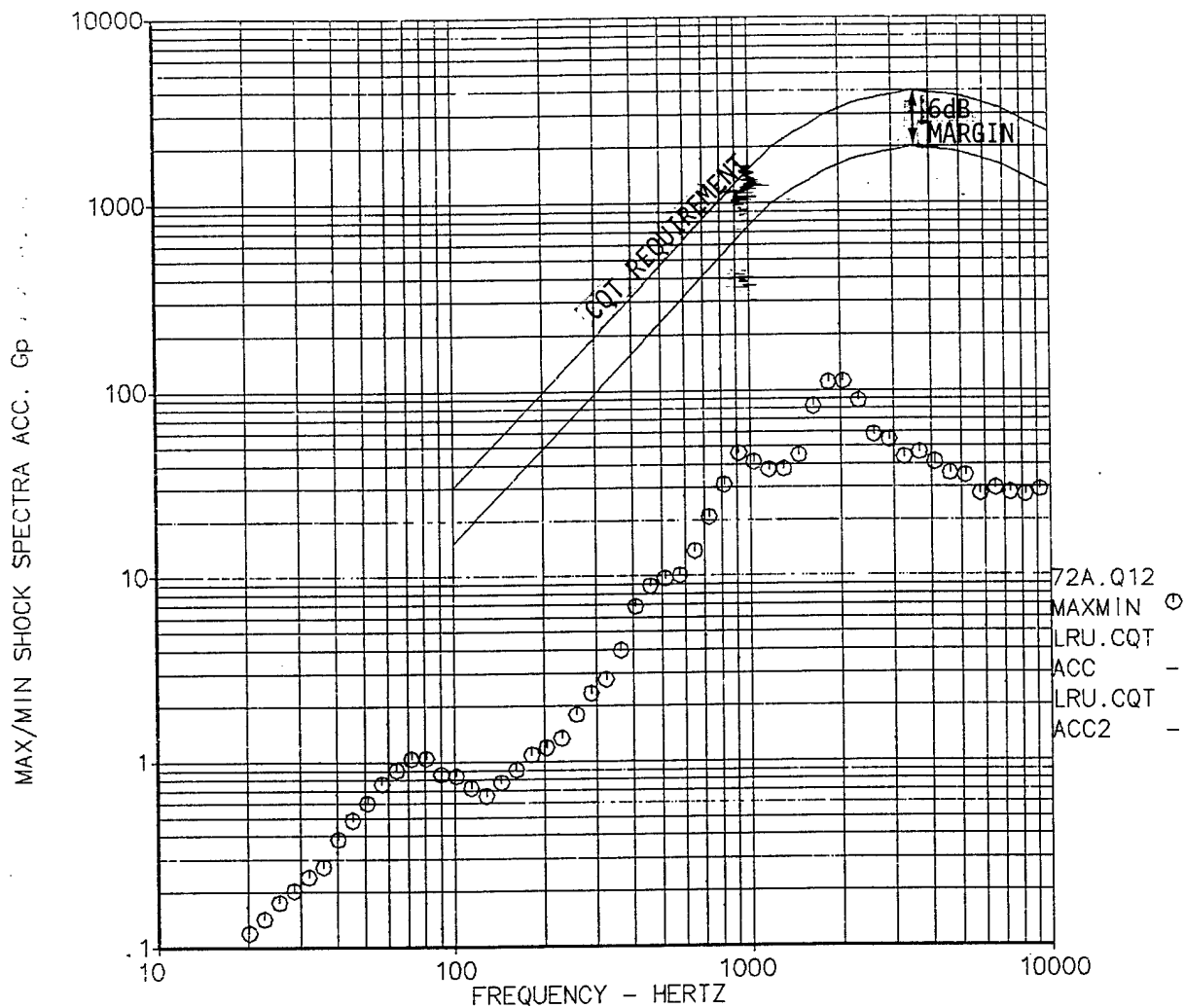
1-JUN-82 08:18:03

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72A
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FIGURE 2-196
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 1 PULSE 2

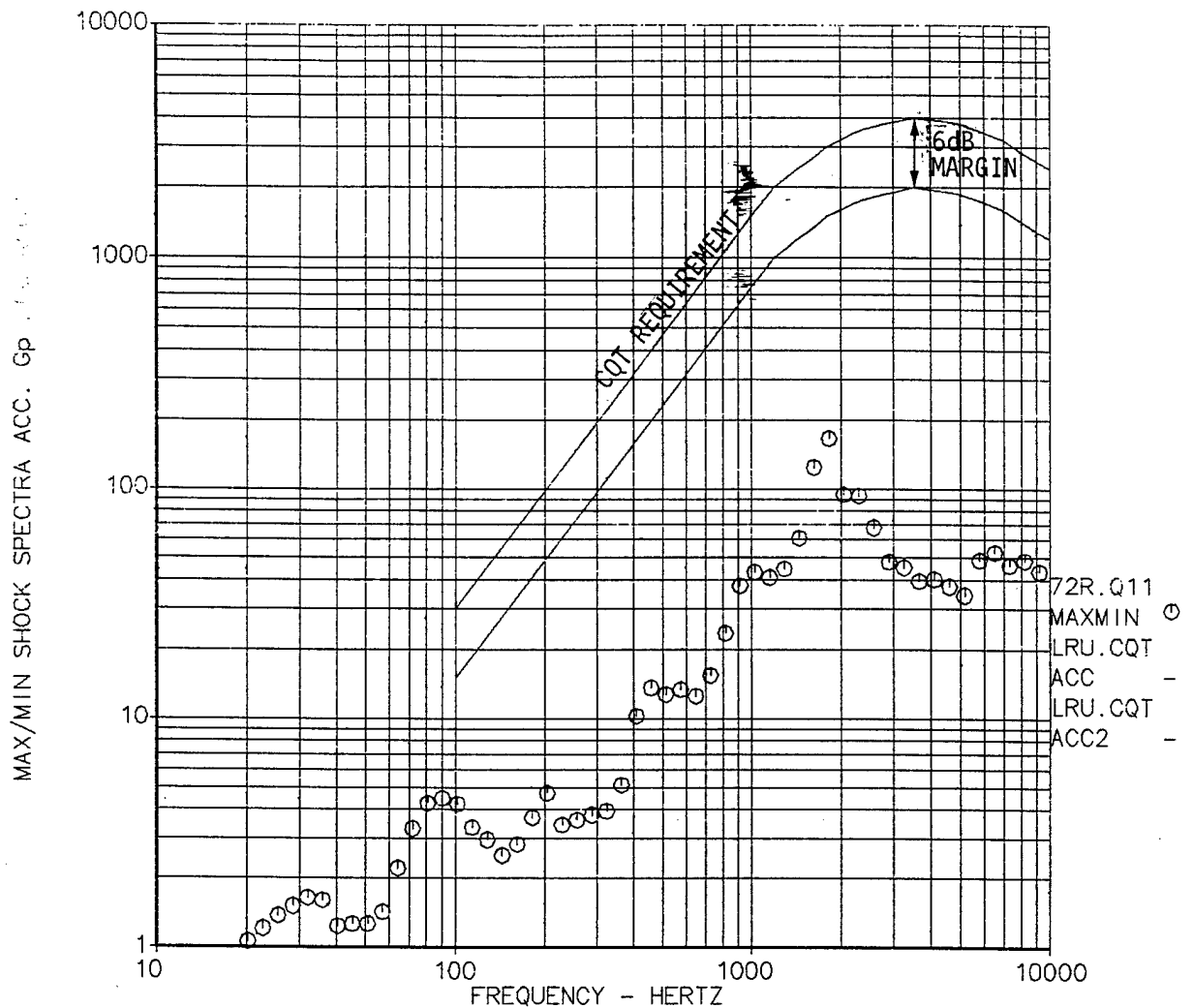


1-JUN-82 08:21:27

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72A
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APPD.						
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FIGURE 2-197
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 1 PULSE 1

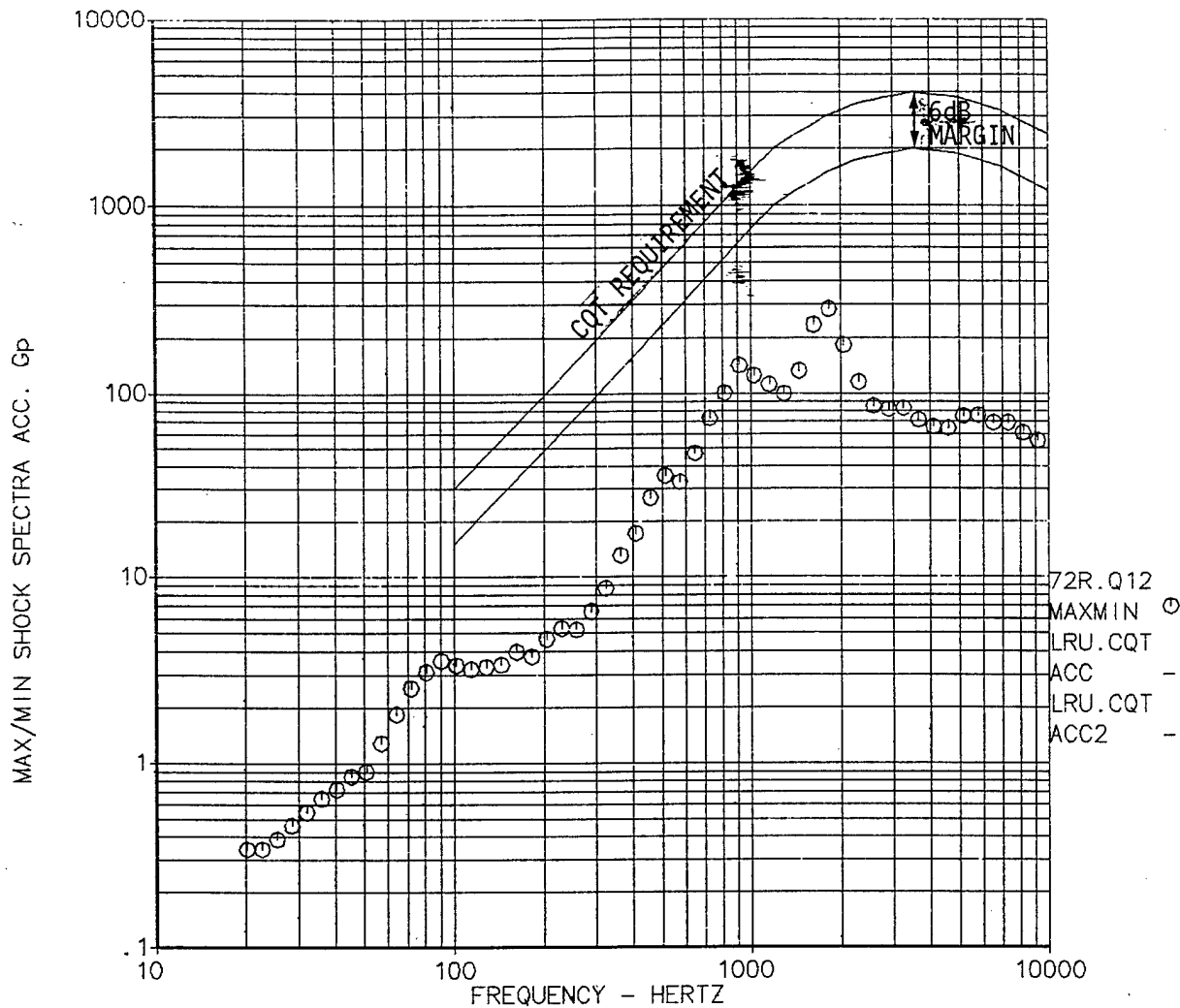


1-JUN-82 08:25:30

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72R
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FIGURE 2-198
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 1 PULSE 2



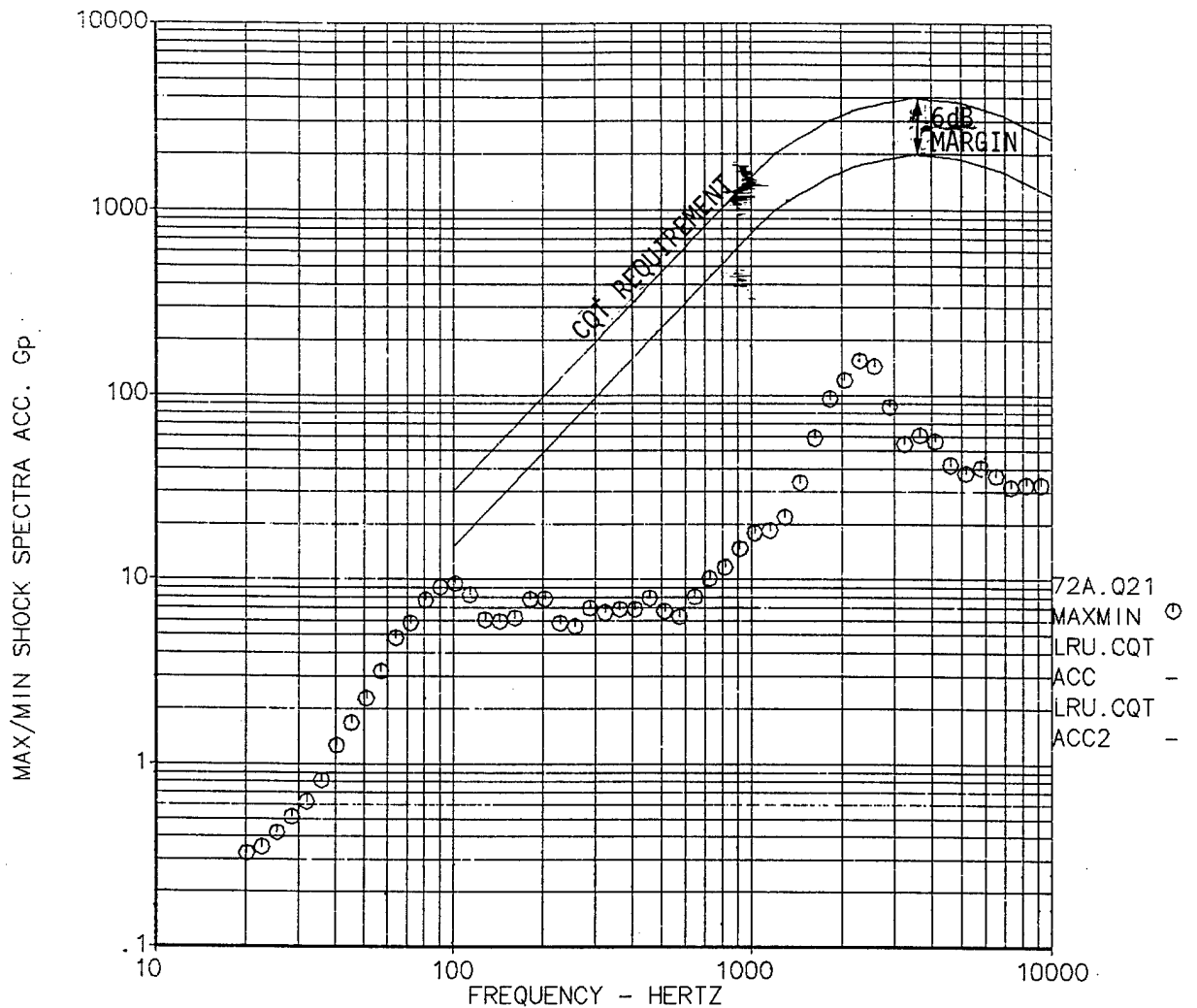
1-JUN-82 08:26:58

DC/DC CONVERTER

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FIGURE 2-199
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 2 PULSE 1

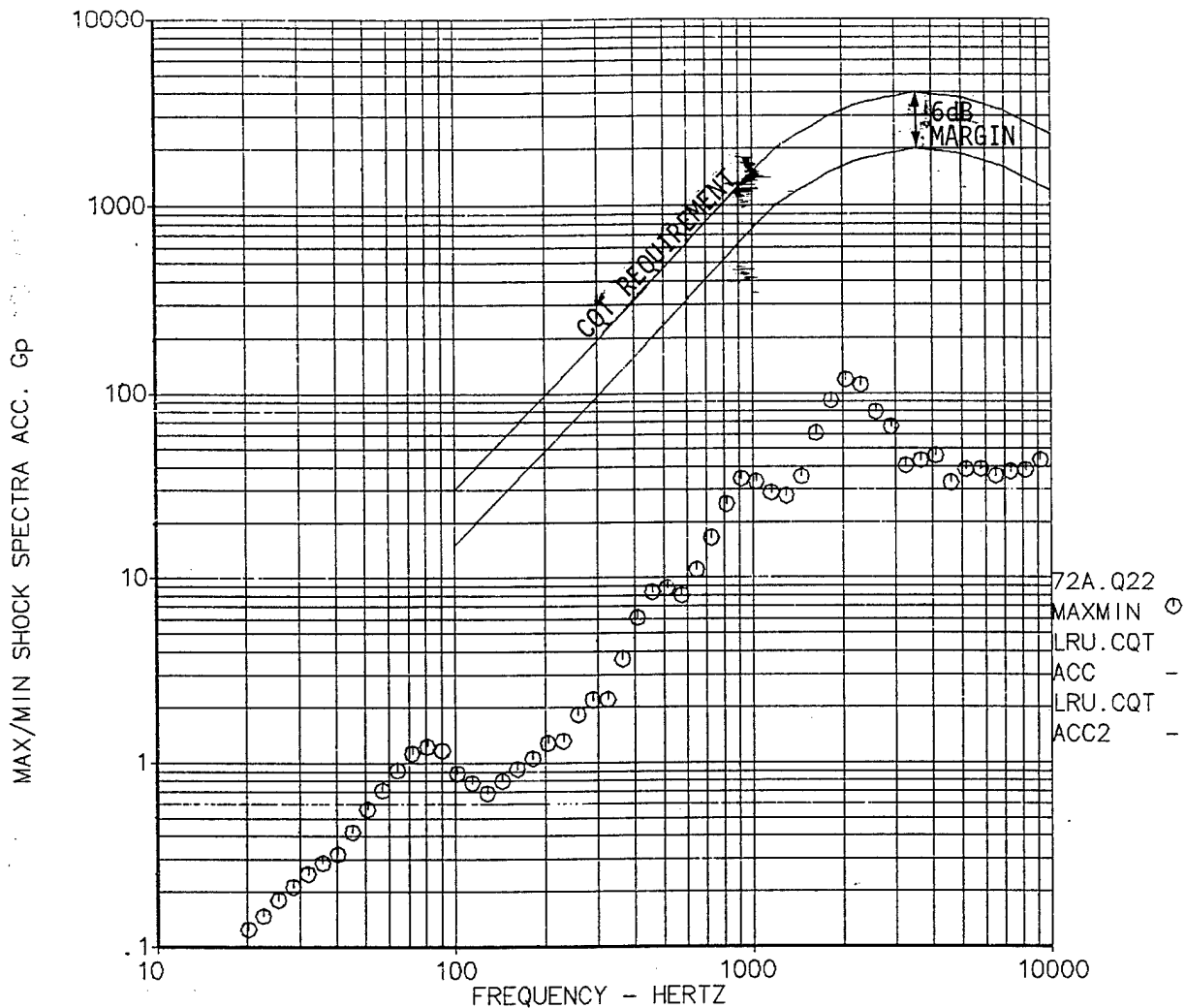


1-JUN-82 08:22:19

DC/DC CONVERTER

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 72A
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FIGURE 2-200
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 2 PULSE 2

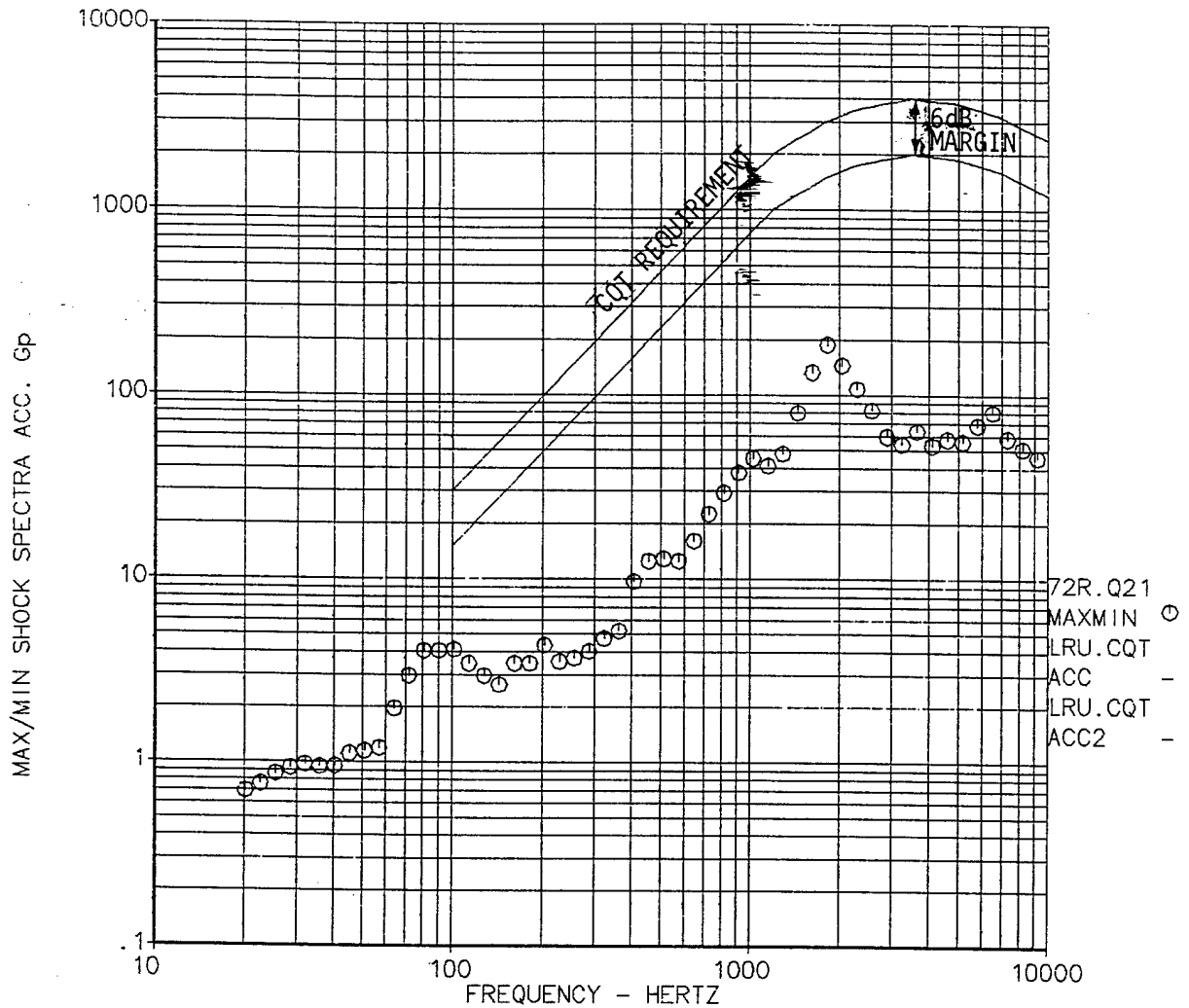


1-JUN-82 08:23:00

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72A
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FIGURE 2-201
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 2 PULSE 1



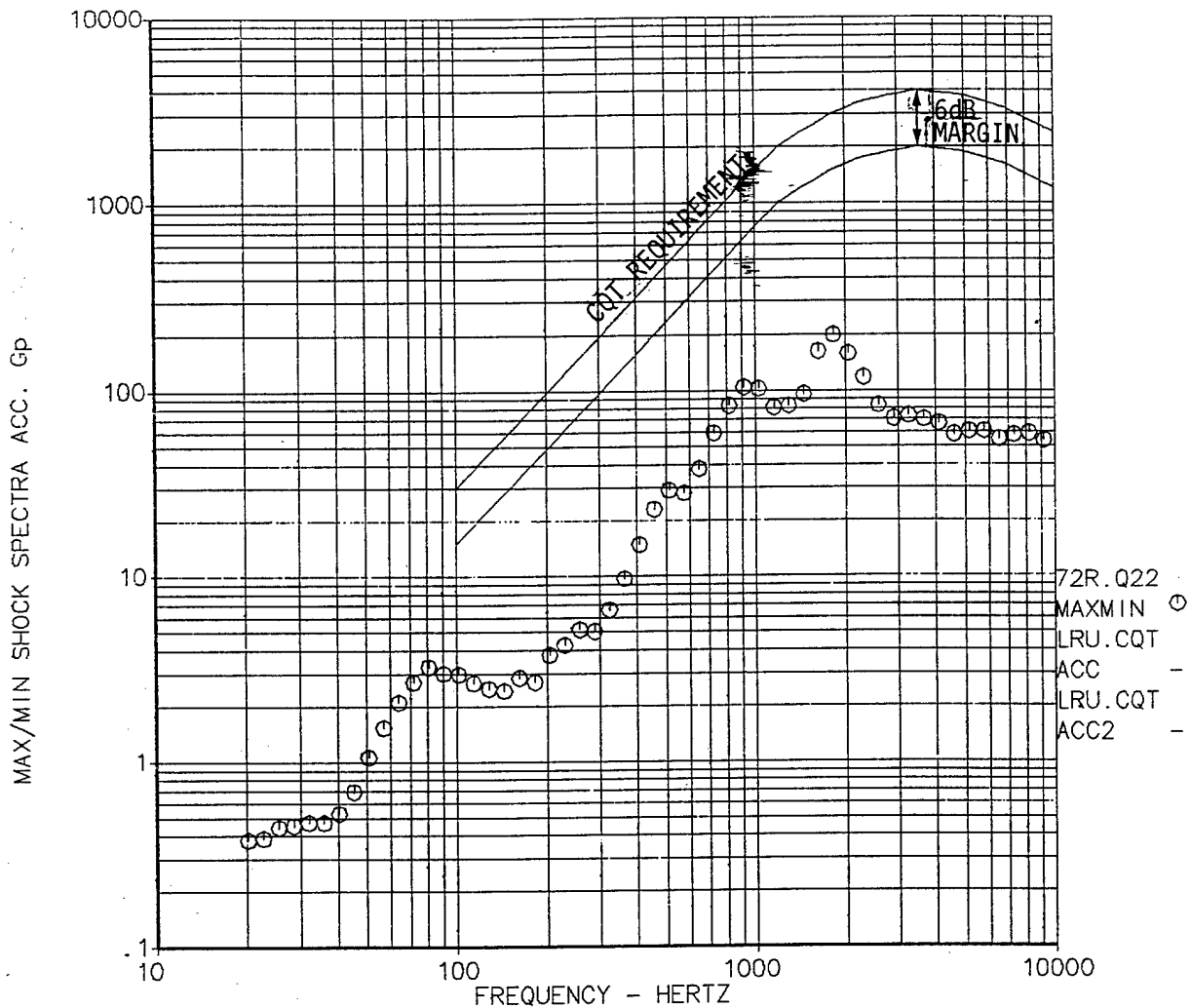
1-JUN-82 08:28:18

DC/DC CONVERTER

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FIGURE 2-202
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 2 PULSE 2



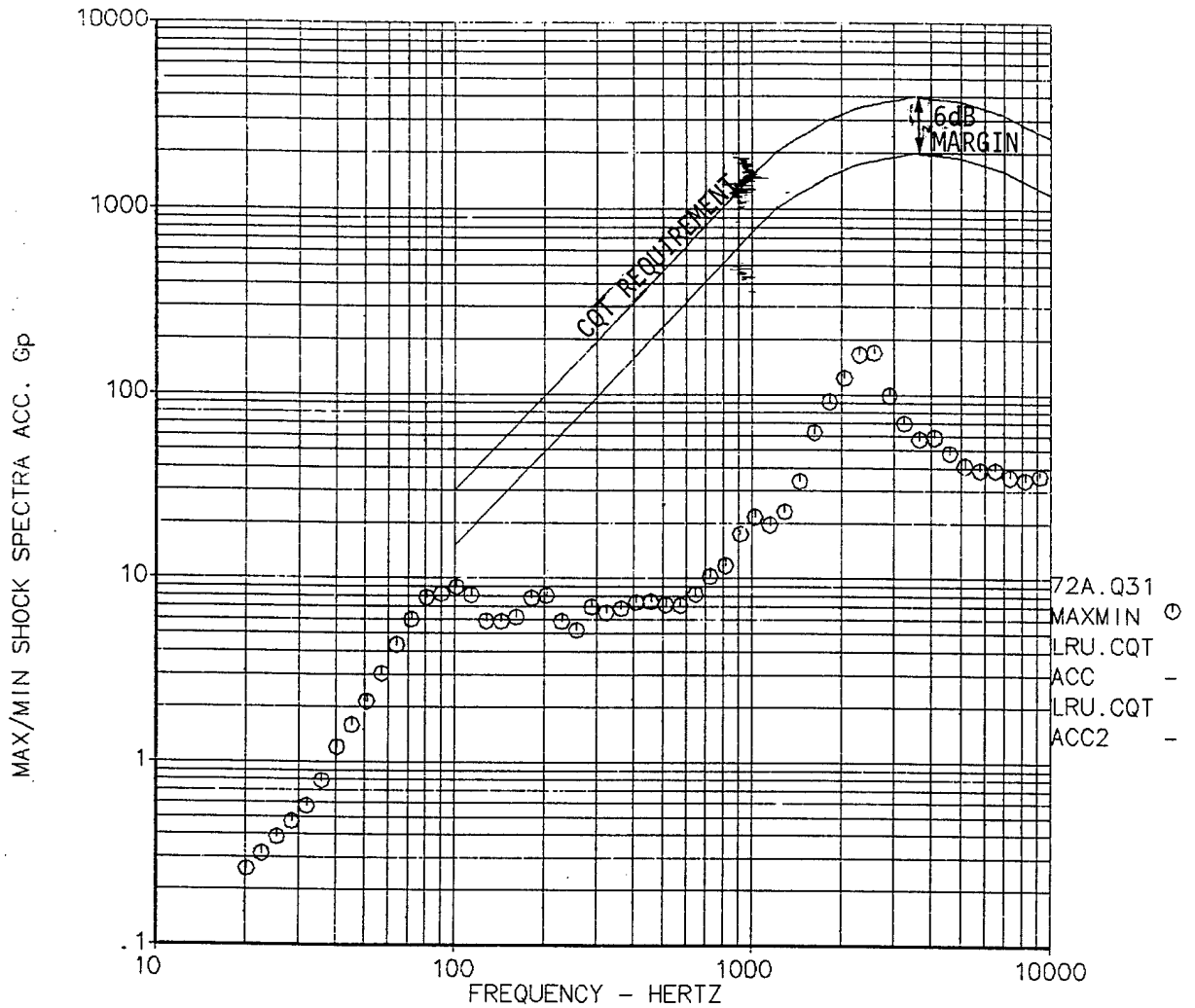
1-JUN-82 08:29:35

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72R
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FIGURE 2-203
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 3 PULSE 1

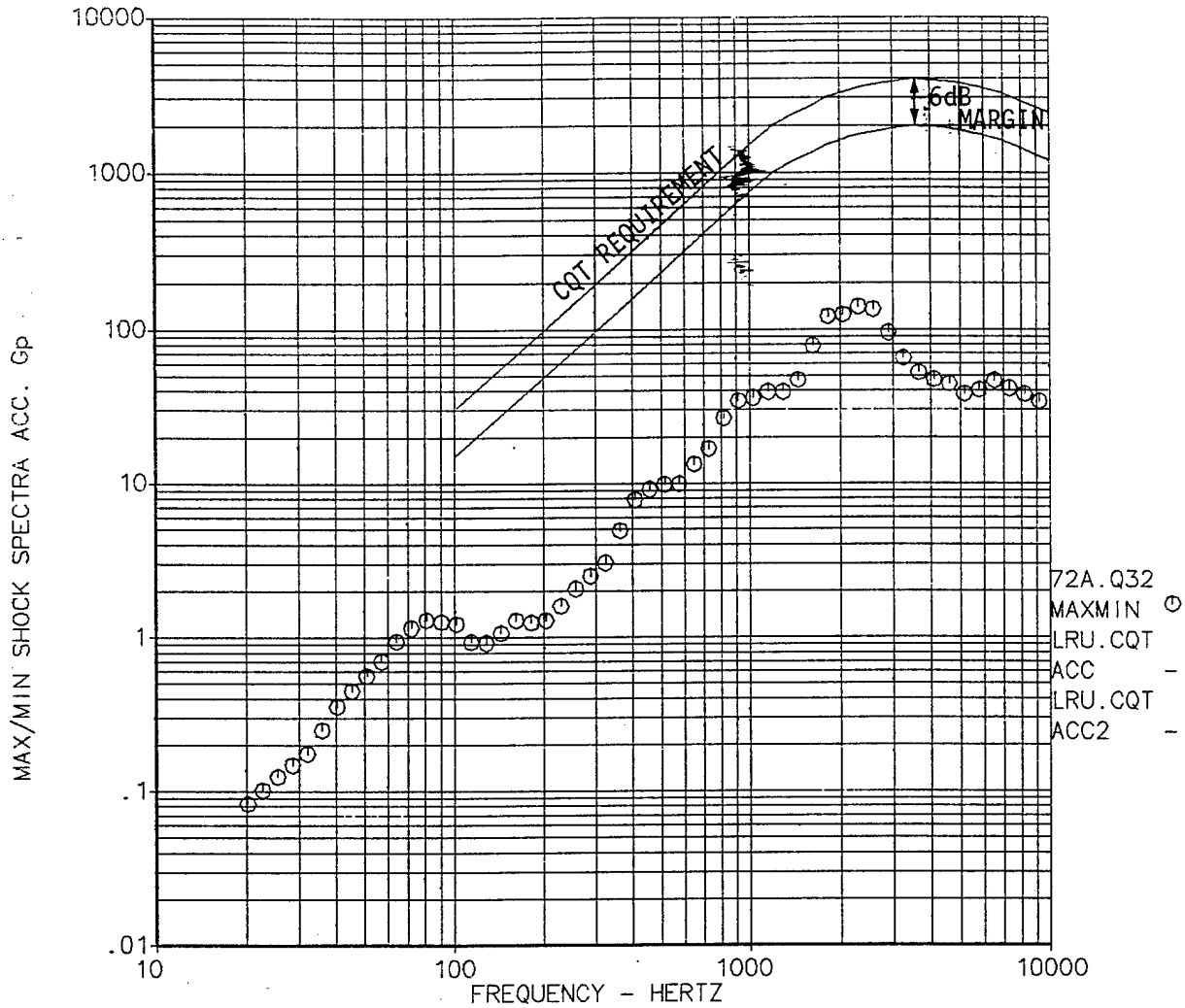


1-JUN-82 08:23:58

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72A
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FIGURE 2-204
SHOCK SPECTRA (Q = 10)
H72A QTV PYROSHOCK TEST 3 PULSE 2

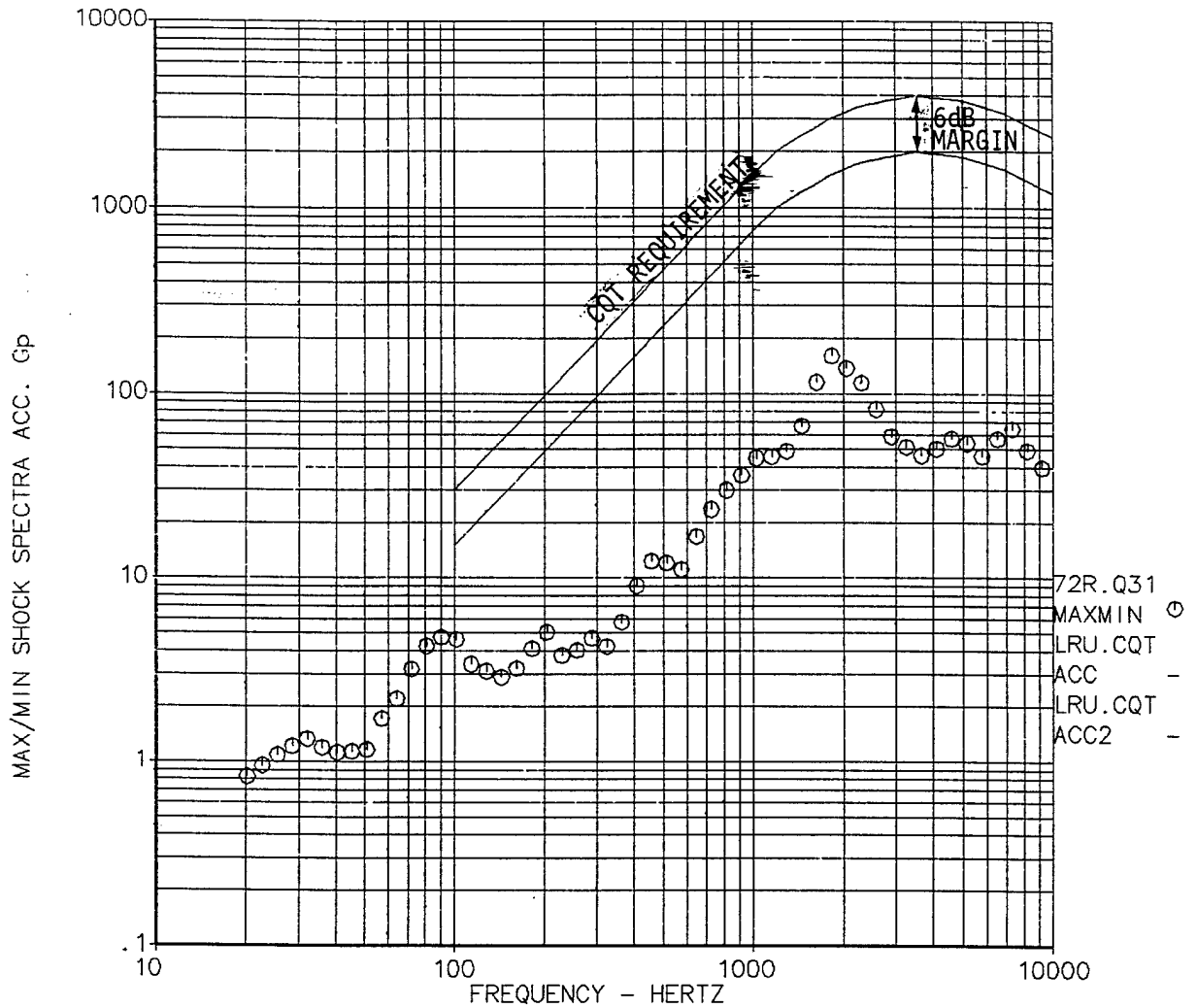


1-JUN-82 08:24:49

DC/DC CONVERTER

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 72A
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FIGURE 2-205
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 3 PULSE 1



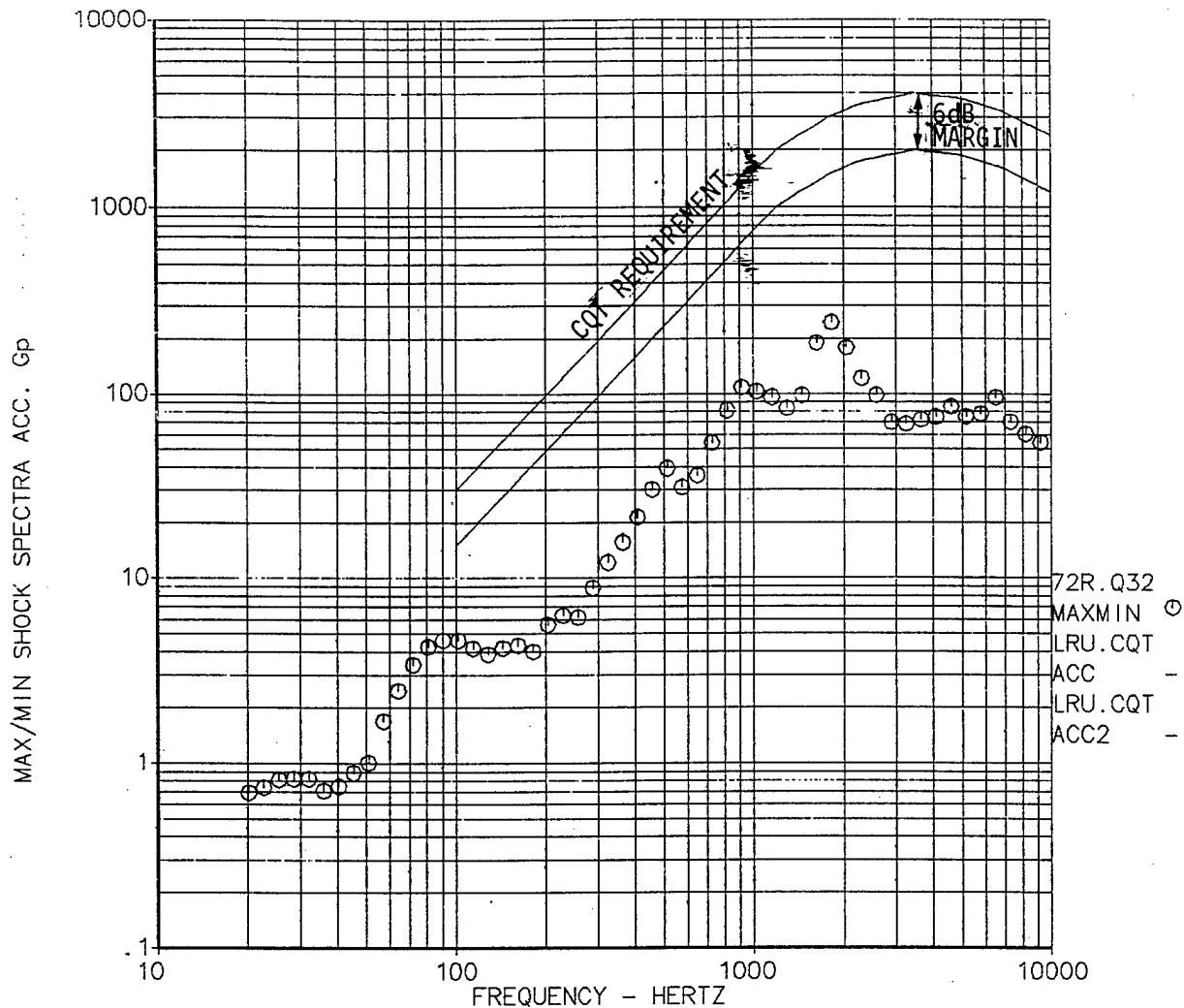
1-JUN-82 08:31:27

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CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 72R
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FIGURE 2-206
SHOCK SPECTRA (Q = 10)
H72R QTV PYROSHOCK TEST 3 PULSE 2



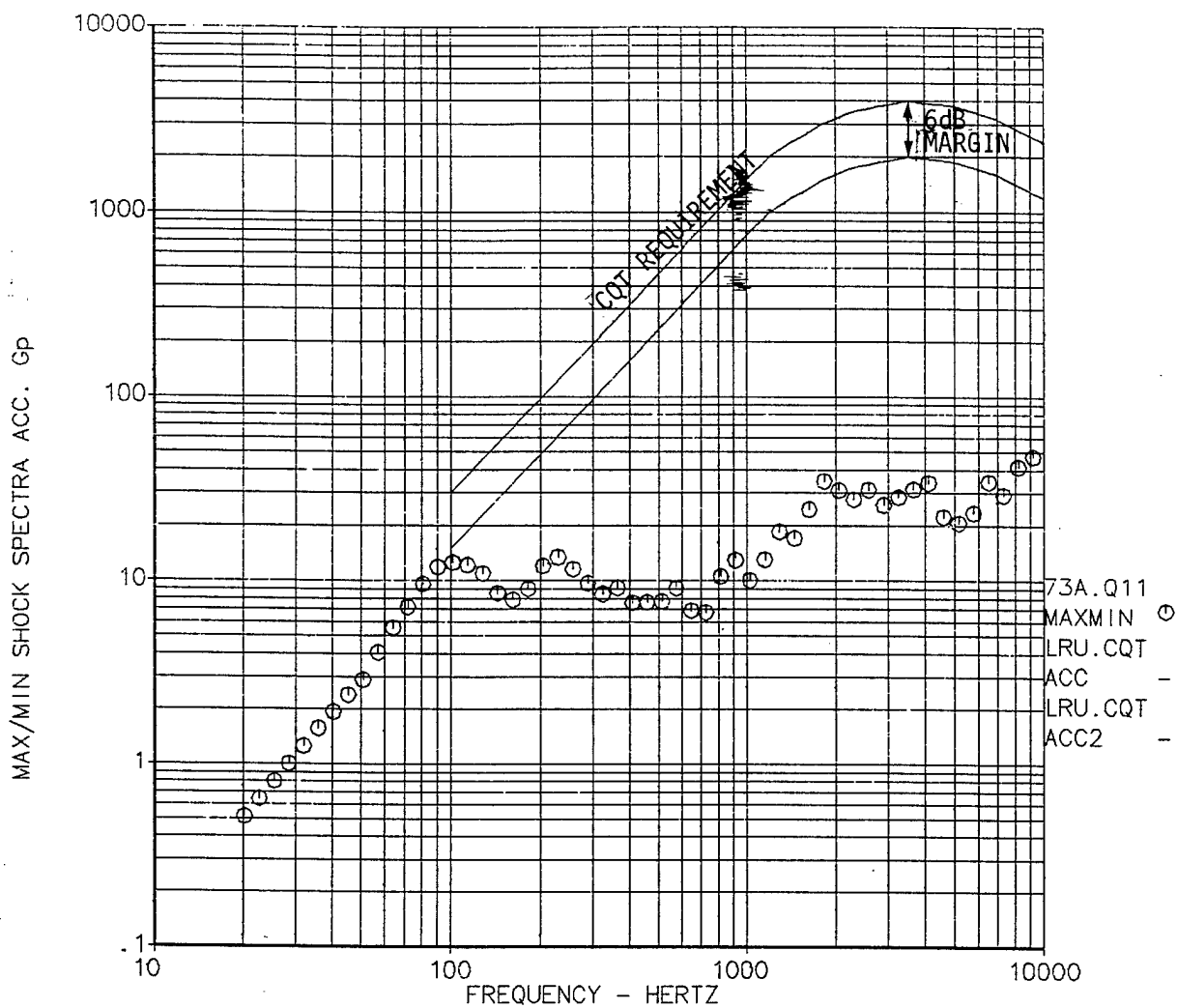
1-JUN-82 08:32:40

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FIGURE 2-207
SHOCK SPECTRA (Q = 10)
H73A QTV PYROSHOCK TEST 1 PULSE 1

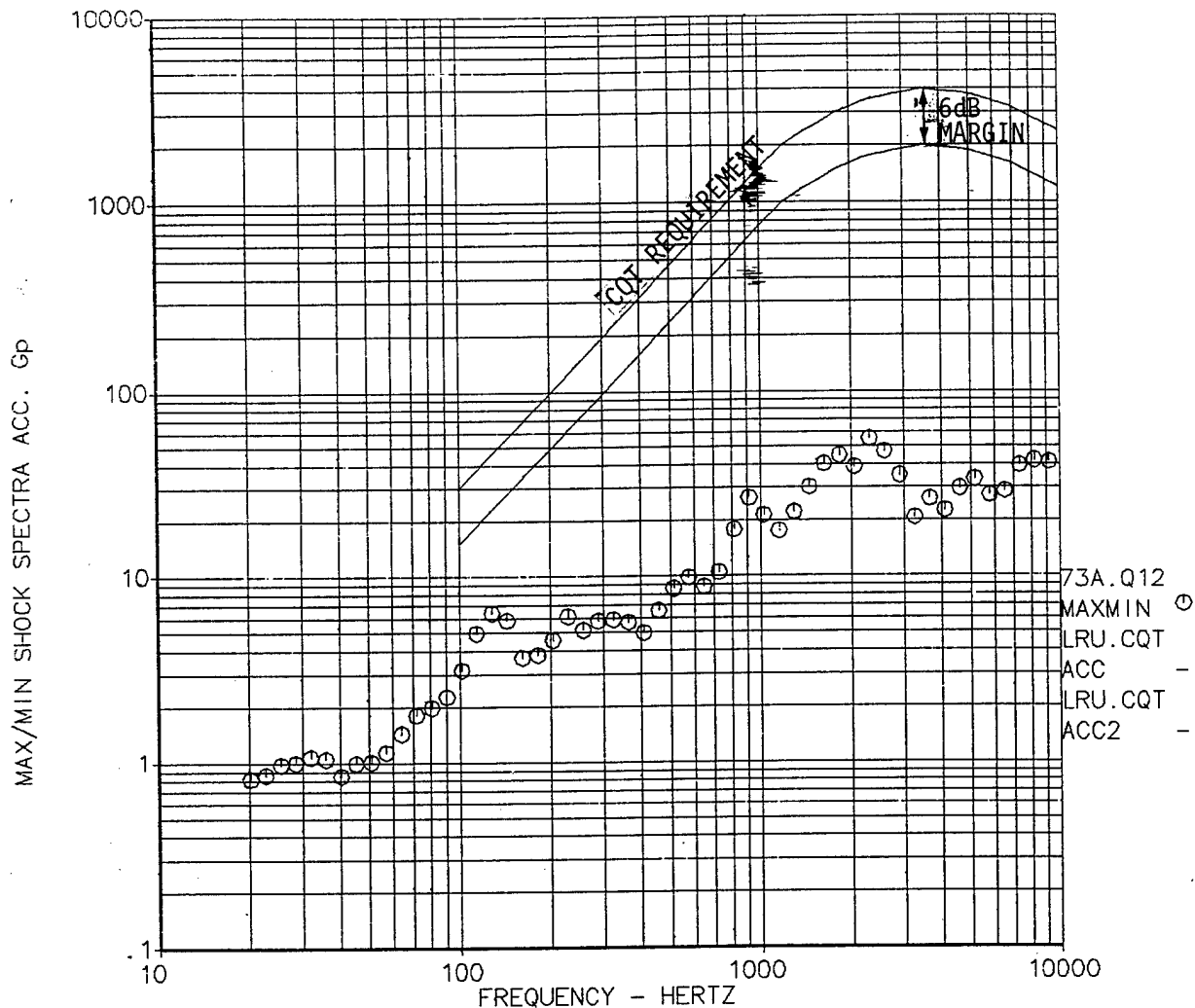


1-JUN-82 08:33:38

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement THE BOEING COMPANY	Acc 73A
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FIGURE 2-208
SHOCK SPECTRA (Q = 10)
H73A QTV PYROSHOCK TEST 1 PULSE 2

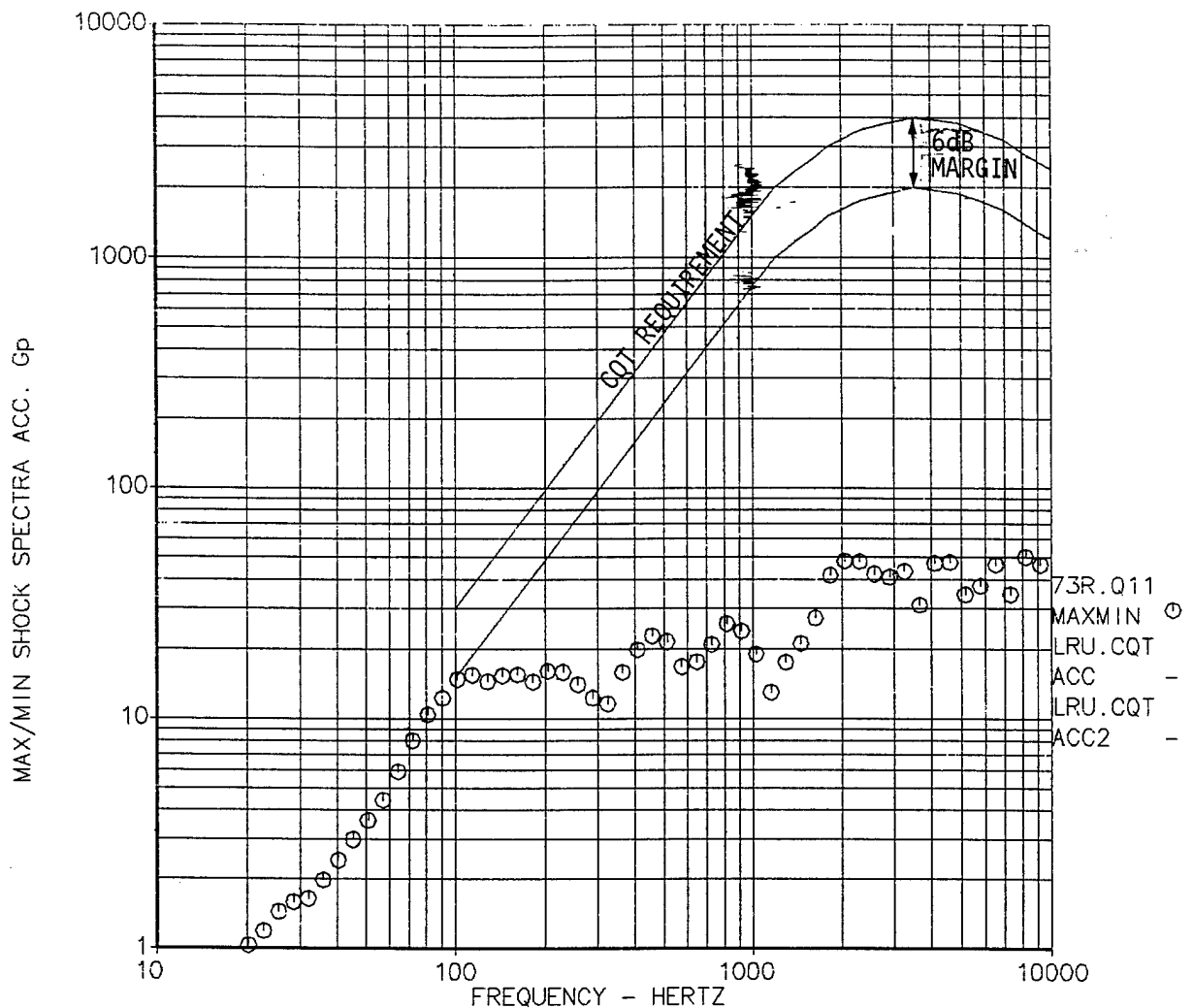


1-JUN-82 08:35:06

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 73A
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FIGURE 2-209
SHOCK SPECTRA (Q = 10)
H73R QTV PYROSHOCK TEST 1 PULSE 1

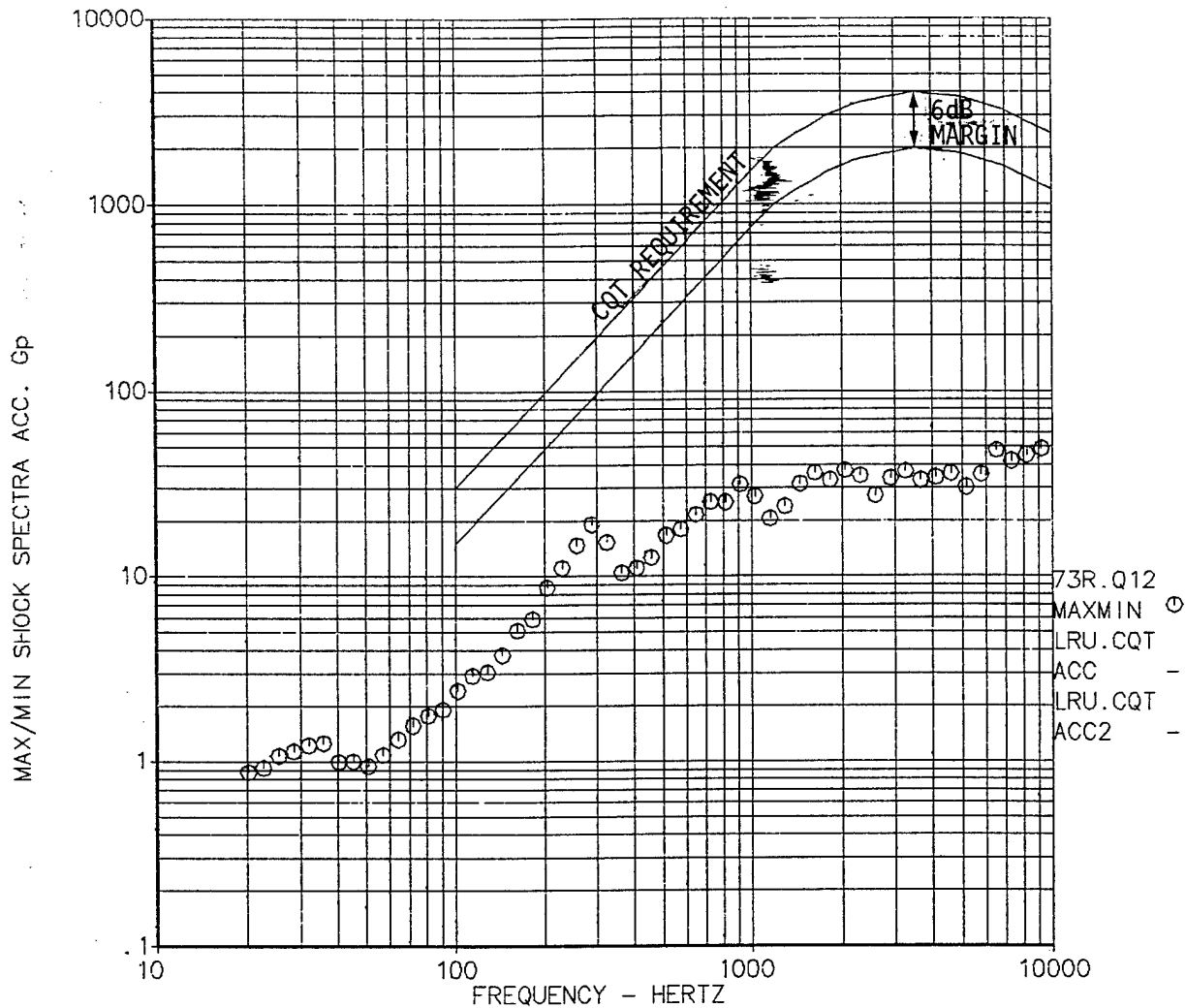


1-JUN-82 08:38:57

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73R
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FIGURE 2-210
SHOCK SPECTRA (Q = 10)
H73R QTV PYROSHOCK TEST 1 PULSE 2

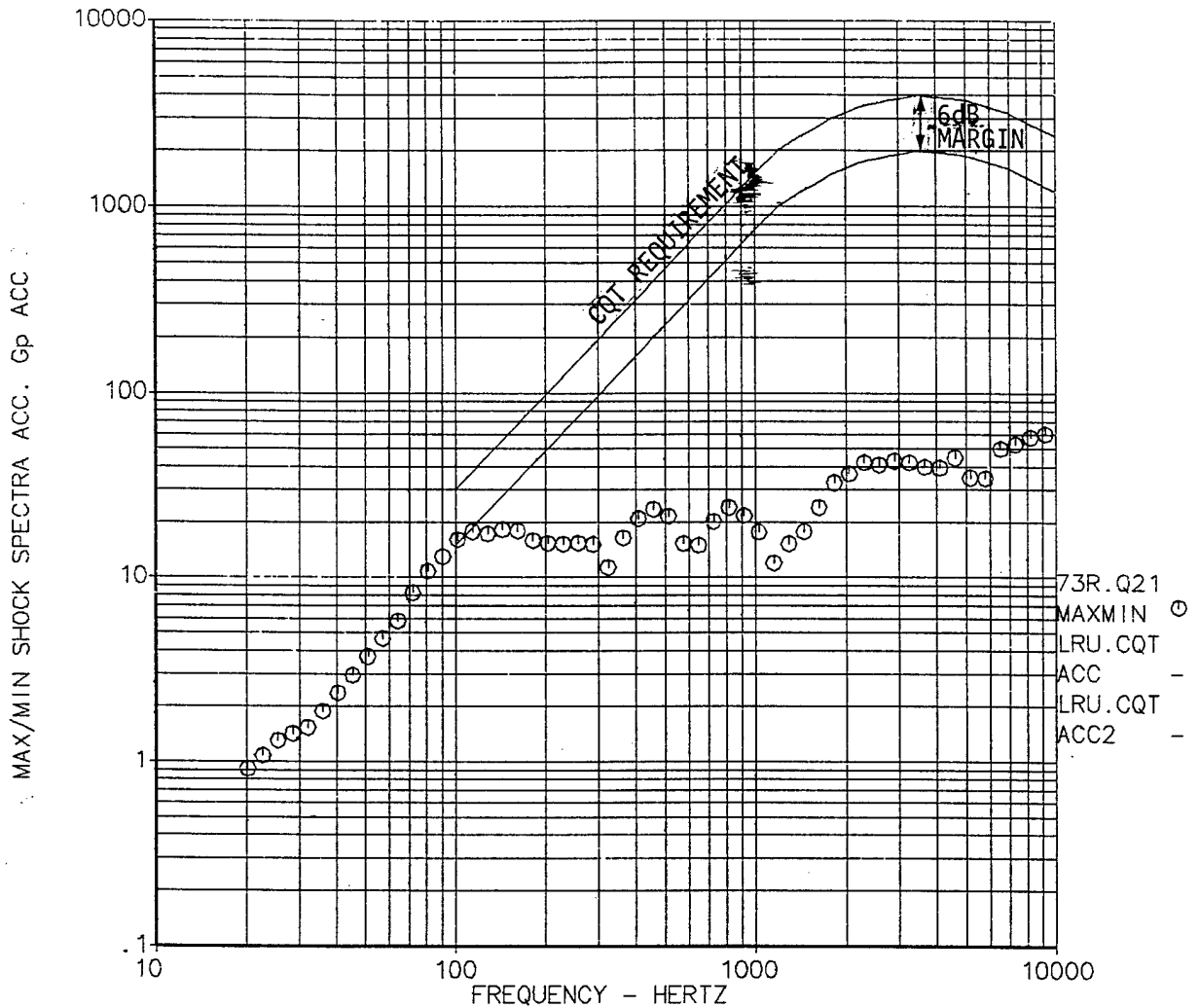


1-JUN-82 08:40:43

POWER AMP A.

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73R
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FIGURE 2-211
SHOCK SPECTRA (Q = 10)
H73R QTV PYROSHOCK TEST 2 PULSE 1

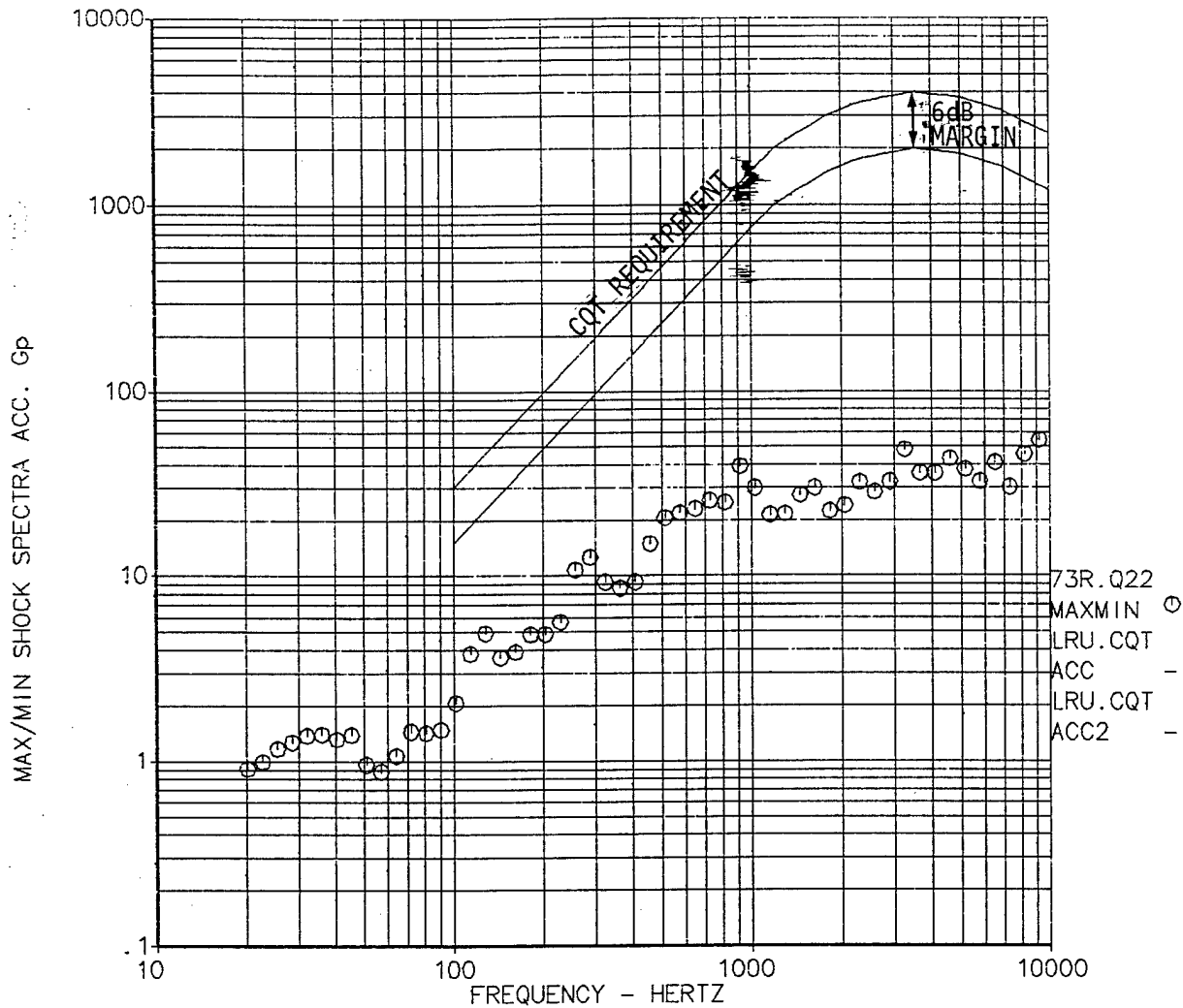


1-JUN-82 08:43:32

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73R
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FIGURE 2-212
SHOCK SPECTRA ($Q = 10$)
H73R QTV PYROSHOCK TEST 2 PULSE 2



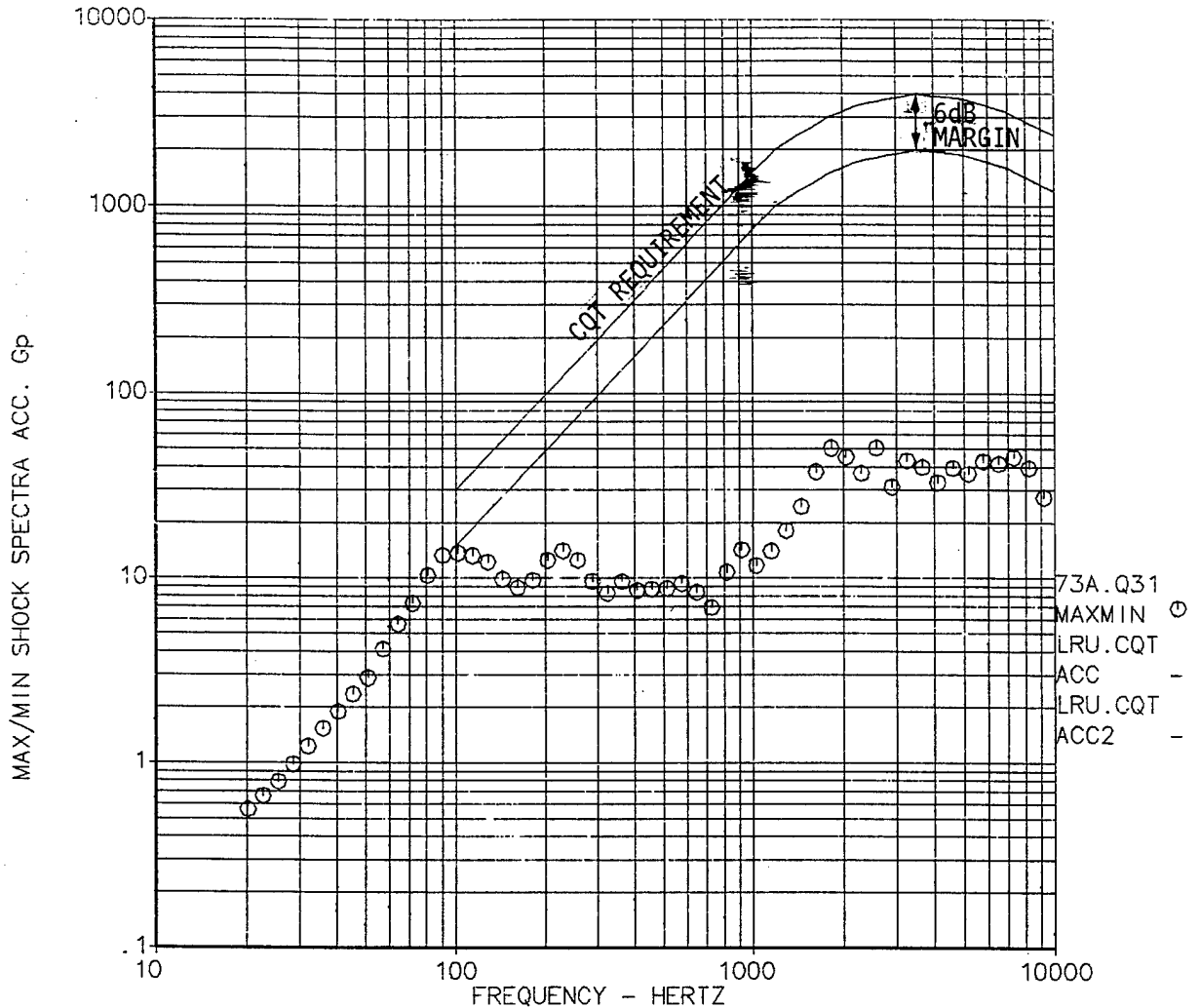
1-JUN-82 08:46:09

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73R
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FIGURE 2-213
SHOCK SPECTRA (Q = 10)
H73A QTV PYROSHOCK TEST 3 PULSE 1

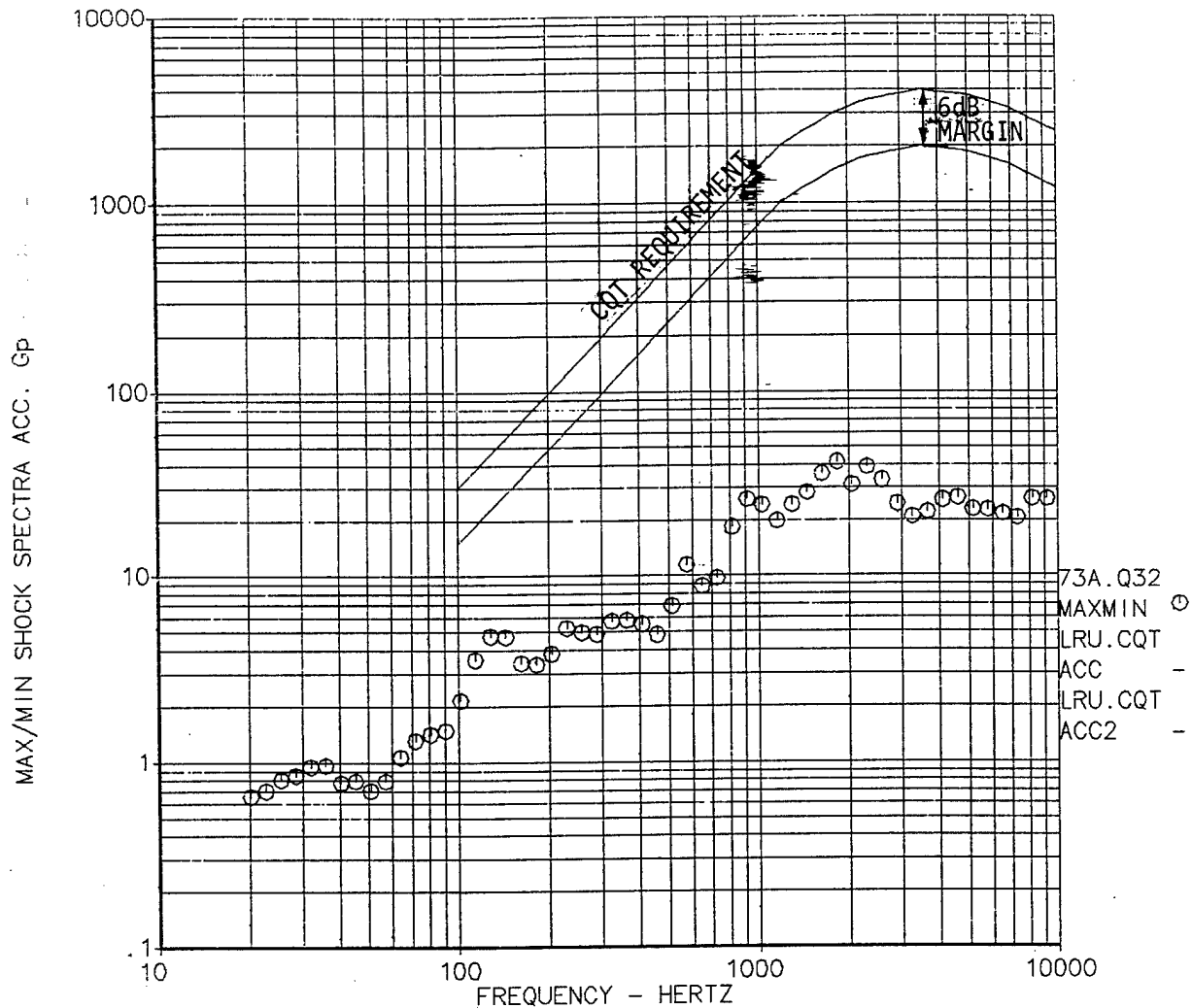


1-JUN-82 08:36:24

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 73A
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FIGURE 2-214
SHOCK SPECTRA (Q = 10)
H73A QTV PYROSHOCK TEST 3 PULSE 2

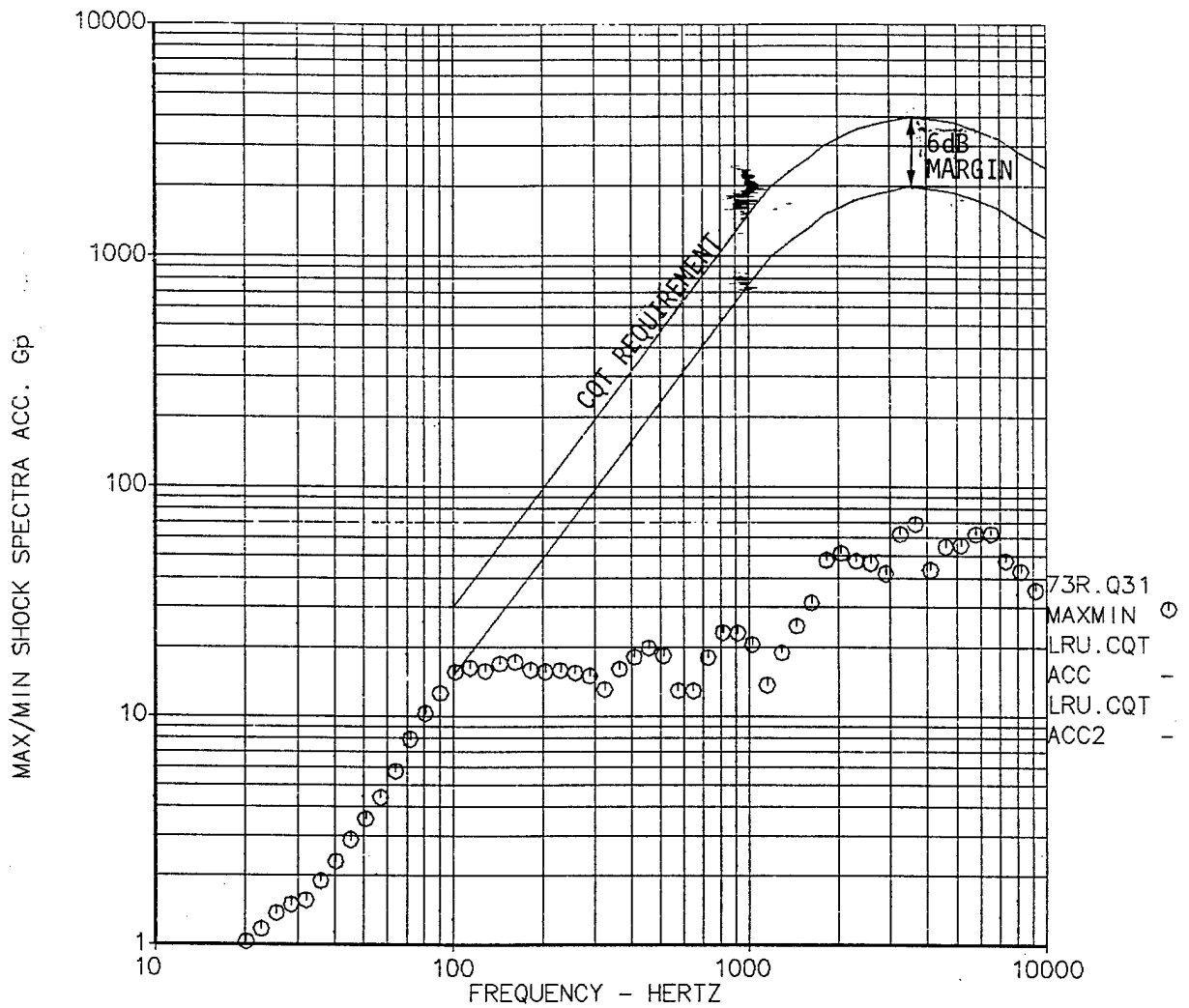


1-JUN-82 08:37:36

POWER AMP A

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73A
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FIGURE 2-215
SHOCK SPECTRA (Q = 10)
H73R QTV PYROSHOCK TEST 3 PULSE 1



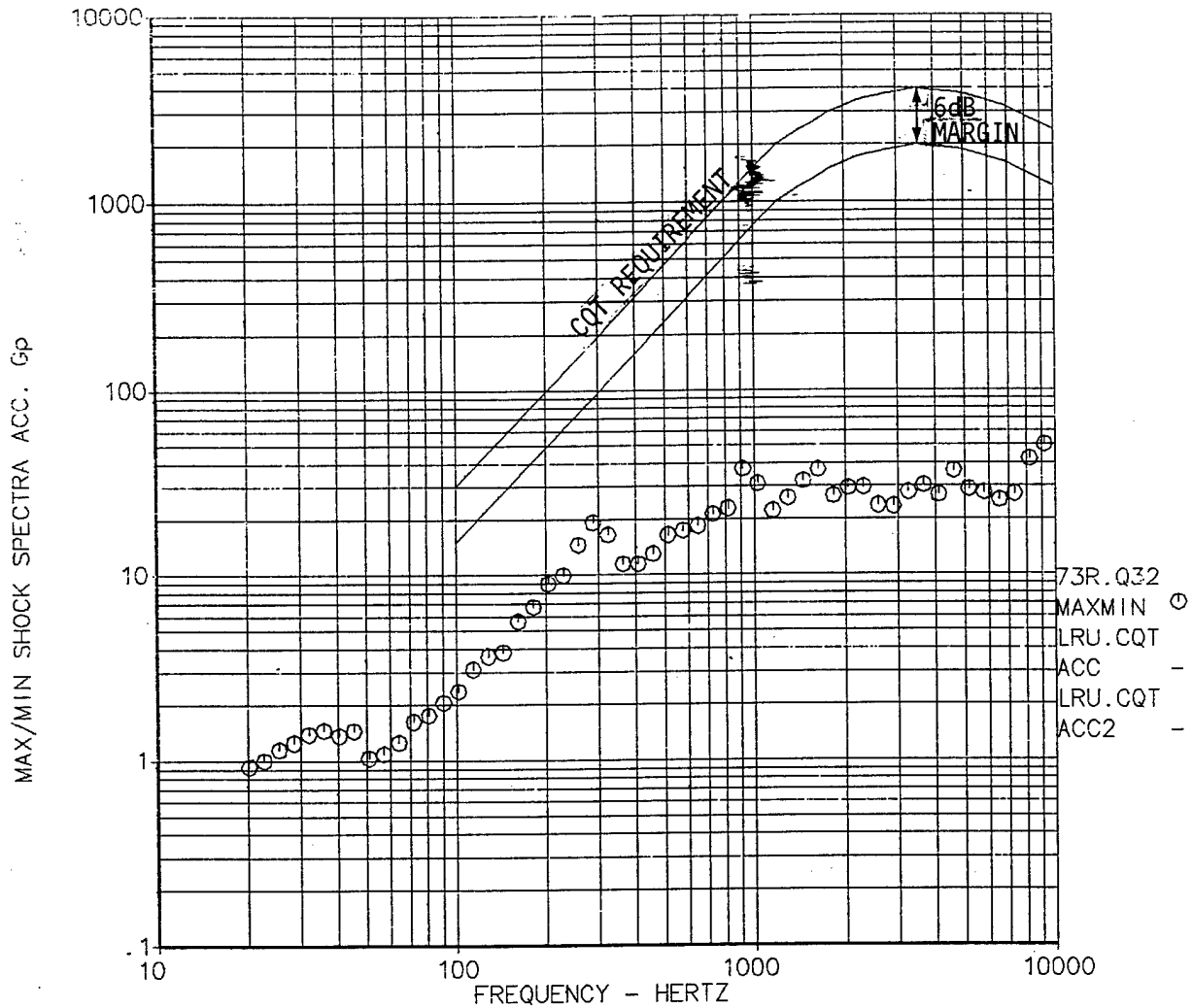
1-JUN-82 08:48:43

POWER AMP A

CALC		1JUN82	REVISED	DATE	Comparison of component shock environment with component Test Requirement	Acc 73R
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FIGURE 2-216
SHOCK SPECTRA (Q = 10)
H73R QTV PYROSHOCK TEST 3 PULSE 2



1-JUN-82 08:51:18

POWER AMP A

CALC	1JUN82	REVISED	DATE	Comparison of component shock environment with component test Requirement	Acc 73R
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ACTIVE SHEET RECORD											
SHEET NO.	REV LTR	ADDED SHEETS				SHEET NO.	REV LTR	ADDED SHEETS			
		SHEET NO.	REV LTR	SHEET NO.	REV LTR			SHEET NO.	REV LTR	SHEET NO.	REV LTR
1	A					32					
2	A					33					
3	A					34					
4		4.1				35					
5	A					36					
6	A	6.1				37					
7						38					
8						39					
9						40					
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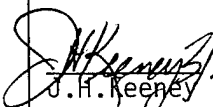
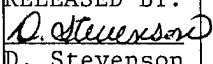
ACTIVE SHEET RECORD

SHEET NO.	REV LTR	ADDED SHEETS				SHEET NO.	REV LTR	ADDED SHEETS			
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64						95					
65						96					
66						97					
67						98					
68						99					
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91						122					
92						123					
93						124					

ACTIVE SHEET RECORD											
SHEET NO.	REV LTR	ADDED SHEETS				SHEET NO.	REV LTR	ADDED SHEETS			
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125						156					
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127						158					
218						159					
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154						185					
155						186					

ACTIVE SHEET RECORD											
SHEET NO.	REV LTR	ADDED SHEETS				SHEET NO.	REV LTR	ADDED SHEETS			
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187						218					
188						219					
189						220					
190						221					
191						222					
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193						224					
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195						226					
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197						228	A				
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REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
A	Revised to remove references to a 2 volume document. A third volume was added to include shock test and analysis results.		 C.J. Beck  H.L. Nordwall  A.D. Watson  J.H. Keeney
	 IUS Document Release/DQA/02APR93/G.E. Parker	930405	RELEASD BY:  D. Stevenson

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