

Shielding Effectiveness Test Report

Test report file no : / Rapor No : E 1404 22277 00 NY

Client : / Müşteri : Teksel Tekstil Ürünleri Pazarlama ve Ticaret A.Ş.
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Kind of Product : / Ürün : Hamile Boxer (Eski)

Model : / Model : --

Manufacturer : / Üretici : Same as Client / Müşteri ile aynı

Test results : / Sonuç : Results are attached as Annex 5.
Raporun sonunda Ek 5 olarak verilmiştir.

Date of issue : / Tarih: 07.08.2020



This report is not valid without security hologram. / Hologram bulunmayan raporlar geçerli değildir. Consept Test ve Teknoloji Merkezi is an independent testing laboratory in accordance with the ISO/EN 17025: 2017. / Consept Test ve Teknoloji Merkezi ISO/EN 17025: 2017 Standardı ile uyumlu olarak çalışan tamamen bağımsız bir test laboratuvarıdır. The test result only responds to the tested sample. / Bu sonuçlar sadece test edilen numune için geçerlidir. It is not allowed to copy this report partly without the allowance of the test laboratory. / Bu test raporu, bütünüyle olmadığı müddetçe, Yayınlayan test laboratuvarının yazılı onayı olmadan çoğaltılamaz.

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IDENTIFICATION OF THE TEST LABORATORY

TEST LABORATUARI BİLGİLERİ

Company name / Laboratuvar İsmi : Consept Test ve Teknoloji Merkezi Ltd. Sti
Technical Services responsible for the carrying out the test / Testler için yetkilendirilmiş Teknik Servis : Consept Hungary Kft

We, Consept, were founded in 2002 to provide our best services in EMC, LVD, Automotive – Type Approval, Acoustic and Performance testing based on related directive and consultation. Our company is an independent inspection body and testing laboratory in accordance with the EN ISO/IEC 17020: 2012 and ISO/EN 17025: 2005.

Consept Ltd. Şti. 2002 yılında EMC, LVD, Otomotiv – Tip Onayı, Akustik ve performans testlerini bağlı oldukları direktifler kapsamında en iyi şekilde sunmak için kurulmuştur. Kuruluşumuz EN ISO/IEC 17020: 2012 ve ISO/EN 17025: 2005 Standartları ile uyumlu olarak çalışan tamamen bağımsız bir muayene kuruluşu ve test laboratuvarıdır.

Consept accreditation scope can be check from the link / Laboratuvarımız akreditasyon kapsamı verilen linkten sorgulanabilir, <http://www.iasonline.org/More/search.html>.

Consept has below certification mark related our testing and inspection / Consept denetim ve testleri ile ilgili aşağıdaki sertifikasyon markalarına sahiptir.



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HUNGARY
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Note / Not:

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf. / Bu rapor tüm sayfaları ile test ve denetim hizmetleri için genel koşullar anlamına gelmektedir.

This report details the results of the testing carried out on one sample. The results contained in this test report do not related to other samples of the same product and does not permit the use of the above Consept Certification Marks. / Bu rapor içeriğinde yer alan sonuçlar bir tane test edilen örnek içindir. Test sonuçları ve yukarıdaki Consept sertifikasyon markaları diğer ürünler için kullanılması uygun değildir. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. / Üretici rapor içeriğinde yer alan ürün ile seri üretimdeki ürünlerin aynı şekilde üretildiğinden emin olmalıdır.

This report may only be reproduced and distributed in full. / Bu rapor tüm sayfaları ile birlikte kullanılmalıdır. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. / Ürün bu raporda belirtildiği konfigürasyonun dışında kullanılması halinde ilgili tüm standartlarla uyumlu olduğundan emin olunmalıdır.

All test result in this report can be traceable to National or International Standards. / Bu rapordaki tüm test sonuçları Ulusal veya Uluslararası Standartlara göre izlenebilir durumdadır.

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DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

Date of receipt of test sample : According to storage records of Consept Ltd.

Testing Start Date : 05.06.2020

Testing End Date : 07.08.2020

The EUT Functions : Shielded fabric

Number of received/tested samples: 30x30 cm

Serial Number: --

Voltage consumption: --

Product status:

☐	Development Sample
☒	Preproduction Sample
☐	Production Sample

Dimensions:

L	: 30 cm
H	: --
W	: 30 cm

Following system devices are parts of the EUT and were connected during the measurement:

--

Following cables were connected during the measurement:

--

Following peripheral devices were connected during the measurement:

--

Shielding Effectiveness Performance tests Methods

The "Shielding Effectiveness" measurements are based upon the methods defined in:

EN 50147-1, March 1996

Mil-Std 285, June 1956

The measurements to be carried out for shielding effectiveness are the magnetic field measurements, electric field measurements and plane wave measurements.

Methodology

Before the actual measurement takes place, a reference measurement will be carried out, to establish the coupling at a fixed distance of 0.60 m when no shielded between antennas. Second the dynamic range is measured by switching off the transmitting antenna. After this, antennas are positioned at the measurement locations, at half the distance used during reference measurement, thus 0.30.

ENVIRONMENTAL CONDITIONS

Çevre Şartları

Temperature/ Sıcaklık : 25±3°C
Humidity/ Nem : 45±10 %
Atmospheric pressure/ Basınç : 860-1060 mbar

STATEMENT OF MEASUREMENT UNCERTAINTY

Ölçüm Belirsizliği Bildirisi

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

Bu belgede kullanılan test veri ve sonuçları gerçek ve doğru olmalıdır. Okuyucu, test cihazları ve bağlı ekipmanlarının kalibrasyon sınırları içinde hata kayıtları olduğunu bilmelidir.

The measurement uncertainty was calculated for all measurements listed in this test report according to NIS 81 Edition 1/5.1994 "The Treatment of Uncertainty in EMC Measurements", CISPR-16-4-2 "Uncertainties, statistics and limit modeling–Uncertainty in EMC measurements" and is documented in the Consept quality system according to EN ISO/IEC/EN 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Bu test raporunda yer alan ölçümlerde yer alan ölçüm belirsizliği tüm ölçümlerde; NIS 81 Versiyon 1/5: 1994 "EMC ölçümleri için belirsizlik iyileştirmesi" ile CISPR 16-4-2 " EMC Ölçümlerinde belirsizlik, istatistik ve Limit Modeli" referans standartları baz alınarak hesaplanmış ve Consept'in ISO/IEC/EN 17025 göre hazırlanan kalite sisteminde dökümanite edilmiştir.

SUMMARY / ÖZET:

Product shielding effectiveness results are given Annex 5.

REVİZYON GEÇMİŞİ / Revision History:

None. / Yok.

FINAL JUDGEMENT/ Son Hüküm:

The tested sample shielding effectiveness performance is in between 10-26%. Please look at annex 5 graph. The results are comparable with the ideal shielding effectiveness.

Gebze, 07.08.2020

Consept Ltd. Sti.:

Test Engineer:

Esra Yalcin
Asst. Manager

Dr. Nuh Yalcin
Sen. EMC Eng.

PHOTO OF THE TEST SAMPLES



Annex 1

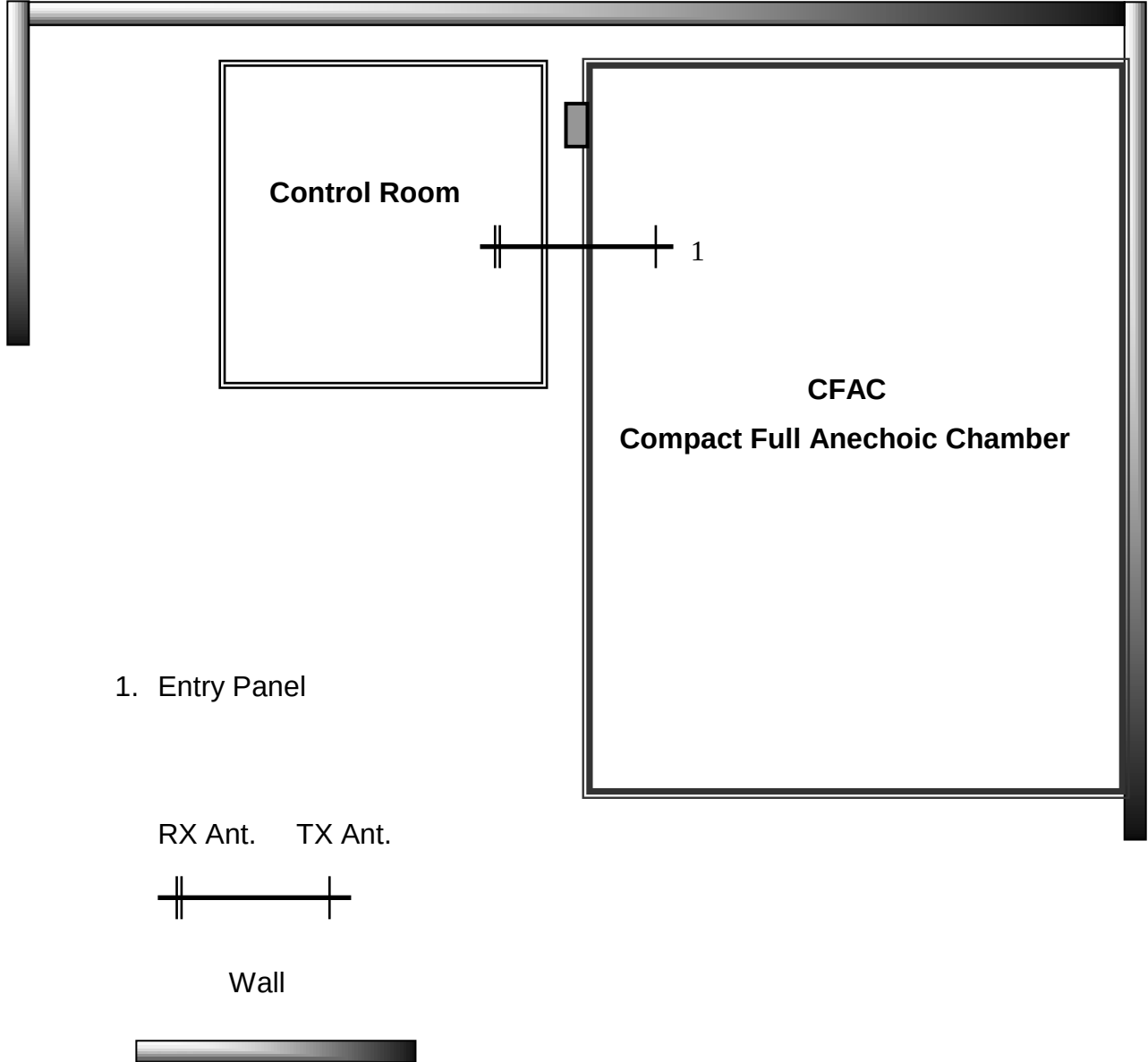
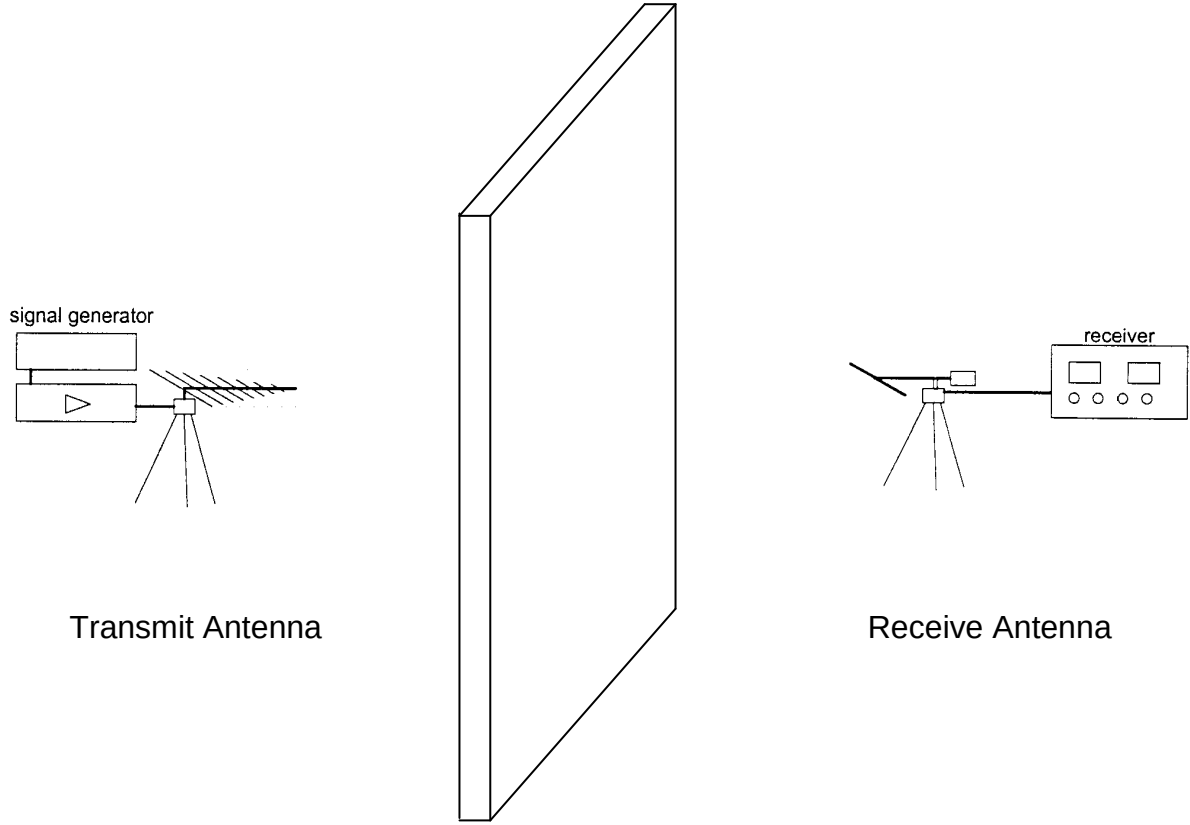


Figure 1. Test Area



Or

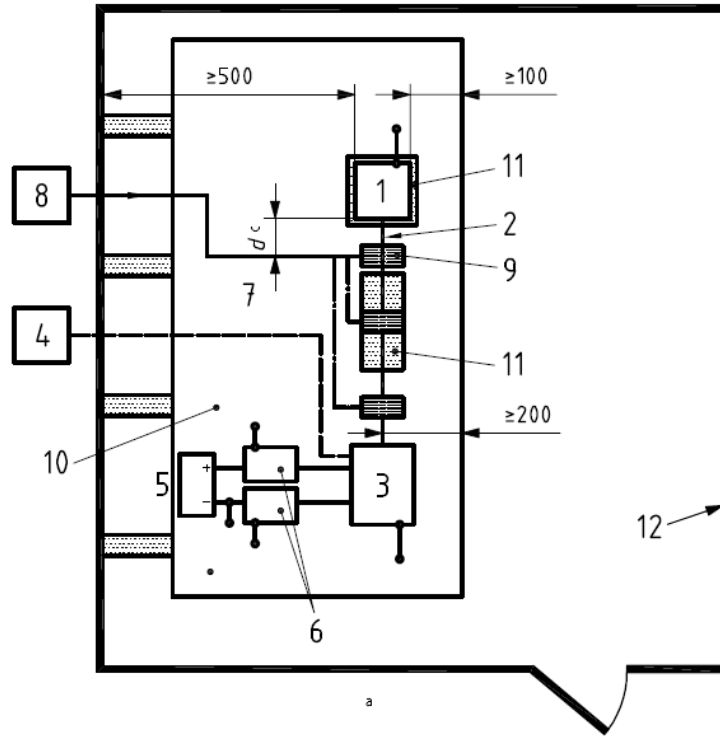


Figure 2. Schematic of the test

Annex 2

Test Equipment List

Test location: ☒ Shielded room 1 / Ekranlı Oda 1
Test Yeri ☒ Shielded room 2 / Ekranlı Oda 2
☐ Shielded room 3 / Ekranlı Oda 3
☐ Shielded room 4 / Ekranlı Oda 4
☐ OATS / Açık Saha test Ortamı

Test instrument Test Cihazı	Type Tip	Manufacturer Üretici	ID - No. Kayıt No	
Spectrum Analyzer	FSU 8	Rohde & Schwarz	RCV-03	☒
Spectrum Analyzer	FSP40	Rohde & Schwarz	RCV-05	☒
Signal Generator	SML 01	Rohde & Schwarz	SG-03	☒
Signal Generator	SMR 40	Rohde & Schwarz	SG-02	☐
Amplifier	75A400	Amplifier Research	AMP-01	☒
HF- Amplifier	BTA 0122-500	Bonn Elektronik	AMP-03	☐
HF- Amplifier	BLWA 0810-500/350	Bonn Elektronik	AMP-04	☒
HF- Amplifier	TWAL 0118-30/20D	Bonn Elektronik	AMP-07	☐
Amplifier	150A100A	Amplifier Research	AMP-08	☐
Amplifier	5002V2	Crown Macro-Tech	AMP-06	☐
LOG.-PER. Antenna	STLP 9128E	Schwarzbeck	ANT-10	☐
Antenna TRILOG	VULB 9163	Schwarzbeck	ANT-08	☒
Biconic Anten	VHBD 9134	Schwarzbeck	ANT-19	☒
Logaritmik Antenna	VHBD 9118-E	Schwarzbeck	ANT-18	☐
Rx Loop Antenna	FMZB 1516	Schwarzbeck	ANT-06	☒
Rx Loop Antenna	HFRA 5150	Schwarzbeck	ANT-05	☒
EM Injection Clamp	EM 101	Lüthi Elektronik	CLMP-01	☐
Current Probe	9215-1N	Solar	PRB-23	☒
Current Probe	9215-1N	Solar	PRB-24	☐
Calibration Fixture	9125-1	Solar	PRB-25	☒
CDN (0-1GHz) 100Ω-1W	CR100	Lüthi Elektronik	CLMP-09	☐
CDN (0-1GHz) 100Ω-1W	CR 100	Lüthi Elektronik	CLMP-10	☐
RF COAX Cable	Sucoflex 307	HUBER SUHNER	CBL-02	☒
RF COAX Cable	AK 9515-E	Consept	CBL-03	☒
RF COAX Cable	AK 9515-E	Consept	CBL-04	☒
RF COAX Cable	Sucoflex 307	HUBER SUHNER	CBL-06	☒

Remarks: This test performed in anechoic chamber.

Yorumlar Bu test tam yansız oda da yapılmıştır.

Annex 3

Typical error budget

None

Annex 4

Test Standards

EN 50147-1

Mil-Std 285

IEEE 299

Annex 5

Results

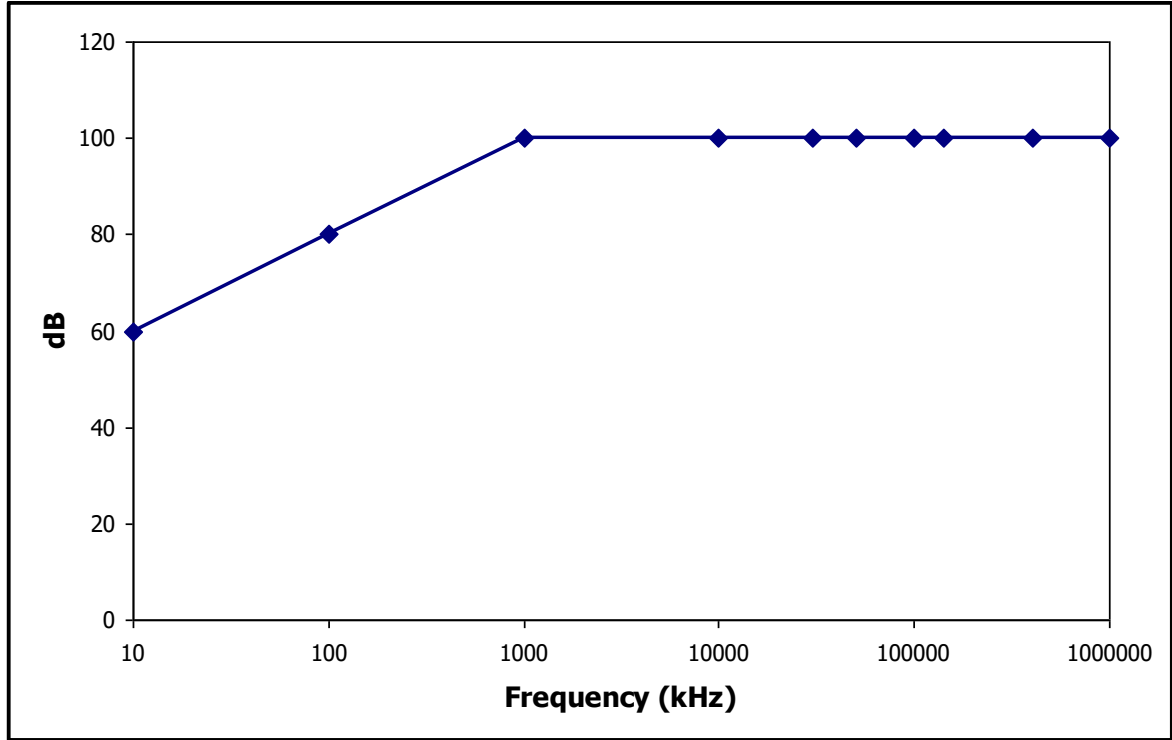
Typical Shielding Effectiveness

Electric Field Results

Frequency	Ref. Meas. dBuV	Att. Meas. dBuV	Noise Lev. dBuV	SE dB
1 MHz	120	58	15.1	100
10 MHz	120	58	15.1	100
30 MHz	120	57	17.4	100
100 MHz	120	56	13.2	100

Plane Wave Results

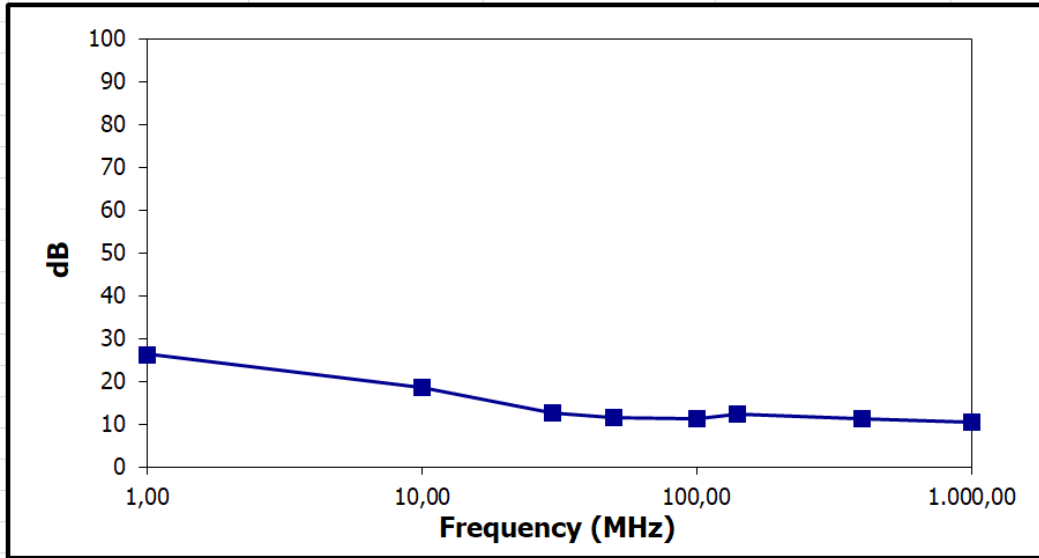
Frequency	Ref. Meas. dBuV	Att. Meas. dBuV	Noise Lev. dBuV	SE dB
140 MHz	120	52	11.2	100
400 MHz	120	53	9.9	100
1000 MHz	120	52	12	100



Typical Shielding Effectiveness

HAMİLE BOXER (Eski)

Frequency (MHz)	Ref. Meas. dBuV	Att. Meas. dBuV	Noise Lev. dBuV	SE dB
1,00	120,00	93,70	15,10	26,3
10,00	120,00	101,30	15,10	18,7
30,00	120,00	107,40	17,40	12,6
50,00	120,00	108,40	13,20	11,6
100,00	120,00	108,60	11,20	11,4
140,00	120,00	107,50	10,40	12,5
400,00	120,00	108,60	9,95	11,4
1.000,00	120,00	109,40	11,80	10,6



Hamile Boxer Shielding Effectiveness

