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Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: 3463 (IC)
TCB ID: DE 0001

Accredited by the
German Accreditation Council
DAR–Registration Number
DAT-P-176/94-D1

Independent ETSI
compliance test house

Accredited Bluetooth® Test Facility (BQTF)

Test report no.:		**2-4201-01-05/05**
Applicant	**:**	**beyerdynamic GmbH & Co. KG**
Type	**:**	**TS 900 M , TS 900 C (OPUS900 Series)**
Test Standard	**:**	**FCC Part 74.861 RSS-123**
FCC ID	**:**	**OSDTS900**
Certification No. IC	**:**	**3628A-TS900**

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1 General information

1.1. Administrative data of the test facility

1.1.1 Identification of the testing laboratory

Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-176/94-D1 Bluetooth Qualification Test Facility (BQTF) Federal Communications Commission (FCC) Identification/Registration No : 90462
Responsible for testing laboratory:	Dirk Hausknecht Phone: +49 681 598 0 Fax: +49 681 598 9075 email: info@ict.cetecom.de

1.2. Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

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Responsible for testing
(Michael Berg)

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Responsible for laboratory
(Dirk Hausknecht)

1.3 Details of Applicant

Name	:	beyerdynamic GmbH & Co. KG
Address	:	Theresienstraße 8
City	:	D-74072 Heilbronn
Country	:	Germany
Phone	:	+49 (0) 7131 617 155
Fax	:	+49 (0) 7131 617 215
Contact	:	Mr. Ulrich Roth
Phone	:	+49 (0) 7131 617 155
Fax	:	+49 (0) 7131 617 215
e-mail	:	roth@beyerdynamic.de

1.4 Application Details

Date of receipt of application	:	2006-04-13
Date of receipt of test item	:	2006-06-21
Date(s) of test	:	2006-06-21 to 2006-06-23
Date of report	:	2006-06-28

1.5 Test Item

Type of equipment	:	Wireless Microphone
Type name	:	TS 900 M , TS 900 C (OPUS900 Series)
Serial number	:	see photographs
Manufacturer	:	MIPRO ELECTRONICS Co., Ltd
Address	:	814 Peikang Road
City	:	Chiayi
Country	:	Taiwan
Frequency Range	:	668 to 806 MHz
Measured Channels	:	
Channel 1	:	669 MHz
Channel 2	:	692 MHz
Channel 3	:	806 MHz
Type of modulation	:	F3E (152KF3E)
Number of channels	:	960
Antenna Type	:	Monopol antenna
Power supply (normal)	:	3.0V DC
Output power	:	Max.5.8 mW
Occupied bandwidth	:	152.3 kHz
Transmitter spurious	:	-44.3 dBm
Receiver spurious	:	-.-
Temperature range	:	-30°C to +50°C
FCC ID	:	OSDTS900
Certification No. IC	:	3628A-TS900
Open Area Test Site IC No.	:	3436
IC Standards	:	RSS-123, Issue 1, Rev. 2

ATTESTATION:
DECLARATION OF COMPLIANCE:
I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager :

2006-06-28	Michael Berg	
Date	Name	Signature

1.6 Test Standards

FCC:	**FCC Part 74 Subpart H**
IC:	**CANADA RSS-123**

2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

2.1 Summary of Measurement Results

Section in this Report	Test Name	Verdict
3.1	RF Power Output	pass
3.2	AFC Fequency Error vs. Voltage	pass
3.3	AFC Fequency Error vs. Temperature	pass
3.4	Characteristics of the Audio Modulation Circuirty	pass
3.5	Occupied Bandwidth	pass
3.6	Emission mask	pass

2.2 Test Procedure

All tests were done in accordance with the EIA/TIA 603.

The substitution method (TIA/EIA 603) was used.

This products fulfills also the requirements for CANADA RSS-123
No deviations from the technical specification(s) were ascertained in the course of the tests performed.

Final verdict : PASS

Additional Information :

TS900M and TS900C differentiate only in the housing:
TS900M : Metall housing
TS900C : Plastic Housing

3 Measurements and results

3.1 Output Power (radiated) FCC Rule Part 74.861 (e)(1)(ii)

Method of measurement:

Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method
(a) The measurements was performed with full rf output power and modulation.
(b) Test was performed at listed 3m test site (listed with FCC, IC).
(c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
(d) The BICONILOG antenna (20 MHz to 1 GHz) or HORN antenna (1 GHz to 18 GHz) was used for measuring.
(e) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level
Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)
(f) Set the EMI Receiver and #2 as follows:

Center Frequency: test frequency
Resolution BW: 100 kHz
Video BW: same
Detector Mode: positive
Average: off
Span: 3 x the signal bandwidth

(g) The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(h) The transmitter was rotated through 360 o about a vertical axis until a higher maximum signal was received.
(i) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(j) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
(k) The above steps were repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization. Both readings with the antennas placed in vertical and horizontal polarization shall be recorded.
(l) Repeat for all different test signal frequencies

Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

(a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:

Center Frequency	: equal to the signal source
Resolution BW	: 10 kHz
Video BW	: same
Detector Mode	: positive
Average	: off
Span	: 3 x the signal bandwidth

(b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level
Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)
(c) Select the frequency and E-field levels for ERP/EIRP measurements.
(d) Substitute the EUT by a signal generator and one of the following transmitting antenna (substitution antenna):
.DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz }.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17-24

(e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
(f) Use one of the following antenna as a receiving antenna: .DIPOLE antenna for frequency from 30-1000 MHz or .HORN antenna for frequency above 1 GHz }.
(g) If the DIPOLE antenna is used, tune it's elements to the frequency as specified in the calibration manual.
(h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
(i) Tune the EMI Receivers to the test frequency.
(j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(k) The transmitter was rotated through 360 o about a vertical axis until a higher maximum signal was received.
(l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
(n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:
P = P1 - L1 = (P2 + L2) – L1 = P3 + A + L2 - L1
EIRP = P + G1 = P3 + L2 - L1 + A + G1
ERP = EIRP – 2.15 dB
Total Correction factor in EMI Receiver # 2 = L2 – L1 + G1
Where: P: Actual RF Power fed into the substitution antenna port after corrected.
P1: Power output from the signal generator
P2: Power measured at attenuator A input
P3: Power reading on the Average Power Meter
EIRP: EIRP after correction
ERP: ERP after correction
(o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
(p) Repeat step (d) to (o) for different test frequency
(q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
(r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.:

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
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Results:

TEST CONDITIONS		TRANSMITTER ERP (mW)					
		TS900M			TS900C		
Frequency (MHz)		669	692	806	669	692	806
T_{nom}(+23)°C	V_{nom} 3.0 V	3.5	3.8	5.8	4.4	2.8	2.0
antenna gain		0 dB					
Measurement uncertainty		±0.5dB					

Sample calculation:

Freg	SA Reading	SG Setting	Ant. gain	Dipol gain	Cable loss	ERP Result	ERP Result		
MHz	dBµV	dBm	dBi	dBd	dB	dBm	mW		
806.0	105.4	10.6	-	0.0	3.0	7.6	5.8		

ERP = SG (dBm) - Cable Loss (dB) + Ant. gain (dBd)

LIMIT **FCC Rule Part 74.861**

Frequency range MHz	Power level conducted mW
54-72, 76-88, 174-216	50
470-608, 614-806	250

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17-24

3.2 AFC Frequency Error vs. Voltage FCC Rule Part 74.861

Method of measurement:
The EUT was fixed in test fixture to a resistive coaxial attenuator of normal load impedance, and the un-modulated carrier was measured by means of a spectrum analyzer .
The input voltage was varied in an range from 2.2V to 3.1V and the maximum change in frequency was noted within one minute.
The temperature tests were performed for each frequency range on one channel

669 MHz

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
2.2	-760	-0,00011360	-1,1360
2.4	-763	-0,00011405	-1,1405
2.6	-764	-0,00011420	-1,1420
2.8	-768	-0,00011480	-1,1480
3.0	-771	-0,00011525	-1,1525
3.1	-774	-0,00011570	-1,1570

692 MHz

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
2.2	-751	-0,00010853	-1,0853
2.4	-754	-0,00010896	-1,0896
2.6	-754	-0,00010896	-1,0896
2.8	-756	-0,00010925	-1,0925
3.0	-757	-0,00010939	-1,0939
3.1	-759	-0,00010968	-1,0968

806 MHz

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
2.2	+802	0,00009950	0,9950
2.4	+807	0,00010012	1,0012
2.6	+815	0,00010112	1,0112
2.8	+820	0,00010174	1,0174
3.0	+822	0,00010199	1,0199
3.1	+824	0,00010223	1,0223

LIMIT **FCC Rule Part 74.861(4)**

The frequency tolerance of the transmitter shall be 0.005 percent

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

3.3 AFC Fequency Error vs. Temperature

Method of measurement:
The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the un-modulated carrier was measured by means of a spectrum analyzer . With all power removed, the temperature was decreased to –30°C and permitted to stabilize for three hours . Power was applied and the maximum change in frequency was noted within one minute. With power OFF , the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency error was noted within one minute . The temperature tests were performed for each frequency range on one channel

669 MHz

TEMPERATURE (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-13864	-0,00207235	-20,7235
-20	-8264	-0,00123528	-12,3528
-10	-5614	-0,00083916	-8,3916
±0.0	-3941	-0,00058909	-5,8909
+10	-1764	-0,00026368	-2,6368
+20	-771	-0,00011525	-1,1525
+30	-104	-0,00001555	-0,1555
+40	+1077	0,00016099	1,6099
+50	+1744	0,00025934	2,5934

692 MHz

TEMPERATURE (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-13908	-0,00200983	-20,0983
-20	-8272	-0,00119538	-11,9538
-10	-5636	-0,00081445	-8,1445
±0,0	-3958	-0,00057197	-5,7197
+10	-1794	-0,00025925	-2,5925
+20	-759	-0,00010968	-1,0968
+30	-90	-0,00001301	-0,1301
+40	+1072	0,00015491	1,5491
+50	+1735	0,00025072	2,5072

806 MHz

TEMPERATURE (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-8654	-0,00107370	-10,7370
-20	-5112	-0,00063424	-6,3424
-10	-2510	-0,00031141	-3,1141
±0,0	-1523	-0,00018896	-1,8896
+10	-213	-0,00002643	-0,2643
+20	+802	0,00009950	0,9950
+30	+1186	0,00014715	1,4715
+40	+1924	0,00023871	2,3871
+50	+2325	0,00034753	3,4753

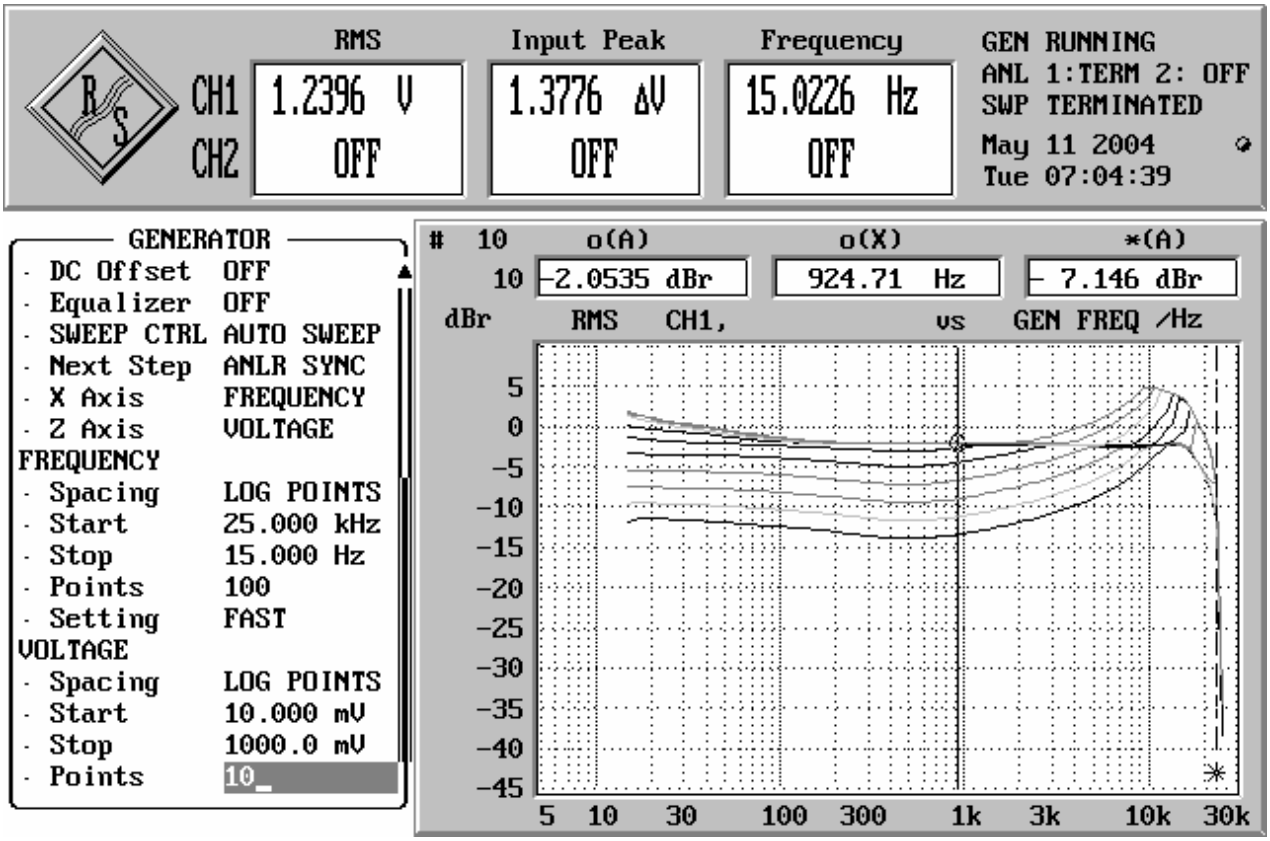
LIMIT **FCC Rule Part 74.861**

The frequency tolerance of the transmitter shall be 0.005 percent

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

3.4 Characteristics of the Audio Modulation Circuirty FCC Rule Part 74 .861(e3)

Method of measurement :
The audio frequency responds was measured in accordance with EIA/TIA 603.
The plots shows 10 curves with different modulation levels, starting from 10.0mV to 1000 mV (30%+20 dB Modulation), the frequency is varied from 20 Hz to 25 kHz .



max. measured frequency deviation : 69 kHz

this measurement is valid for all channels

Limit: max Deviation ±75kHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

3.5 Occupied Bandwidth FCC Rule Part 74.861(e)(3), (5)/ Sec. 2.1049

Test method :
The audio frequency responds was measured in accordance with EIA/TIA 603.

Data in the plots show that all sidebands between 50 & 100% for the authorized bandwidth are attenuated by at least 25dB. From 100 to 250% of the authorize3d bandwidth they are attenuated by at least 35dB and beyond 250% 43 log(Po) dB. The plot shows the transmitter modulated with 15000 Hz (the highest modulation frequency), adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the un-modulated carrier at the top of the screen. The test procedure diagram and occupied bandwidth plots follow.

TEST CONDITIONS		OCCUPIED BANDWIDTH (kHz)					
Frequency (MHz)		669	692	806			
T_{nom}(+23)°C	V_{nom} 3.0 V	151.303	152.305	125.250			
max. Deviation (FM)		69 kHz					
Measurement uncertainty		±0.5%					

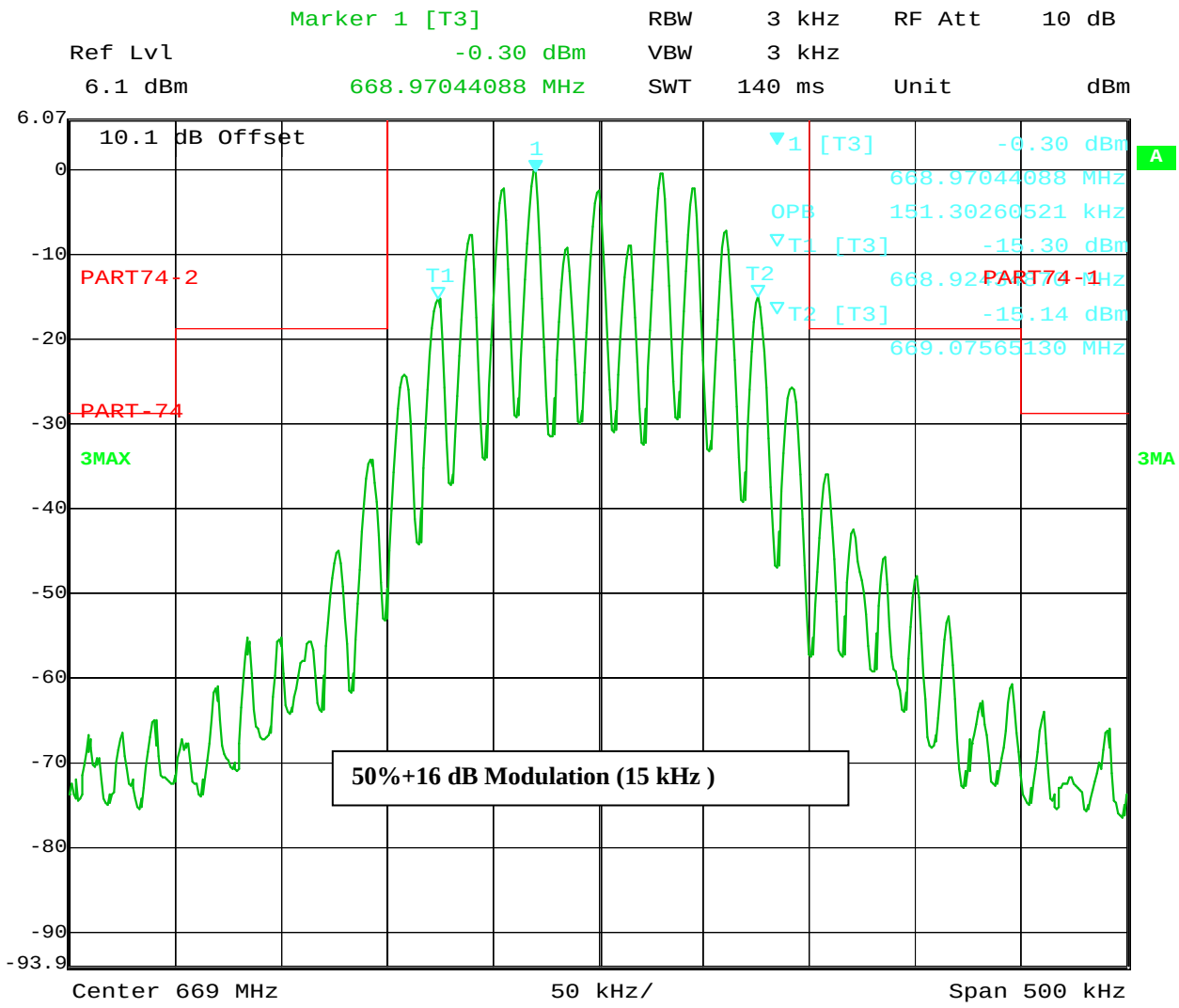
Limits **FCC Rule Part 74.861(e)(5)**

The operating bandwidth shall not exceed 200 kHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

OCCUPIED BANDWIDTH **FCC Rule Part 74.861(e)(3), (5)/ Sec. 2.989**

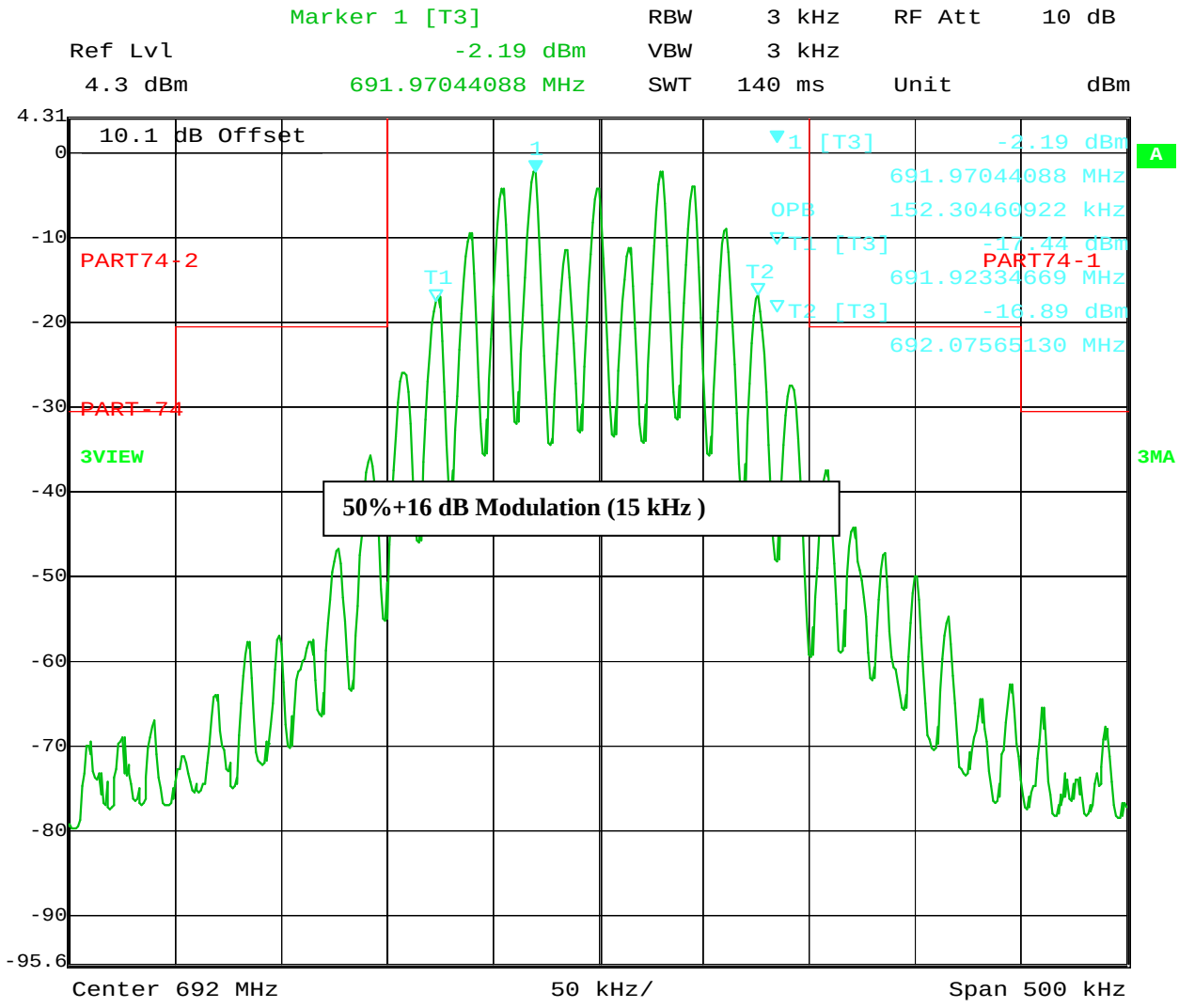
Frequency: 669 MHz / max. deviation : ± 69kHz (Limit ± 75 kHz)



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

OCCUPIED BANDWIDTH **FCC Rule Part 74.861(e)(3), (5)/ Sec. 2.1049**

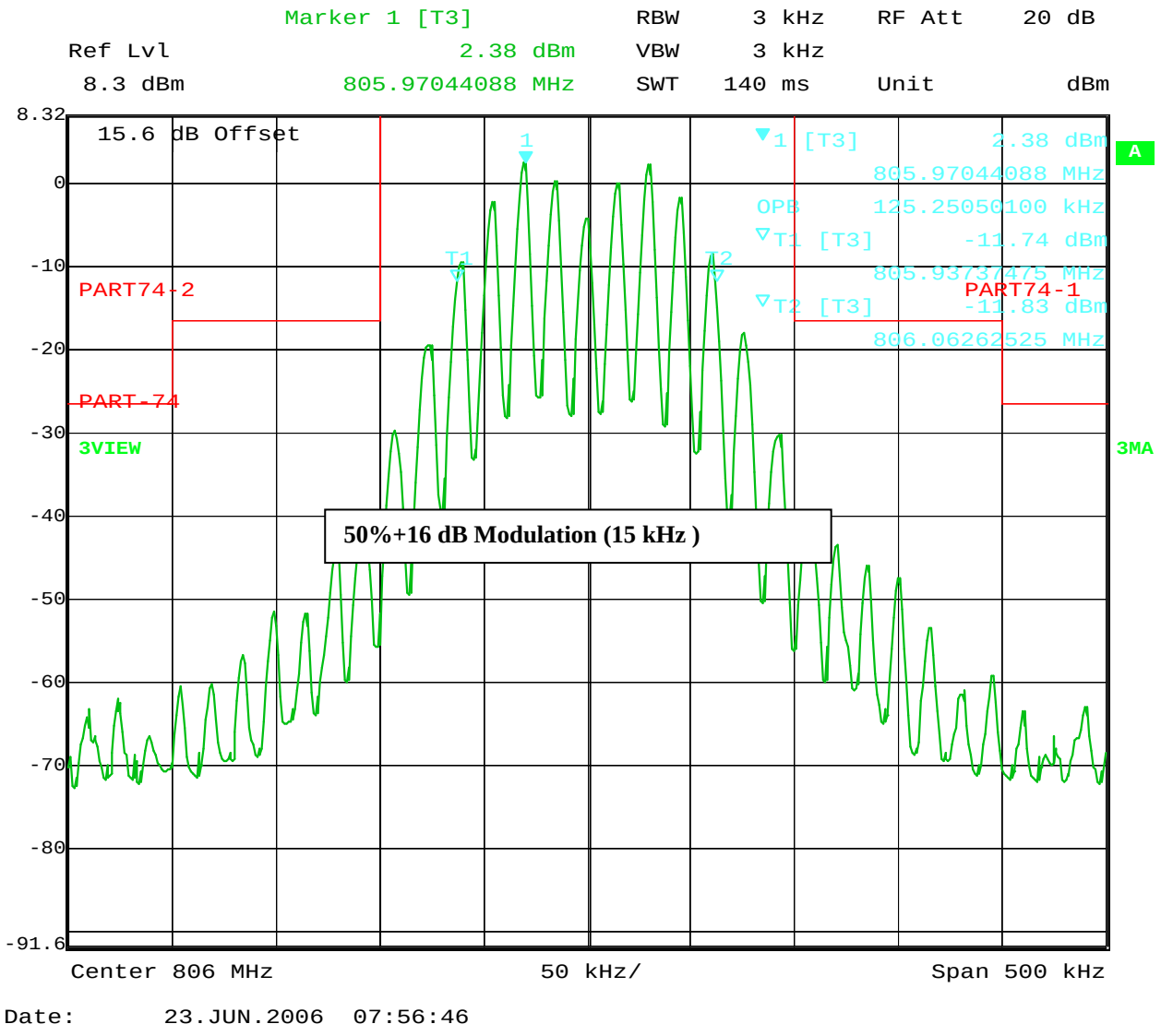
Frequency: 692 MHz / max. deviation : ± 69 kHz (Limit ± 75 kHz)



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64 ;05

OCCUPIED BANDWIDTH **FCC Rule Part 74.861(e)(3), (5)/ Sec. 2.1049**

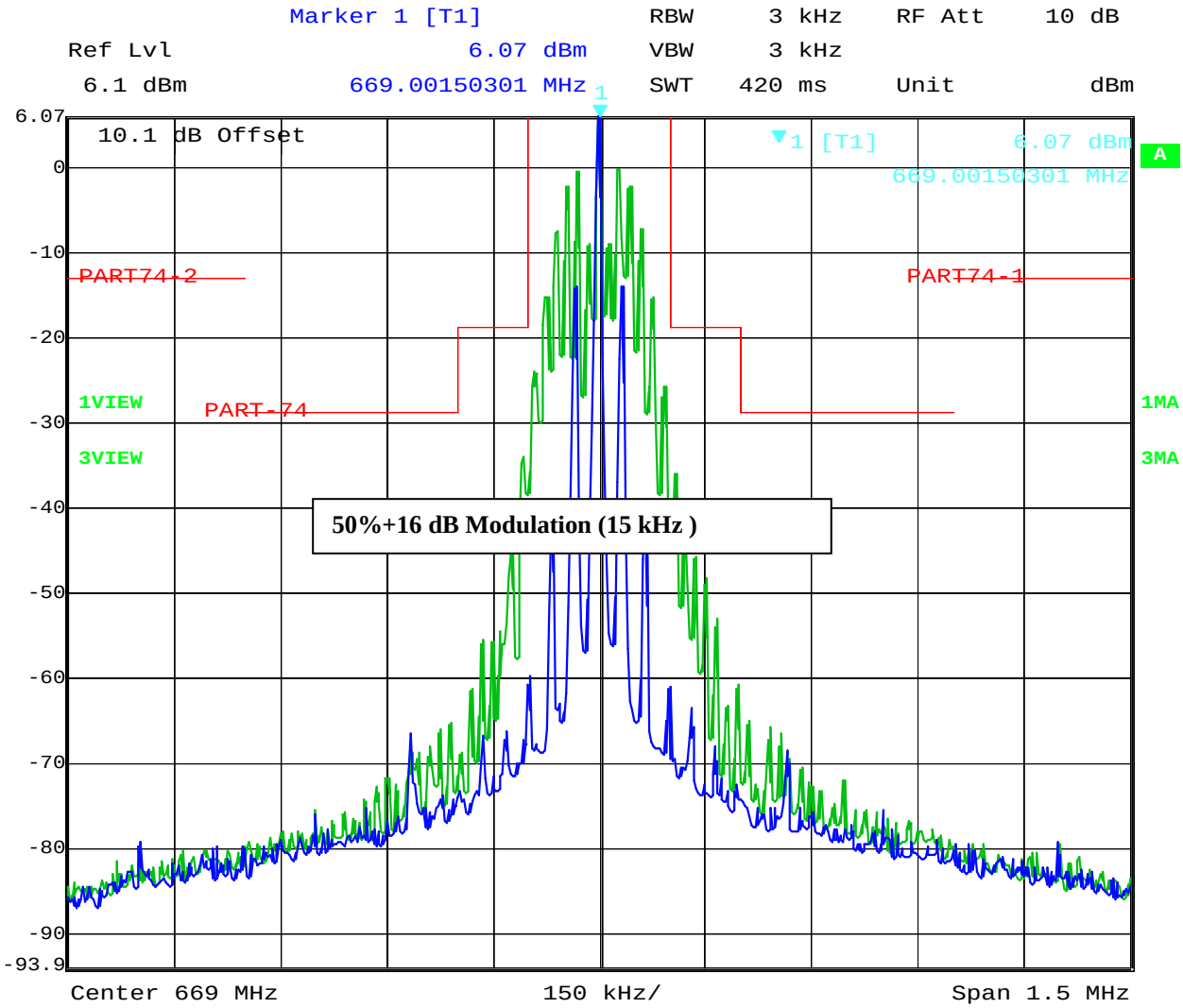
Frequency: 806 MHz / max. deviation : ± 69 kHz (Limit ± 75 kHz)



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

3.6 Emission mask FCC 74 861(e)(6)

669 MHz

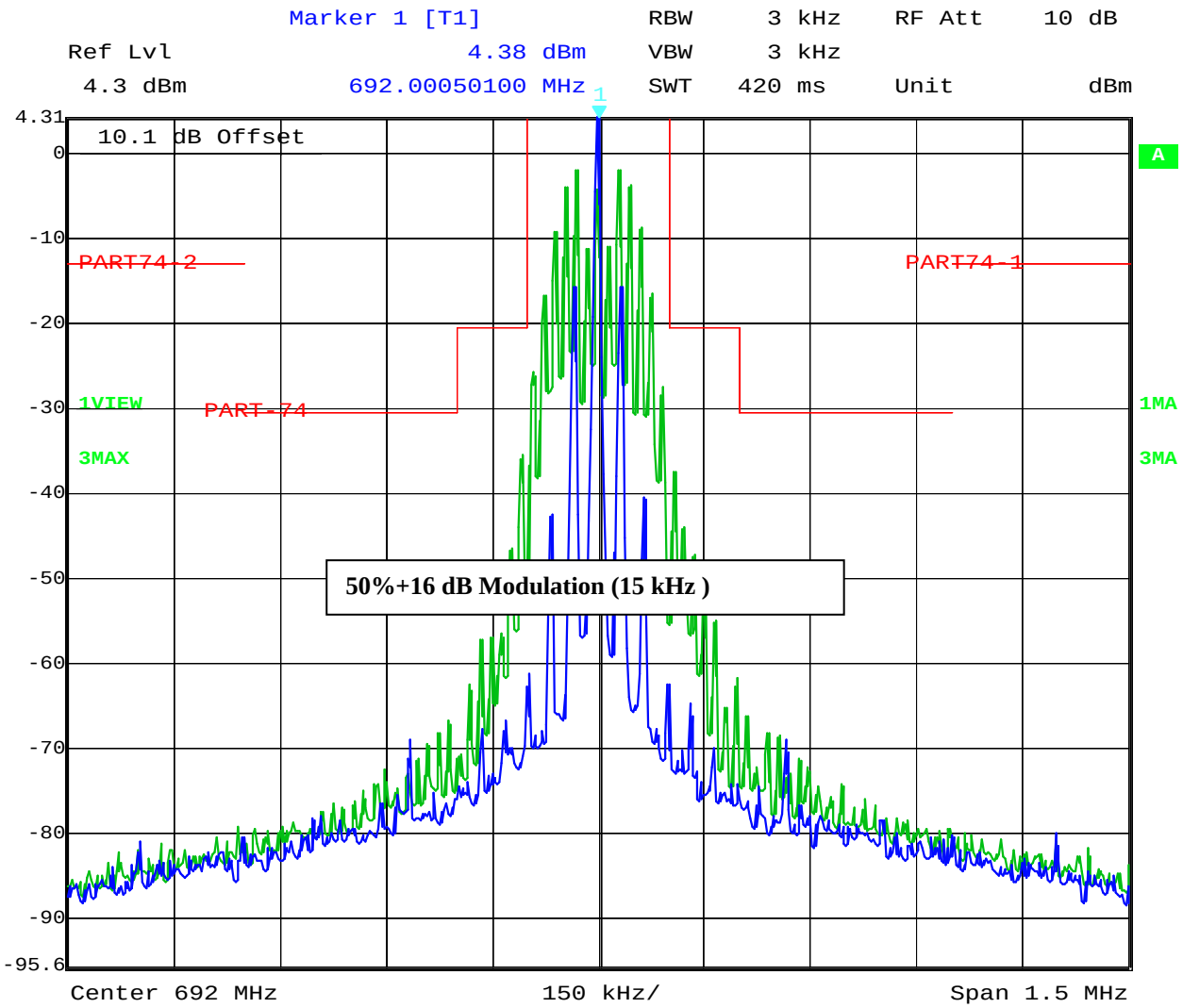


Limits **FCC Rule Part 74.861(e)(6)**

f ± 100 kHz to f ± 200 kHz	f ± 200 kHz to f ± 500 kHz	f ± 500 kHz
25 dBc	35 dBc	-43 +10 $\log_{10}$(mean output power in watts) dB below the mean output power

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Emission mask **FCC 74 861(e)(6)**
692 MHz



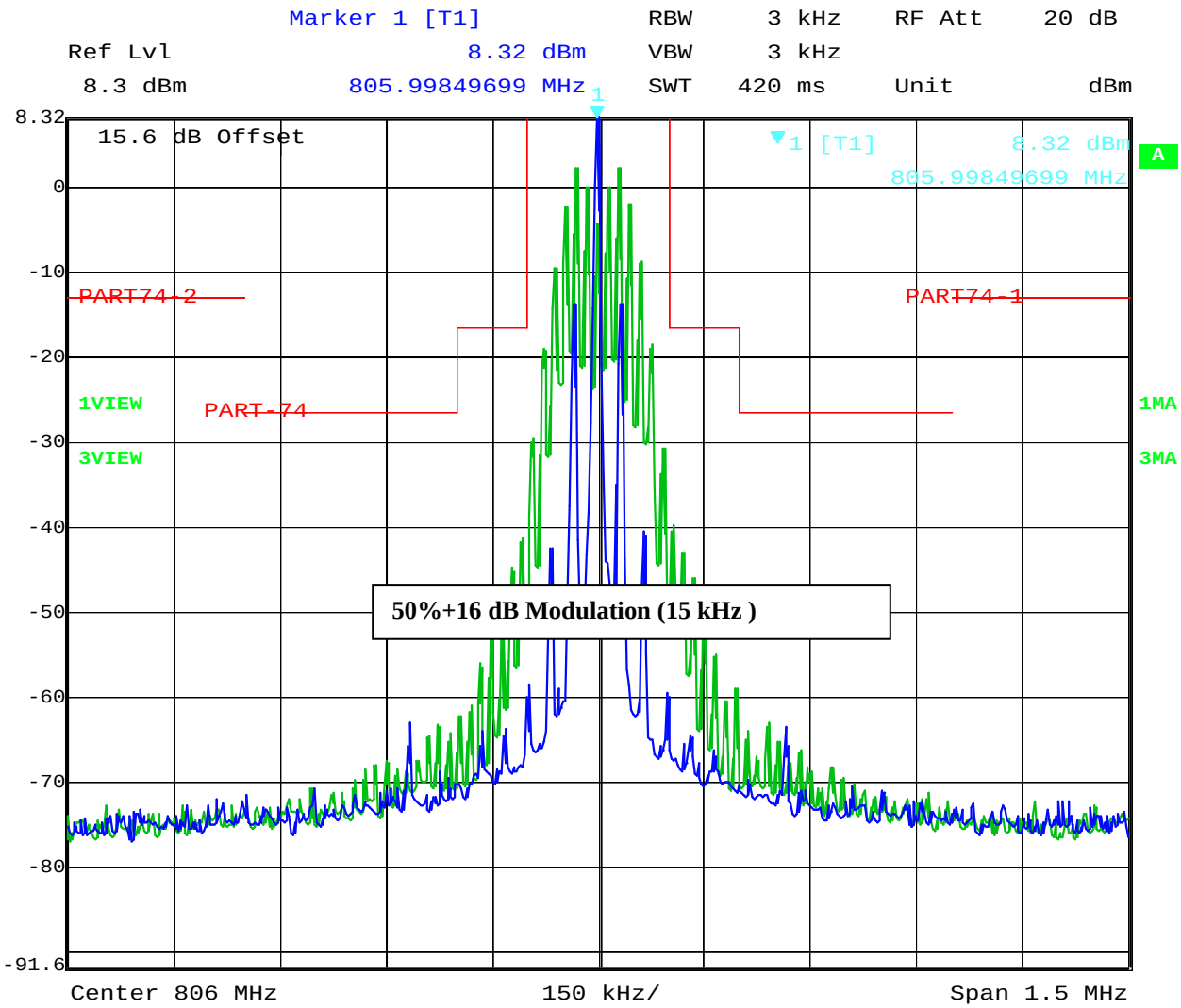
Limits **FCC Rule Part 74.861(e)(6)**

f ± 100 kHz to f ± 200 kHz	f ± 200 kHz to f ± 500 kHz	f ± 500 kHz
25 dBc	35 dBc	-43 +10 $\log_{10}$(mean output power in watts) dB below the mean output power

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Emission mask **FCC 74 861(e)(6)**

806 MHz



Limits **FCC Rule Part 74.861(e)(6)**

f ± 100 kHz to f ± 200 kHz	f ± 200 kHz to f ± 500 kHz	f ± 500 kHz
25 dBc	35 dBc	-43 +10 $\log_{10}$(mean output power in watts) dB below the mean output power

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
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3.7 Radiated Emissions FCC Rule Part 74 subpart H

Test procedure

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak
detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna (tuned dipole for f less than 1GHz and horn for frequency higher than 1GHz).
10). The substitution antenna shall be oriented for vertical polarization and the length (if a dipole antenna is used) of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11). The substitution antenna shall be connected to a calibrated signal generator.
12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.
18). Repeat above substitution measurement procedure for fundamental and all harmonica emissions.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

TS900M

Freg	SA Reading	SG Setting	Ant. gain	Dipole gain	Cable loss	ERP Result	Limit	Margin	Pol
MHz	dBµV	dBm	dBi	dBd	dB	dBm	dBm	dBm	H/V
669.0	102.8	8.2		0.0	2.8	5.4	24		V
669.0	94.3	-0.3		0.0	2.8	-3.1			H
All other peaks > 25 dB below Limit							-13		
692.0	103.2	8.6		0.0	2.8	5.8	24		V
692.0	95.7	+0.2		0.0	2.8	-2.6			H
All other peaks > 25 dB below Limit							-13		
806.0	105.4	10.6	-	0.0	3.0	7.6	24		V
806.0	96.5	2.2		0.0	3.0	-0.8			H
no traceable peak found									

TS900C

Freg	SA Reading	SG Setting	Ant. gain	Dipole gain	Cable loss	ERP Result	Limit	Margin Limit	Pol
MHz	dBµV	dBm	dBi	dBd	dB	dBm	dBm	dB	H/V
669.0	103.8	9.2		0.0	2.8	6.4	24		V
669.0	96.5	+1.7		0.0	2.8	-1.1			H
All other peaks > 25 dB below Limit							-13		
692.0	103.2	7.3		0.0	2.8	4.5	24		V
692.0	95.5	+0.0		0.0	2.8	-2.8			H
All other peaks > 25 dB below Limit							-13		
806.0	99.4	6.0	-	0.0	3.0	3.0	24		V
806.0	93.8	-0.6		0.0	3.0	-3.6			H
All other peaks > 25 dB below Limit									

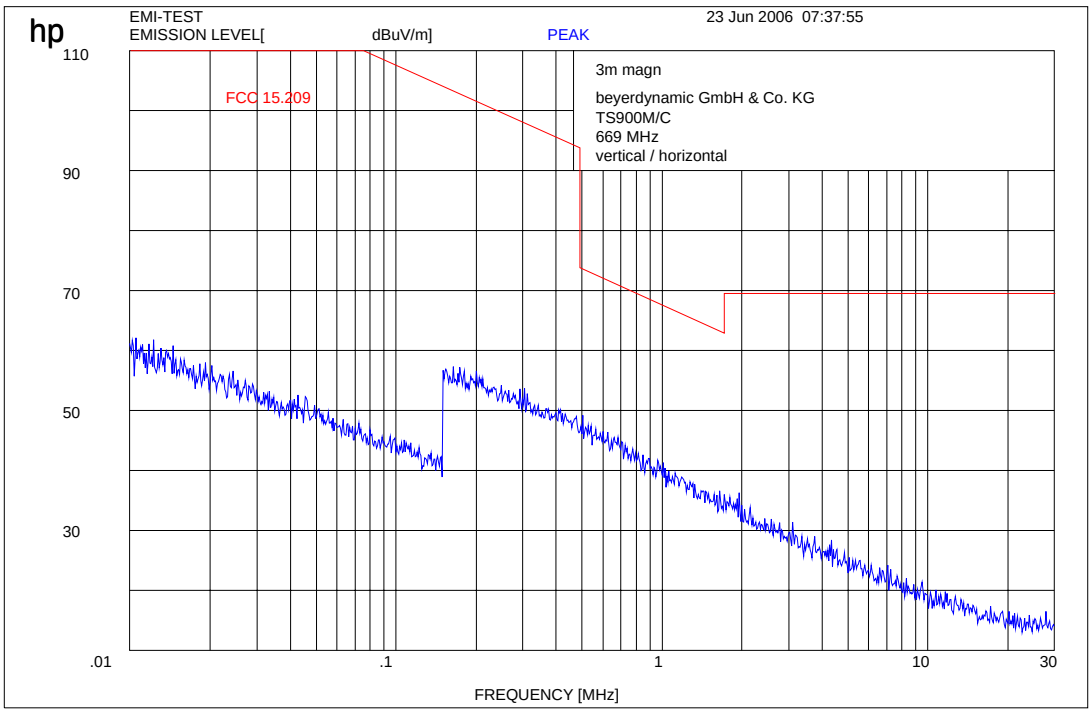
all results worst case

Limits **FCC Rule Part 74.861(e)(6)**

f ± 100 kHz to f ± 200 kHz	f ± 200 kHz to f ± 500 kHz	f ± 500 kHz
25 dBc	35 dBc	-43 +10 $\log_{10}$(mean output power in watts) dB below the mean output power

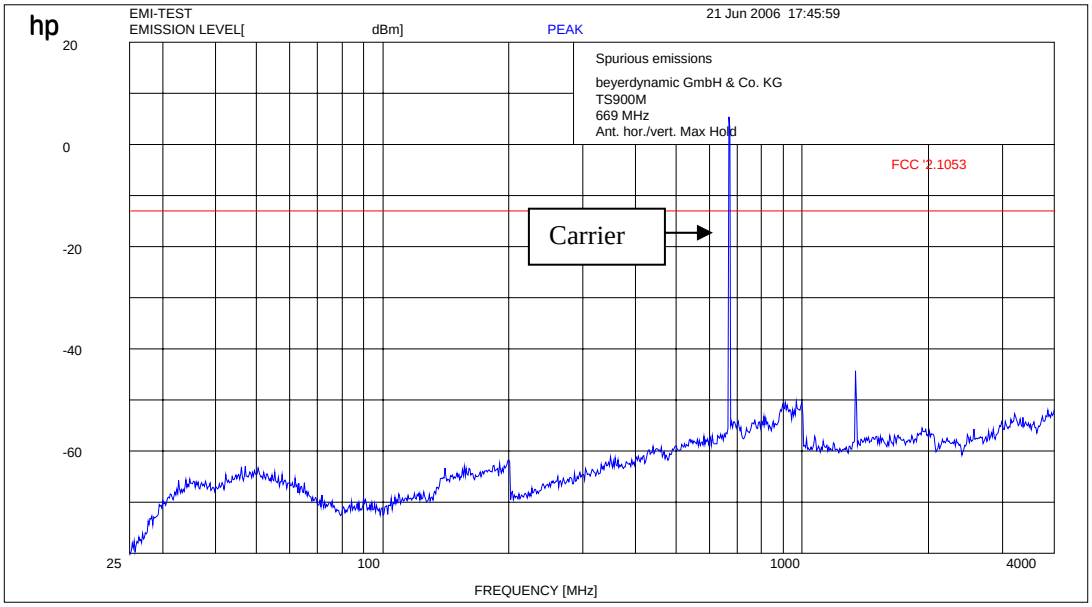
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

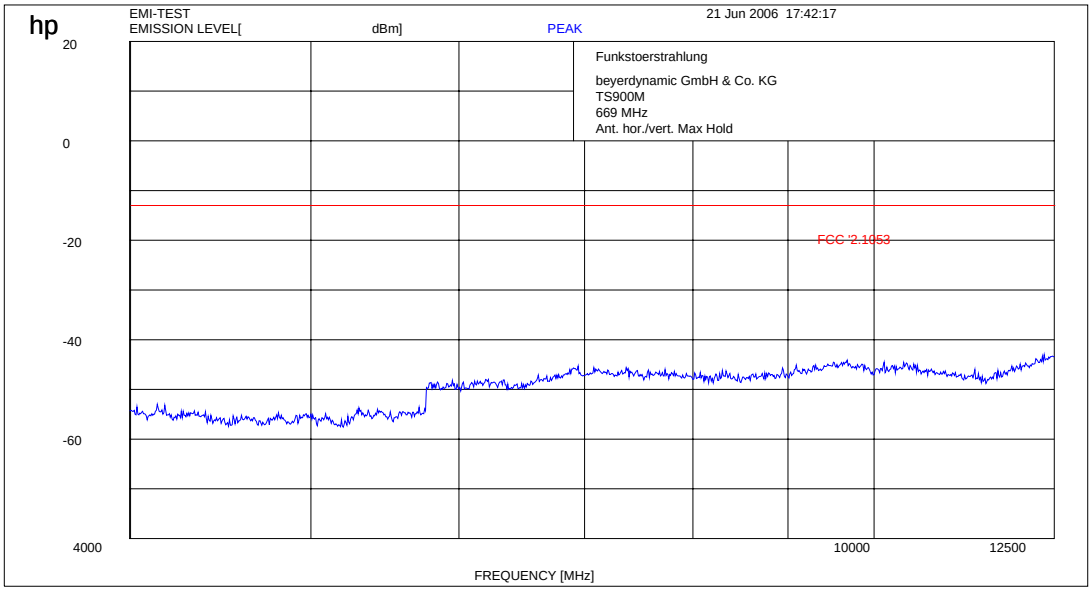
RADIATED EMISSIONS **FCC Rule Part 74 subpart H**
(this plot is valid for all channels)
Part 15.209 Magnetics



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

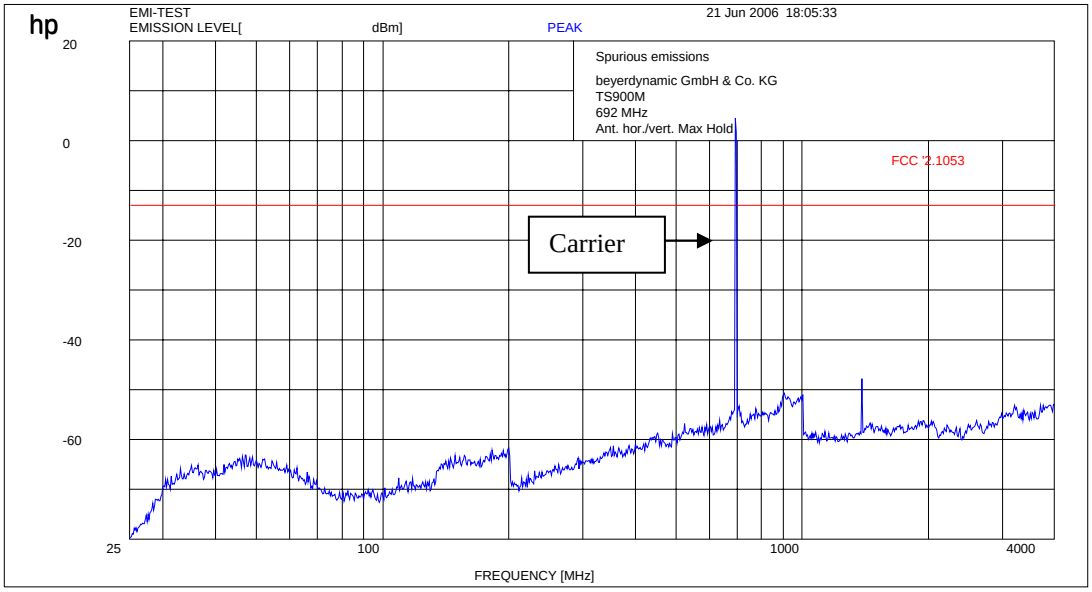
RADIATED EMISSIONS **FCC Rule Part 74 subpart H**
669 MHz (TS900M)

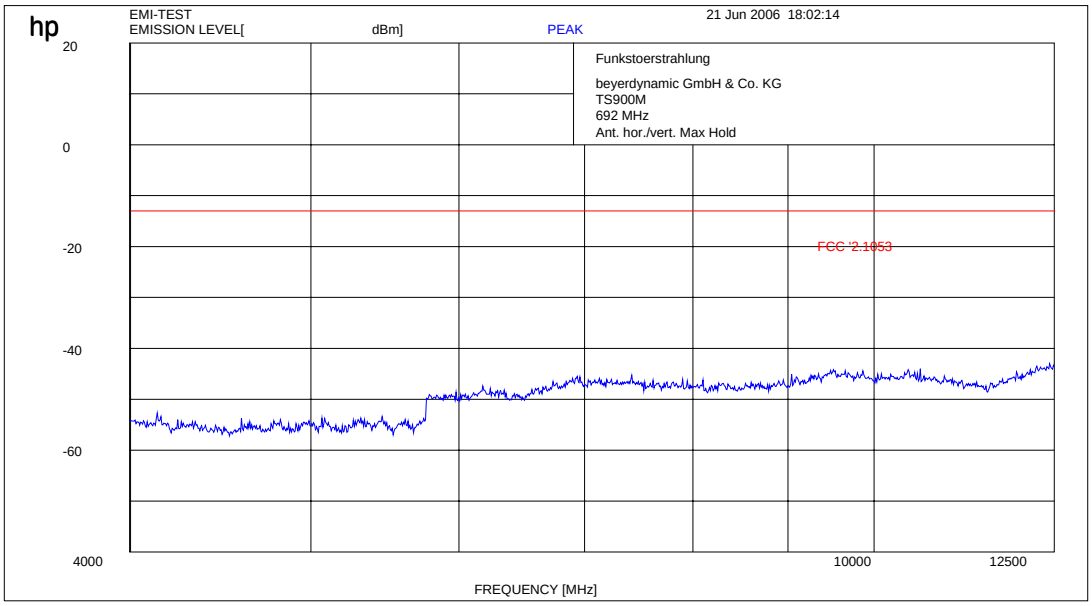




REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

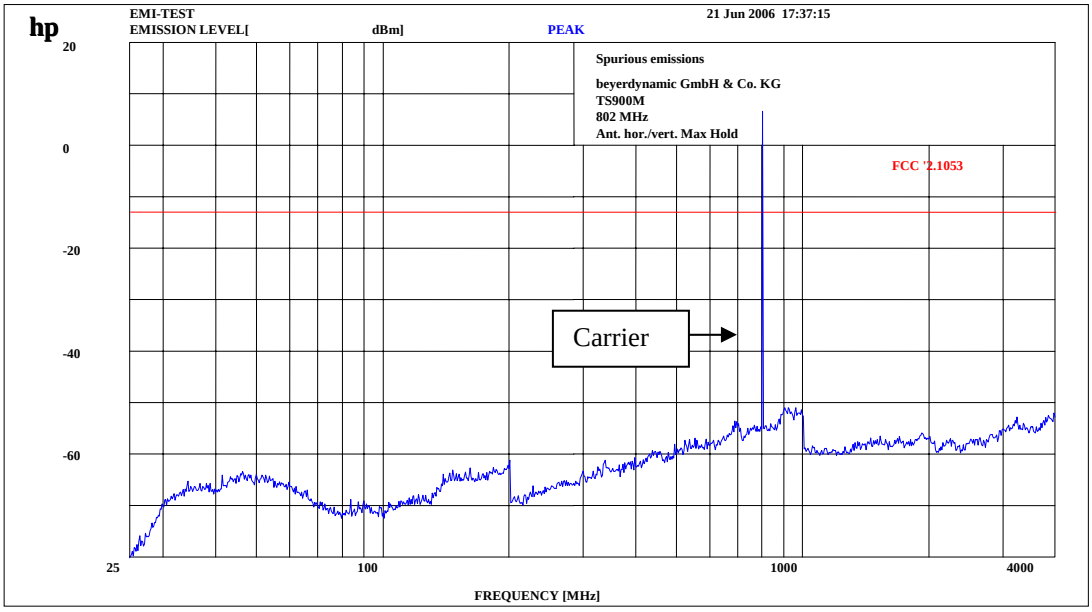
RADIATED EMISSIONS **FCC Rule Part 74 subpart H**
692 MHz (TS900M)

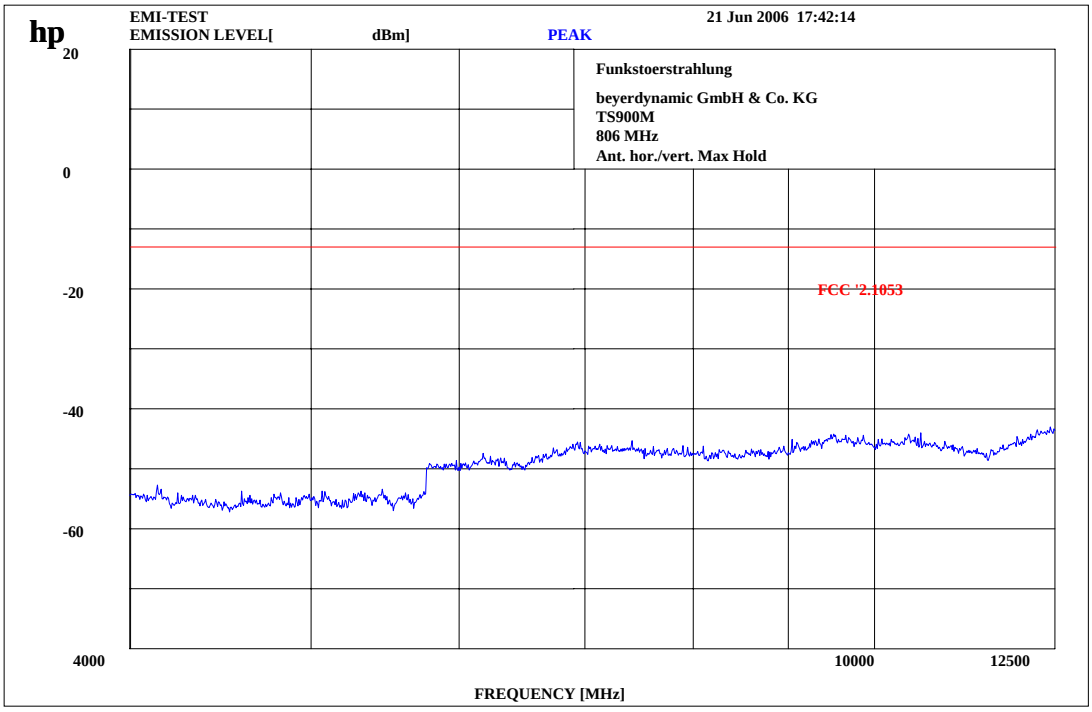




REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

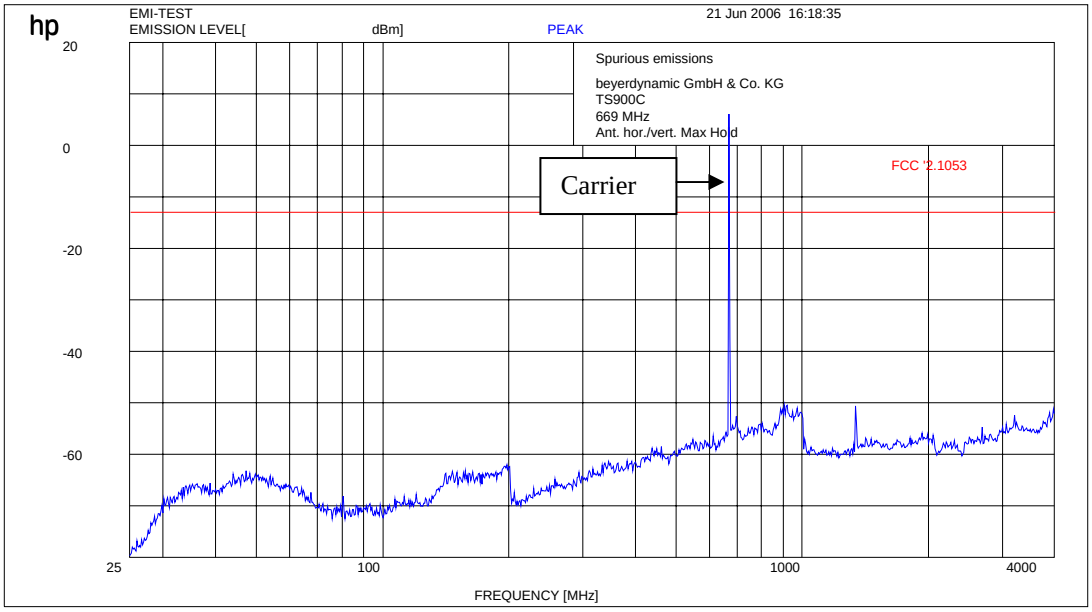
RADIATED EMISSIONS **FCC Rule Part 74 subpart H**
806 MHz (TS900M)

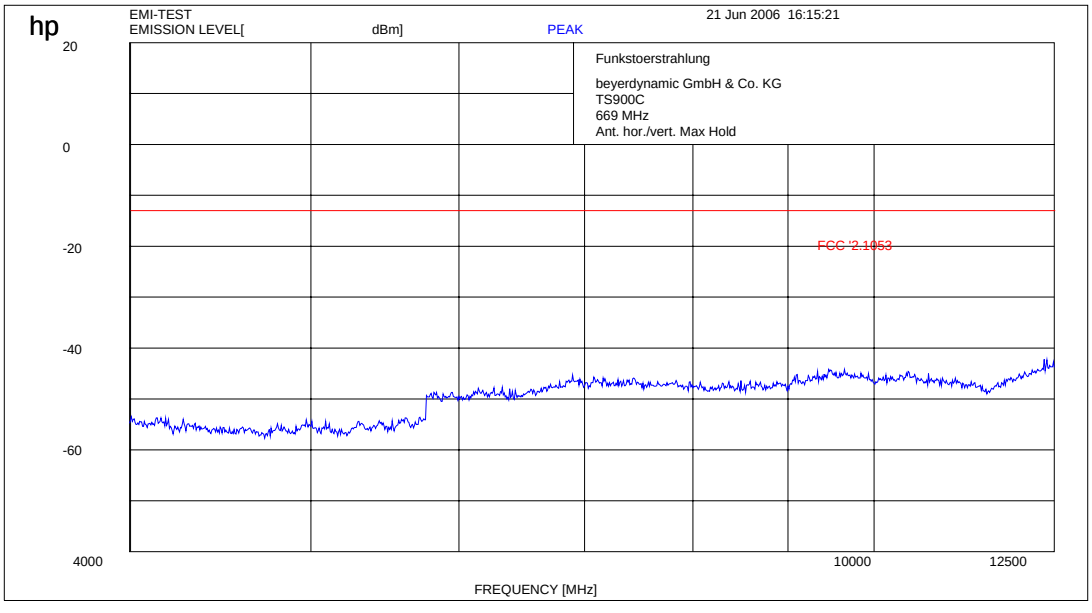




REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

RADIATED EMISSIONS **FCC Rule Part 74 subpart H**
669 MHz (TS900C)

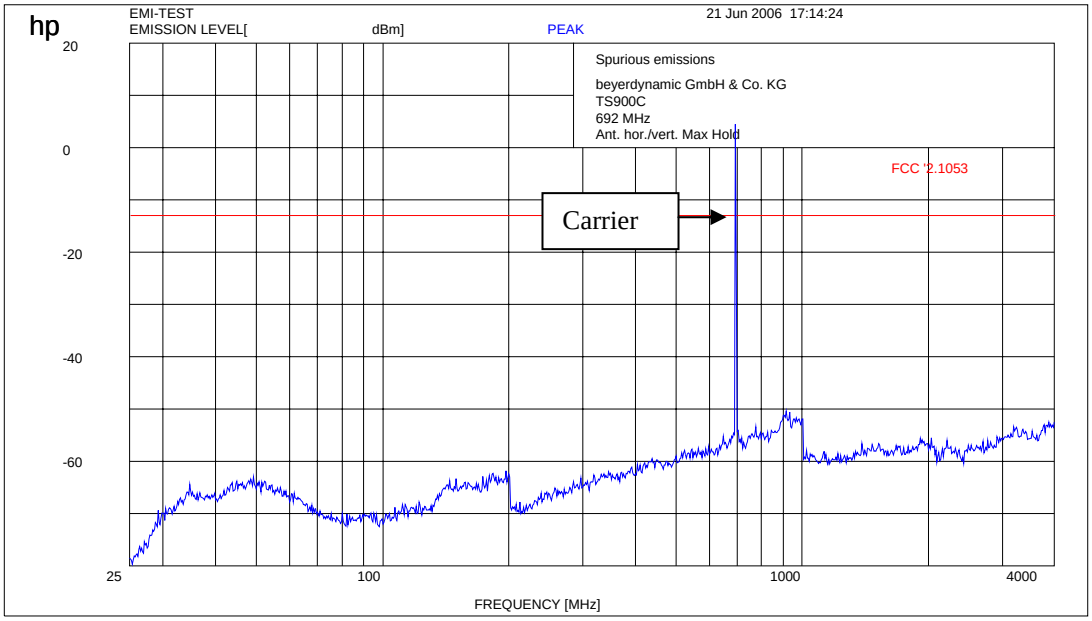


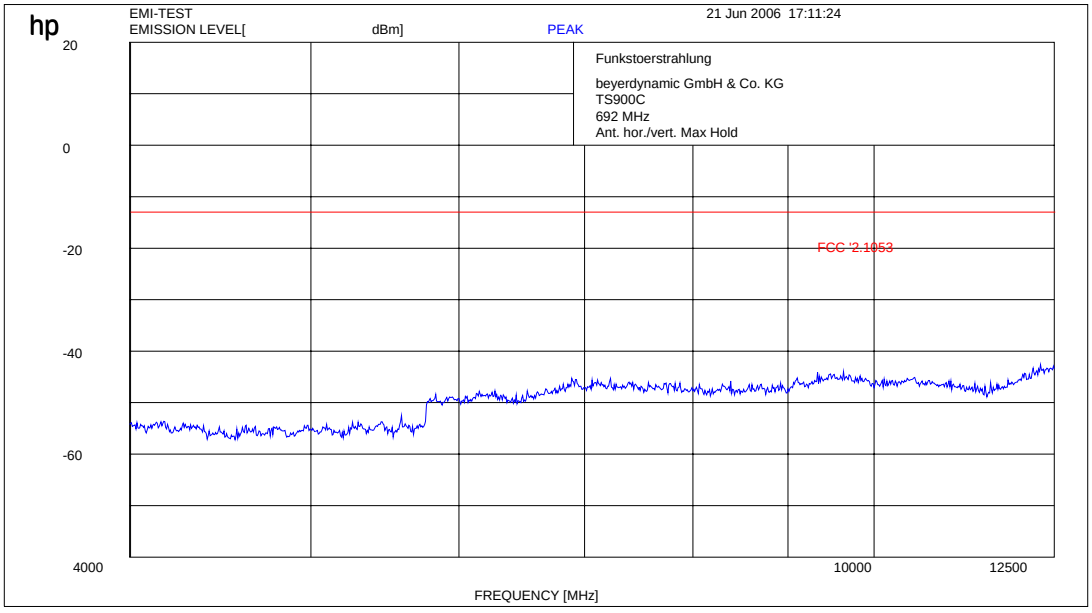


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

RADIATED EMISSIONS FCC Rule Part 74 subpart H

692 MHz (TS900C)

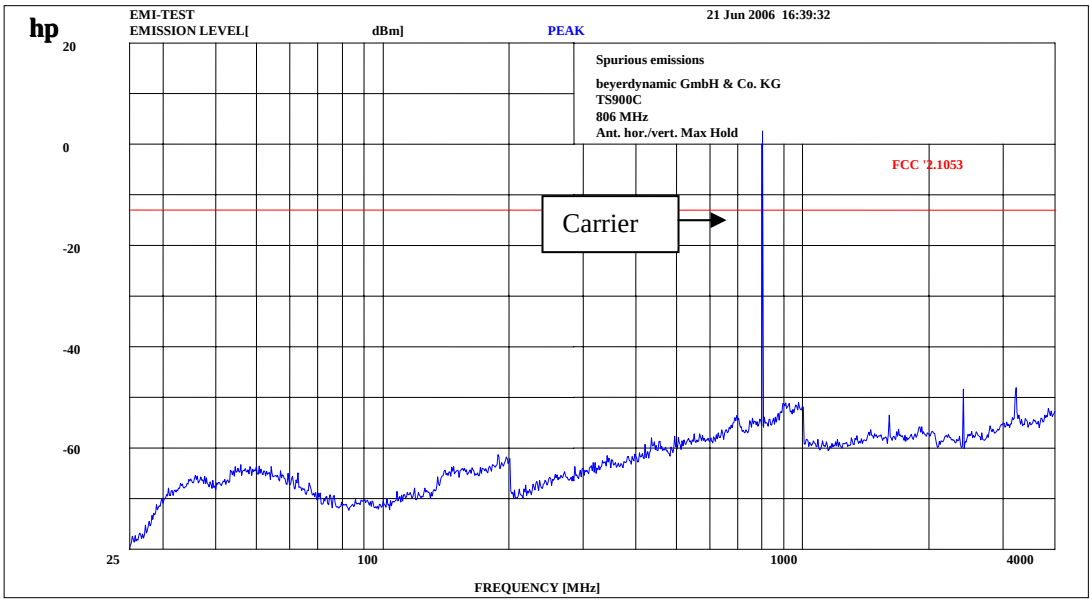


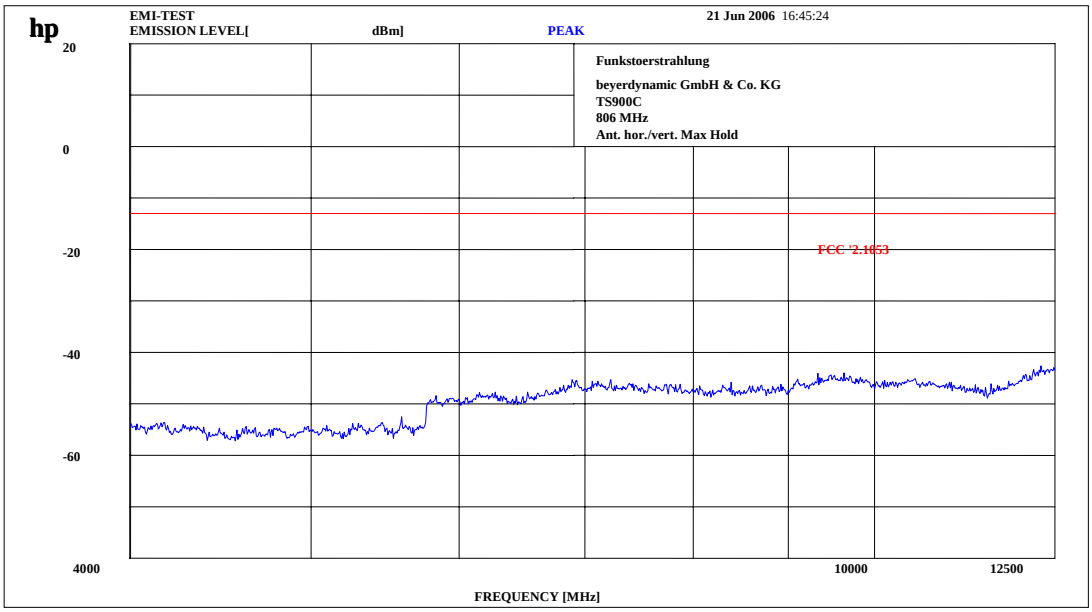


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

RADIATED EMISSIONS FCC Rule Part 74 subpart H

806 MHz (TS900C)





REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

4 Used Testequipment

Anachoic chamber C:

Device	Manufacturer	Type	S/N Number	Inv. No. Cetecom
Spektrum Analyser	HP	8566B	2747A05306	300001000
Spektrum Analyser Display	HP	85662A	2816A16541	300002297
Quasi-Peak-Adapter	HP	85650A	2811A01131	300000999
Power Dupply	HP	6032A	2818A03450	300001040
Power Attenuator	Byrd	8325	1530	300001595
Bikonical Antenna	EMCO	3104	3758	300001602
Log. Period. Antenna	EMCO	3146	2130	300001603
Double Ridged Antenna	EMCO	HP 3115P	3088	300001032
Active Loop Antenna	EMCO	6502	2210	300001015
Antenna VDE/FCC		HP11965B		300002298
SRM-Drive	HP	9144A	2823e46556	300001044
Software	HP	EMI		300000983
Busisolator	Kontron			300001056
Absorberhalle	MWB		87400/02	300000996
Salzsäule	Kontron			300001055
Antenna	R&S	HMO20	832211/003	300002243
Indukt.Tast Antenna	R&S	HFH 2 Z4	881468/026	300001464
System-Rack	HP I.V.	85900	*	300000222
Spectrum Analyzer	HP	8566B	2747A05275	300000219
Quasi-Peak-Adapter	HP	85650A	2811A01135	300000216
RF-Preselector	HP	85685A	2837A00779	300000218
Rahmen Antenne	R&S	HFH2-Z2	891847-35	300001169
Leitungsteiler	HP	11850C		300000997
Breitband-Hornantenne EMI	HP	35155P		300002300
PC	HP	Vectra VL		300001688
VHF Meßantenne	Schwarzbeck	VHA 9103		300001778
Spectrum Analyzer Display	HP	85662A	2816A16497	300001690
VHF Meßantenna	Schwarzbeck	VHA 9103		300001780
Biconical Antenna	EMCO	3104 C	9909-4868	300002590

SRD Laboratory:

Device	300001207	Type	S/N Number	Inv. No. Cetecom
Spectrum Analyzer	300001208	494AP	B010241	300000863
Spectrum Analyzer	HP	71210A (70000)	2731A02347	300000321
Spectrum Analyzer Display	HP	70206A	2840A01553	300002017
Reference Frequency	HP	70310A	2736A00707	300002018
Local Oscillator	HP	70900A	2842A02221	300002019
ZF-Modul 10Hz-300 kHz	HP	70902A	2840A02145	300002020
ZF-Modul 100 kHz-3 MHz	HP	70903A	2835A01069	300002021
HF-Teil für 71210A 100Hz- 22GHz	HP	70908A		300002022
Spectrum Analyzer 2	HP	85660B	3138A07614	
Spectrum Analyzer Display 2	HP	85662A	3144A20627	

Signal Generator DC-600 KHz	HP	8904A	2822A01213	300001157
Signal Generator DC-600 KHz	HP	8904A	2822A01214	300001158
Powersupply	HP	6038A	3122A11097	300001204
Netznachbildung	R&S	ESH3-Z5	828576/020	300001210
Amplituden Controller	R&S	SMDU-Z2	871829/051	300002309
Trenntrafo	Erfi	913501		300001205
Trenntrafo	Grundig	RT5A	9242	300001627
Relais Matrix	HP	3488A	2719A15013	300001156
Multimeter	Siemens	Multizet		300001102
Peak Power Calibrator	HP	8900B		300001084
Schallgeber	Schomandl	SG 1	10159	300001209
Schallgeber	Schomandl	SG 2	10176	300002473
Filter	FSY Microwave			300001206
Attenuatorer	Pro Nova			300002476
Klimaschrank	Heraeus Voetsch	VUK04/500		300001012
Spectrum Analyzer 3	HP	8566A	1925A00257	300001098
Spectrum Analyzer Display 3	HP	85662	1925A00860	300002306
Oszilloscope	Tektronix	2432	110261	300001165
Radiocom. Analyzer	R&S	CMTA 54	894043/010	300001175
Powersupply	HP	6038A	2848A07027	300001174
Signal Generator 0.01-1280 MHz	HP	8662A	2224A01012	300001110
Signal Generator (Funktions)	R&S	AFGU	862490/032	300001201
Trenntrafo	Erfi	MPL	91350	300001155
Relais Matrix	R&S	PSU	893285/020	300001173
Power Meter	HP	436A	2101A12378	300001136
Powersensor	HP	8484A	2237A10156	300001140
Powersensor	HP	8482A	2237A06016	300001139
Relais Matrix	R&S	PSU	282628/004	300001214
Powersupply	Zentro		2007	300001109
Oszilloscope	Tektronix	7633		300001111
Klimaschrank	Heraeus Voetsch	VUK04/500	32926	300001500
Quasi-Peak Adapter	HP	85650A	2811A01204	300002308
Radiocom. Analyzer	R&S	CMTA 84	894199/012	300001176
Oszilloscope	HP	54510A	3022A02062	300001202
Funkmeßplatz	Schomandl	FD1000	34982	300001115
Signal Generator	R&S	SMPC	882416/019	300001162
Frequency counter	HP	5340A	2116A08138	300001104
Power Meter	HP	436A	2031U01461	300001105
Powersensor	HP	8482A		300001106
Powersensor	HP	8484A		300001107
Powersensor	HP	8485A		300001108
Powersupply	HP	6038A	2752A04866	300001161
Reflectionsmeter	R&S	NAP	879191	300001132
Signal Generator NF	R&S	SPN	880139/068	300001142
Trenntrafo	Erfi	MPL	91350	300001151
Attenuator	JFW	30 db	1350h/104	300001703
Attenuator	JFW	10 db	1350h/103	300001704
Attenuator	JFW	20 db	1350h/106	300001705
Attenuator	JFW	20 db	1350h/105	300001766
Filter	Spinner	153755		300001791

Powersensor	HP	8484A	2237A10494	300001666
Powersupply	HP	6038A	3122A11097	300001204
Netznachbildung	R&S	ESH3-Z5	828576/020	300001210
Amplituden Controller	R&S	SMDU-Z2	871829/051	300002309
Trenntrafo	Erfi	913501		300001205
Trenntrafo	Grundig	RT5A	9242	300001627
Relais Matrix	HP	3488A	2719A15013	300001156
Multimeter	Siemens	Multizet		300001102
Peak Power Calibrator	HP	8900B		300001084
Schallgeber	Schomandl	SG 1	10159	300001209
Schallgeber	Schomandl	SG 2	10176	300002473
Filter	FSY Microwave			300001206
Attenuatorer	Pro Nova			300002476
Klimaschrank	Heraeus Voetsch	VUK04/500		300001012
Spectrum Analyzer 3	HP	8566A	1925A00257	300001098
Spectrum Analyzer Display 3	HP	85662	1925A00860	300002306
Oszilloscope	Tektronix	2432	110261	300001165
Radiocom. Analyzer	R&S	CMTA 54	894043/010	300001175
Powersupply	HP	6038A	2848A07027	300001174
Signal Generator 0.01-1280 MHz	HP	8662A	2224A01012	300001110
Signal Generator (Funktions)	R&S	AFGU	862490/032	300001201
Trenntrafo	Erfi	MPL	91350	300001155
Relais Matrix	R&S	PSU	893285/020	300001173
Power Meter	HP	436A	2101A12378	300001136
Powersensor	HP	8484A	2237A10156	300001140
Powersensor	HP	8482A	2237A06016	300001139
Relais Matrix	R&S	PSU	282628/004	300001214
Powersupply	Zentro		2007	300001109
Oszilloscope	Tektronix	7633		300001111
Klimaschrank	Heraeus Voetsch	VUK04/500	32926	300001500
Quasi-Peak Adapter	HP	85650A	2811A01204	300002308
Radiocom. Analyzer	R&S	CMTA 84	894199/012	300001176
Oszilloscope	HP	54510A	3022A02062	300001202
Funkmeßplatz	Schomandl	FD1000	34982	300001115
Signal Generator	R&S	SMPC	882416/019	300001162
Frequency counter	HP	5340A	2116A08138	300001104
Power Meter	HP	436A	2031U01461	300001105
Powersensor	HP	8482A		300001106
Powersensor	HP	8484A		300001107
Powersensor	HP	8485A		300001108
Powersupply	HP	6038A	2752A04866	300001161
Reflectionsmeter	R&S	NAP	879191	300001132
Signal Generator NF	R&S	SPN	880139/068	300001142
Trenntrafo	Erfi	MPL	91350	300001151
Attenuator	JFW	30 db	1350h/104	300001703
Attenuator	JFW	10 db	1350h/103	300001704
Attenuator	JFW	20 db	1350h/106	300001705
Attenuator	JFW	20 db	1350h/105	300001766
Filter	Spinner	153755		300001791
Powersensor	HP	8484A	2237A10494	300001666

Powersensor	HP	8485A	2238A00849	300001668
Bandfilter	Telonic	TTF7255EE	20293-11	300001300
Bandfilter	Telonic	TTF12555EE	20292-6	300001302
Bandfilter	Telonic	TTF25055EE	20291-8	300001304
Bandfilter	Telonic	TTF50055EE	20290-7	300001305
Bandfilter	Telonic	TTF100055EE	20289-7	300001307
Bandfilter	Telonic	TTA300055EESN	20370-2	300001312
Bandstop	Telonic	TTR3753EE1	30013-1	300001314
Bandstop	Telonic	TTR723EE	20417-2	300001316
Bandstop	Telonic	TTR95-3EE	20372-4	300001318
Bandstop	Telonic	TTR1903EE	30036-4	300001320
Bandstop	Telonic	TTR3753EE	20369-5	300001321
Bandstop	Telonic	TTR750-3EE1	90177-1	300002387
Highpass	Pro Nova	HDP120-6GG	ohne	300001348
Highpass	Pro Nova	HMC500-6AA	HJ67-01?	300001350
Highpass	Narda	NHP 9000	0004	300001362
Highpass	Narda	HDP16-6GH	JV70-01	300001364
Highpass	RSD	HDP50-6GH, HDP200-6GG		300001371
Highpass	RSD	2099-02-01		300000370
Signal Generator 0.1-2060 MHz	HP	8657A	2838U00736	300001009
Radio Code Analyzer	Schlumberger	SL4922		300001038
Signal Analyzer	B&K	2033		300001047
Frequency counter	HP	5386A	2704A01243	300000998
Laufzeitelement	WR-Elektronik			300001036
Powersupply Stromversorgung	Systron	M5P 40/15A	828233	300001291
Powersupply	Heiden	1108-32	1701	300001392
Powersupply	Heiden	1108-32	1802	300001383
Powersupply	Heiden	1108-32	003202	300001187
Powersupply	Zentro	LA 2x30/5GB1	2011	300001276
Powersupply	Zentro	LA 2x30/5GB2	2012	300001275
Powersupply	Zentro	LA 30/5GA	2041,2042	300001287
Trenntrafo	Grundig	RT5A	8781	300001277
Trenntrafo	Grundig	RT5A	9242	300001263
Multimeter	Goerz Elektro	Unigor 6e P	911 355	300001625
Multimeter	Goerz Elektro	Unigor 6e P	911 391	300001281
Climatic Box	Heraeus Voetsch	VUK04/500	32679	300000299
Powersensor + Att.	HP	8482B	2703A02586	300001492
Attenuator 30 dB	HP	8498A	1801A02445	300001475
Signal Generator NF	HP		2822A01203	300001004
Attenuator	Spinner	BN 534171 D	51881	300001516
Attenuator coaxial	Bird	8325	2429	300001513
Impulsbegrenzer	R&S	ESH 3 Z2		300001460
4Port Box	R&S	4Port Box	860457/005	300001472
Signal Generator 0.1-4200 MHz	HP	8665A	2833A0011	300002299
NF-Spektrumanalyzer	B&K	2033A		300002301
Swissphone Freifeld-Messbox	Swissphone Schweiz			300002302
Trenntrafo regelbar	Grundig	RT5H	9242	300001628
Signal Generator	HP	8111A	2215G00867	300001117

5 Photographs of Test Setup

TS900M
Photo 1: (Radiated Emission)

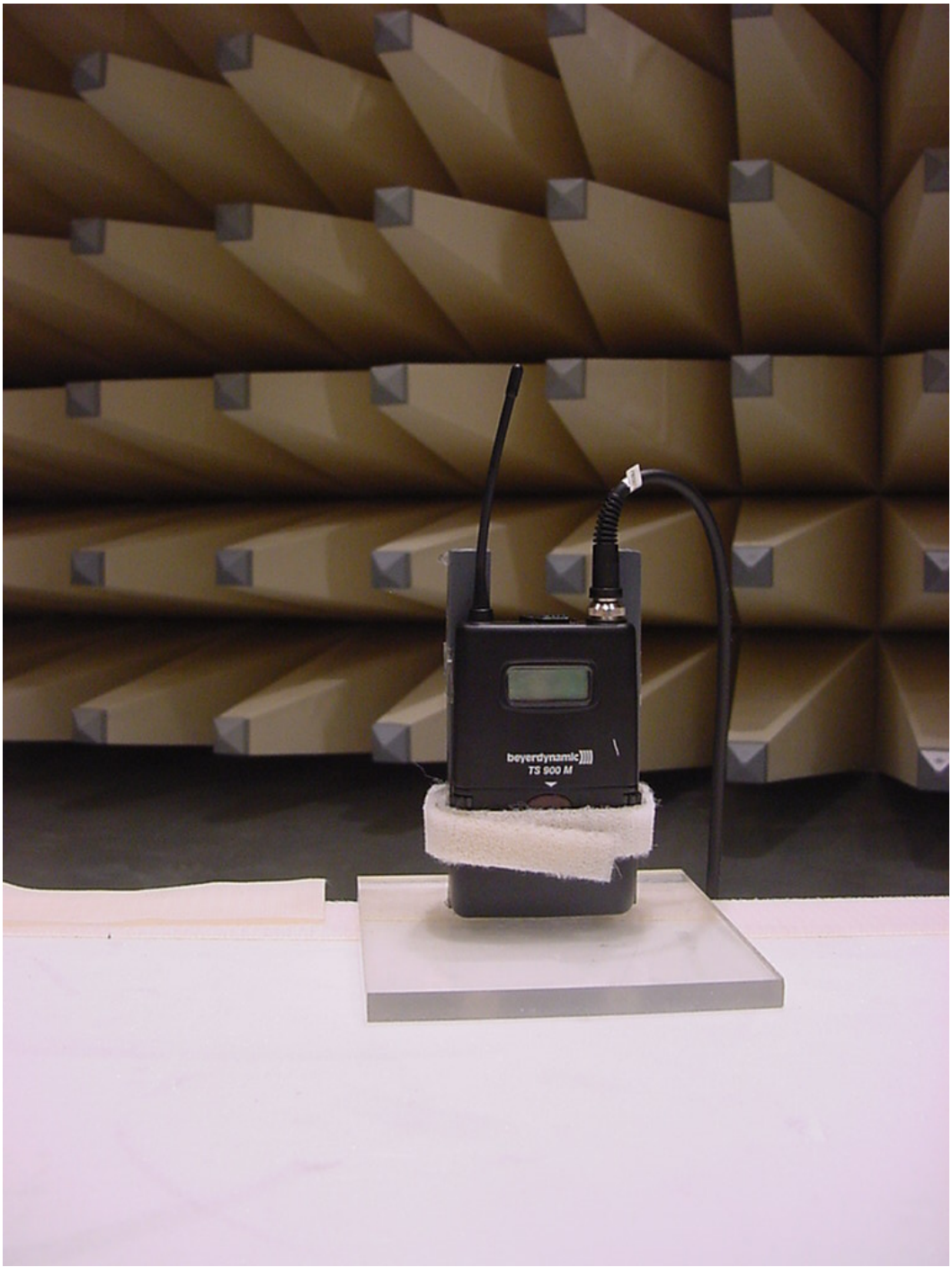
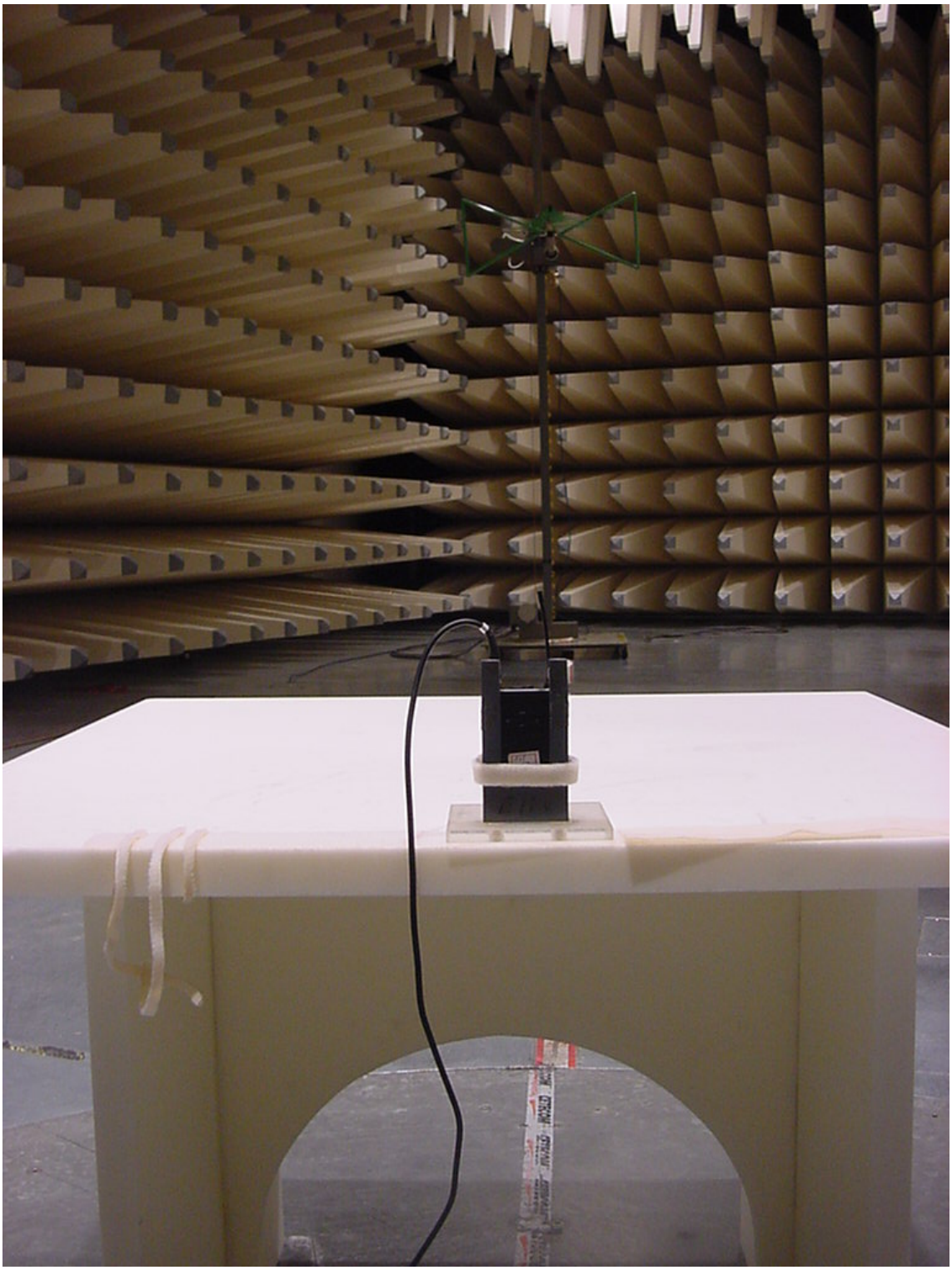


Photo 2: (Radiated Emission)



TS900C
Photo 1: (Radiated Emission)

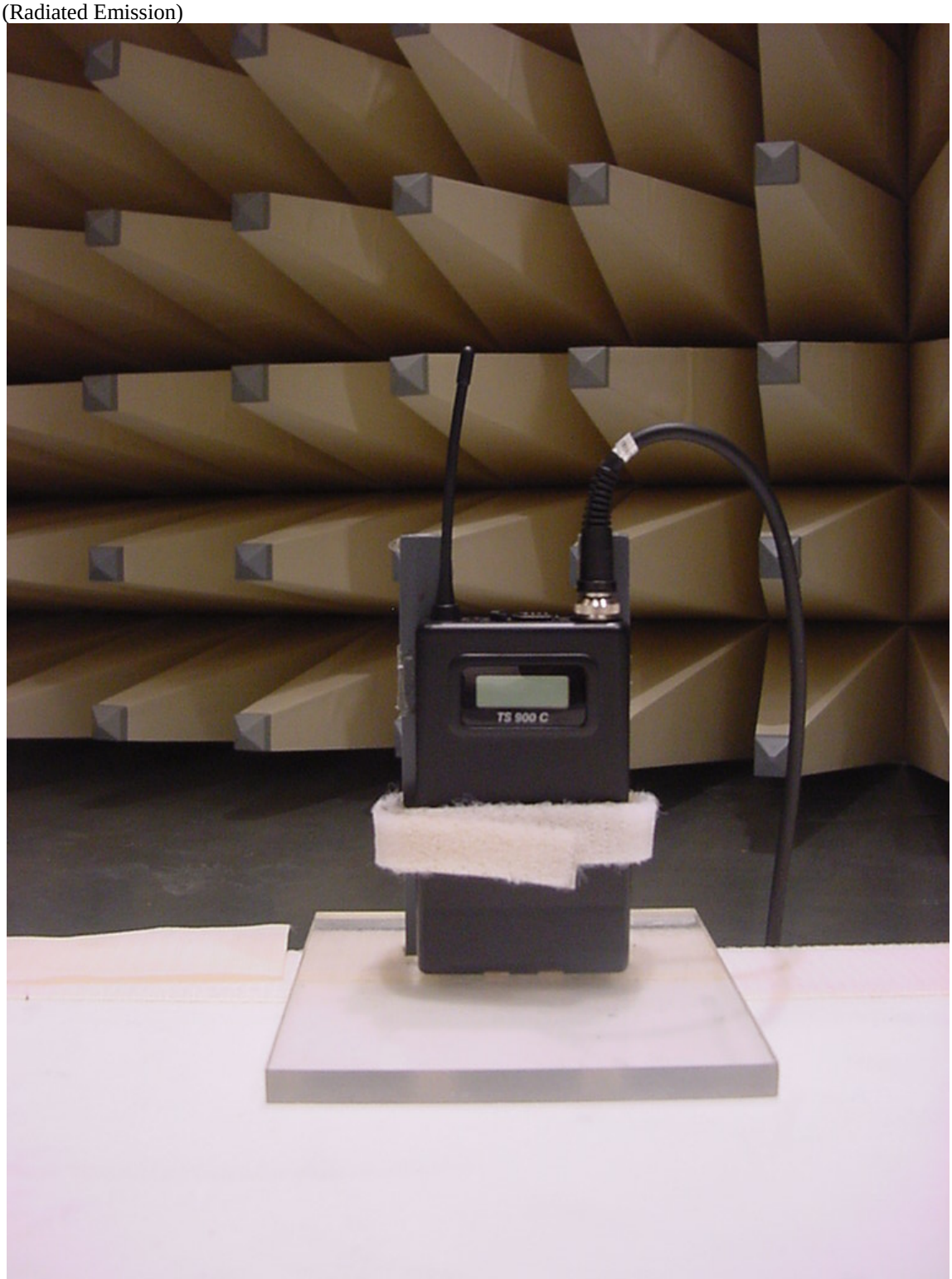
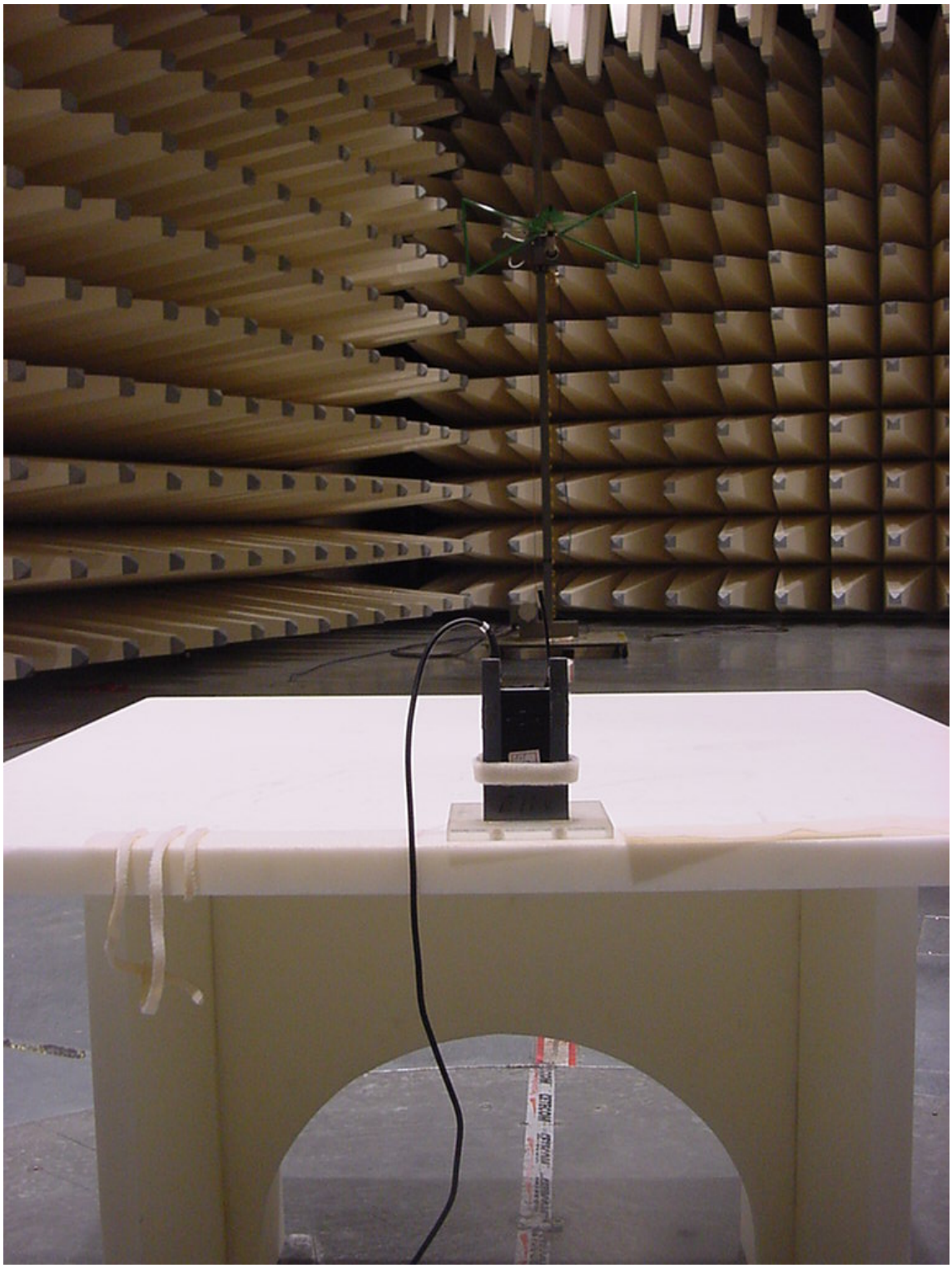


Photo 2: (Radiated Emission)



6 Photographs of Test Equipment

TS900M
Photo 1:

Photo 2:

Photo 3:

Photo 4:

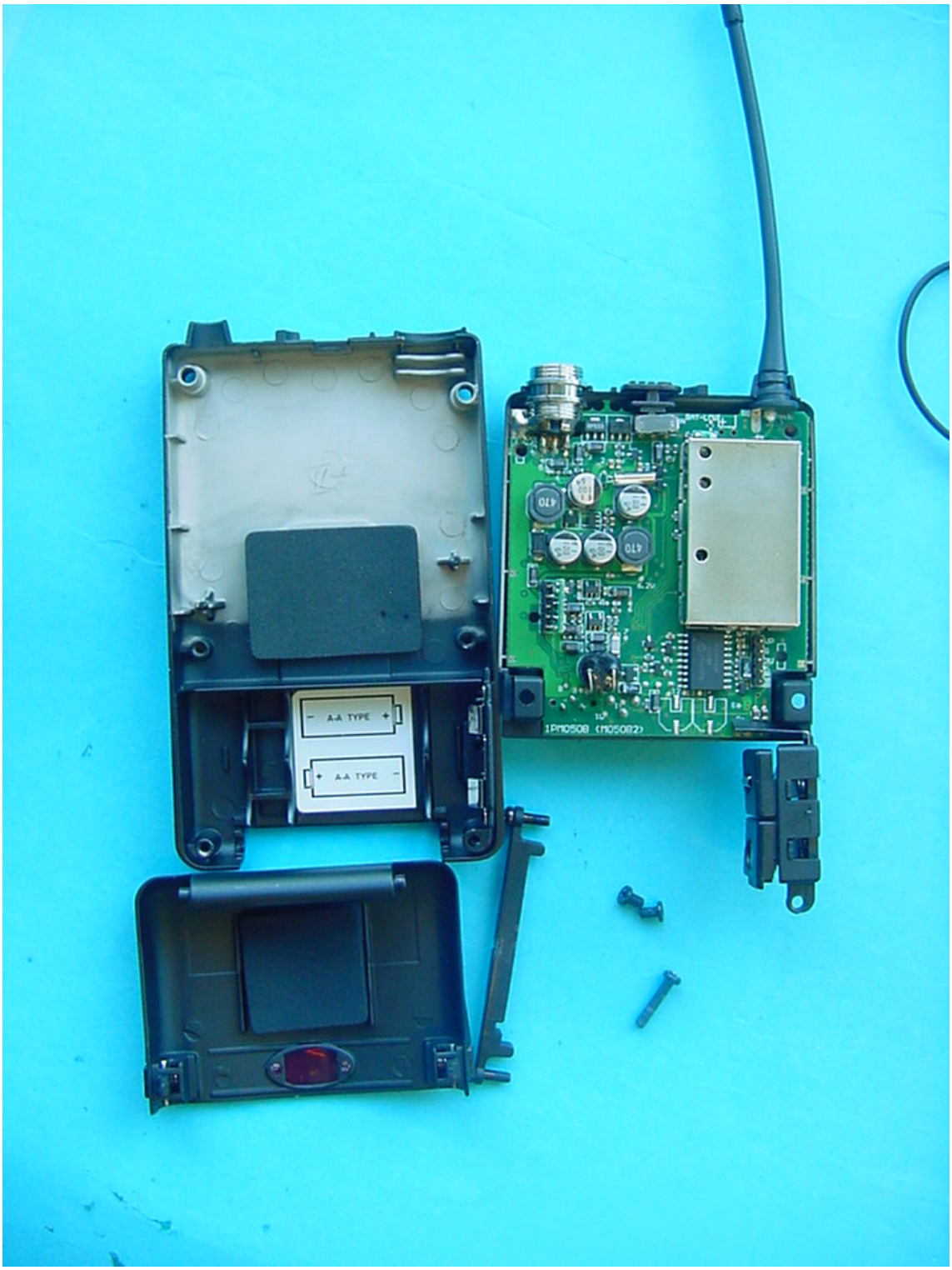


Photo 5:

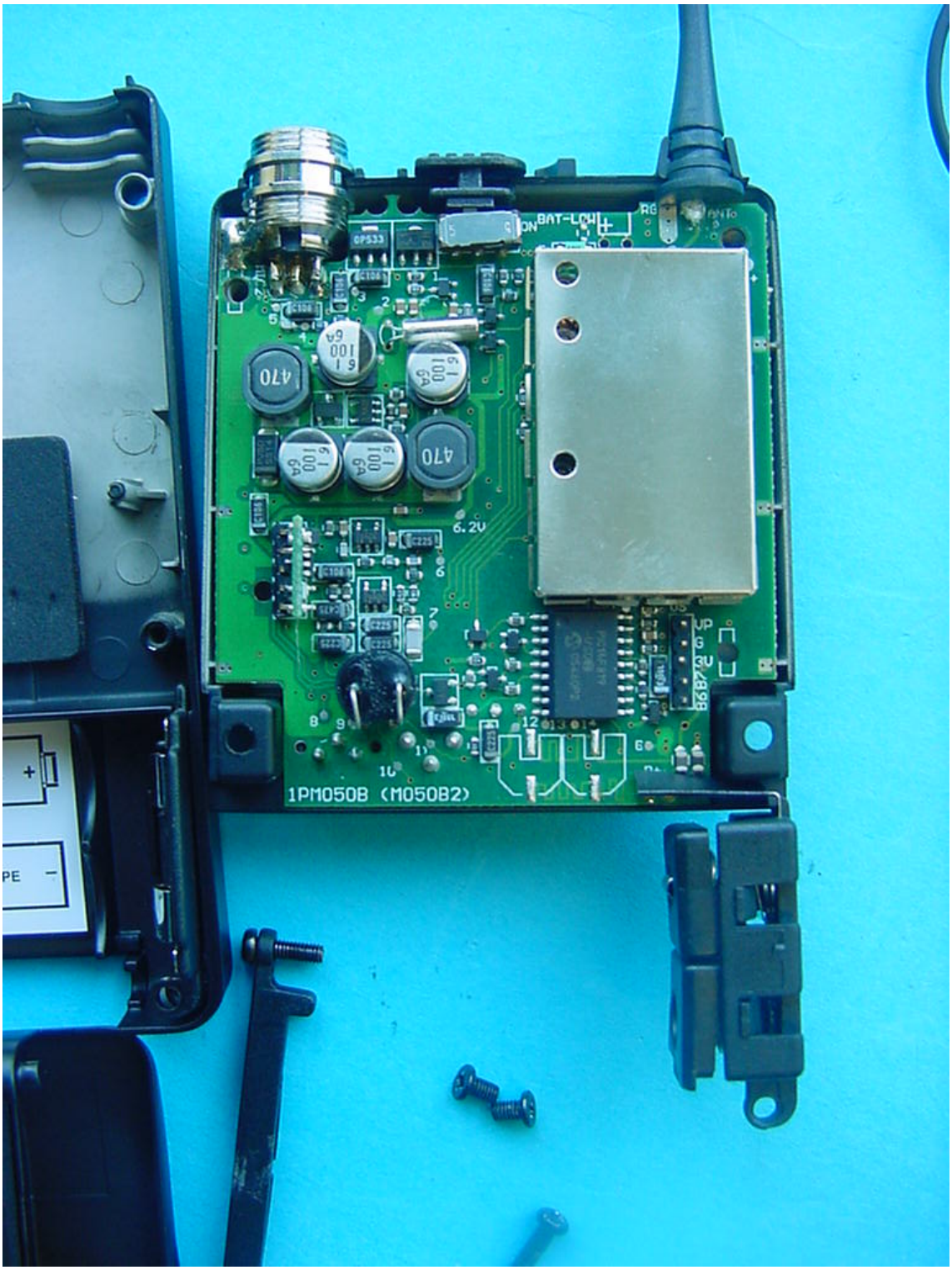


Photo 6:

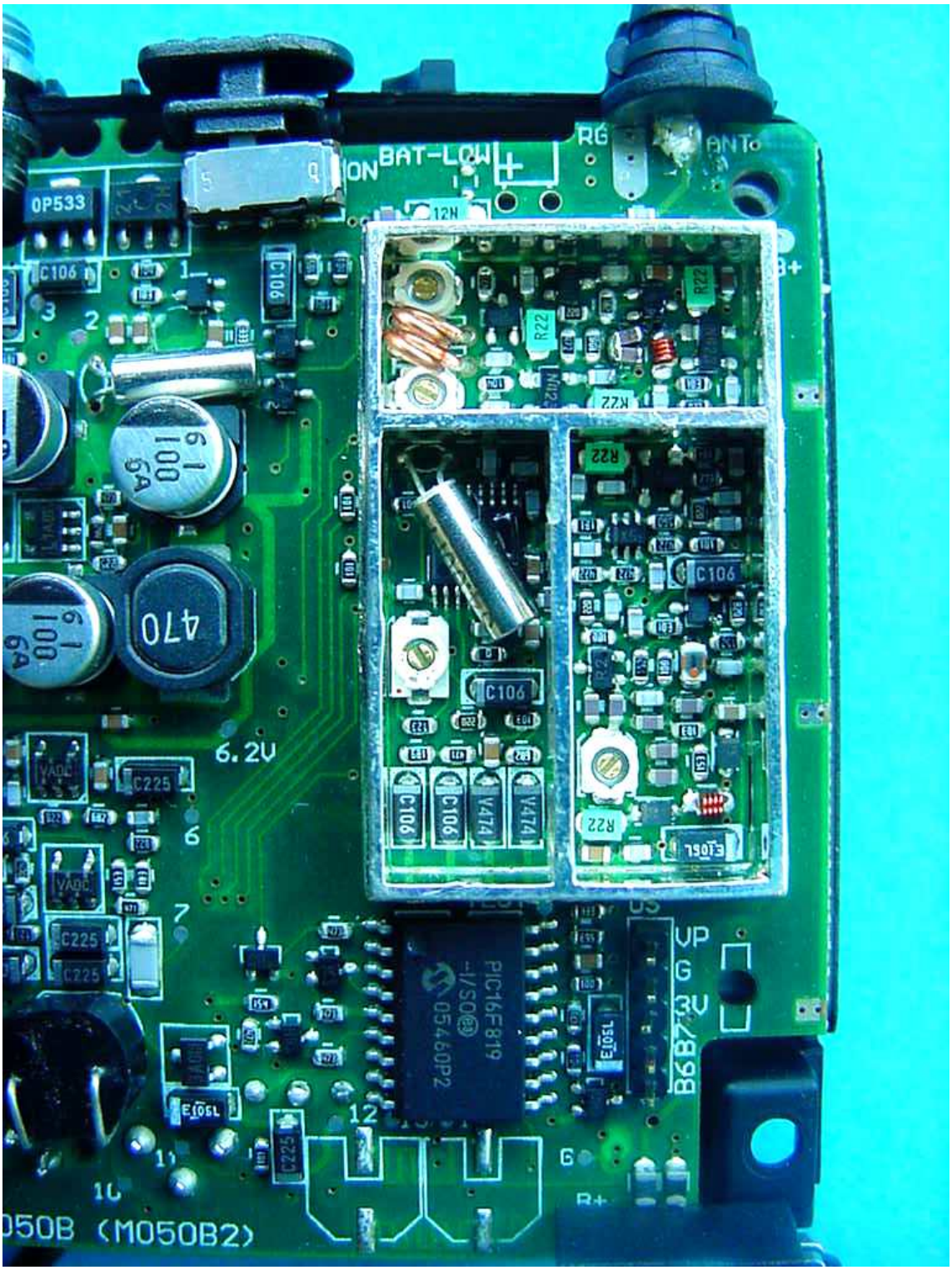
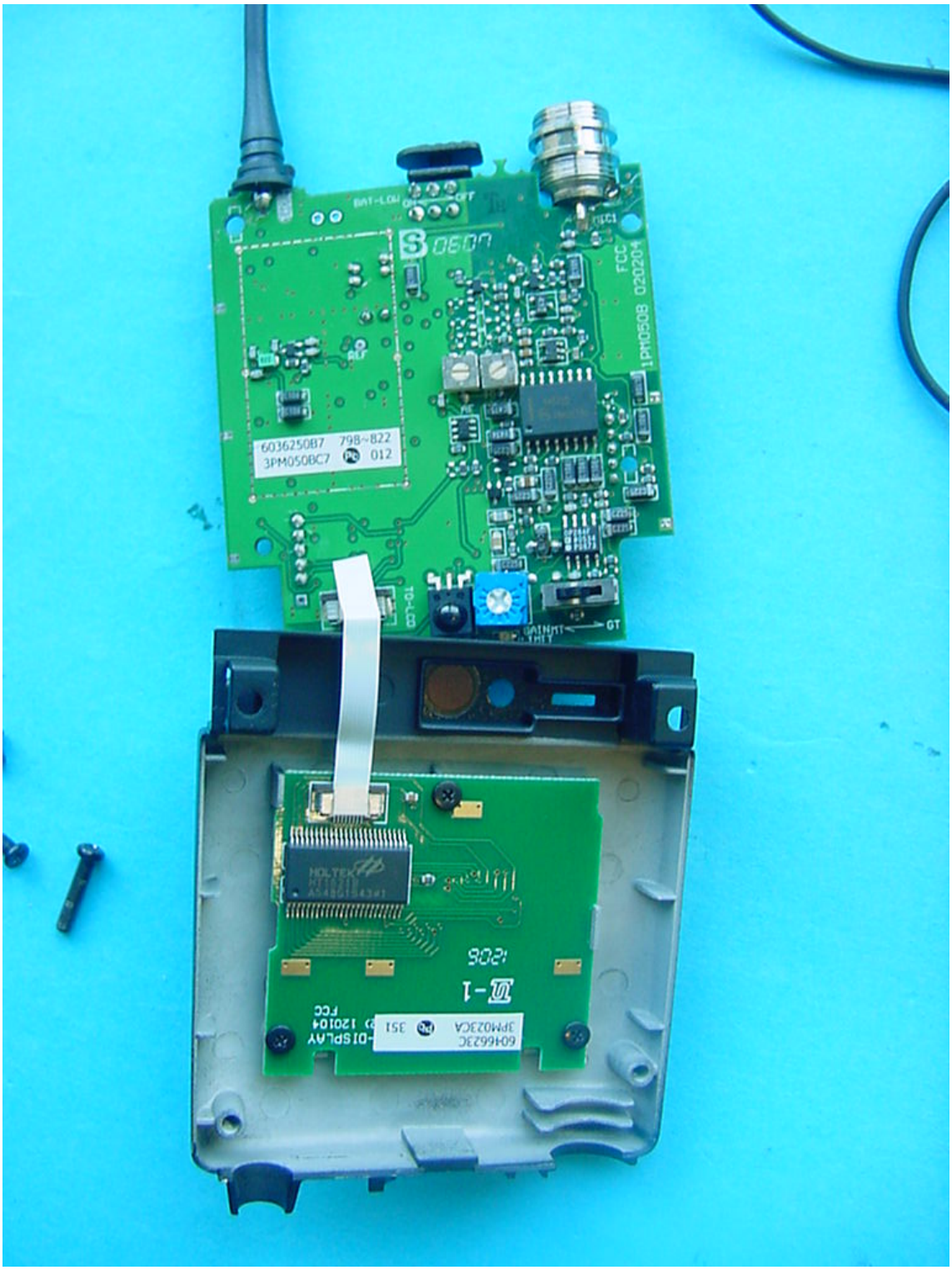

BAT-LOW
ANTo
OP533
C106
470
6.2V
C225
PIC16F819
-/SO
05460P2
VP
G
3V
B6B73
R+
050B (M050B2)

Photo 7:



TS900C
Photo 1:

Photo 2:

Photo 3:

Photo 4:

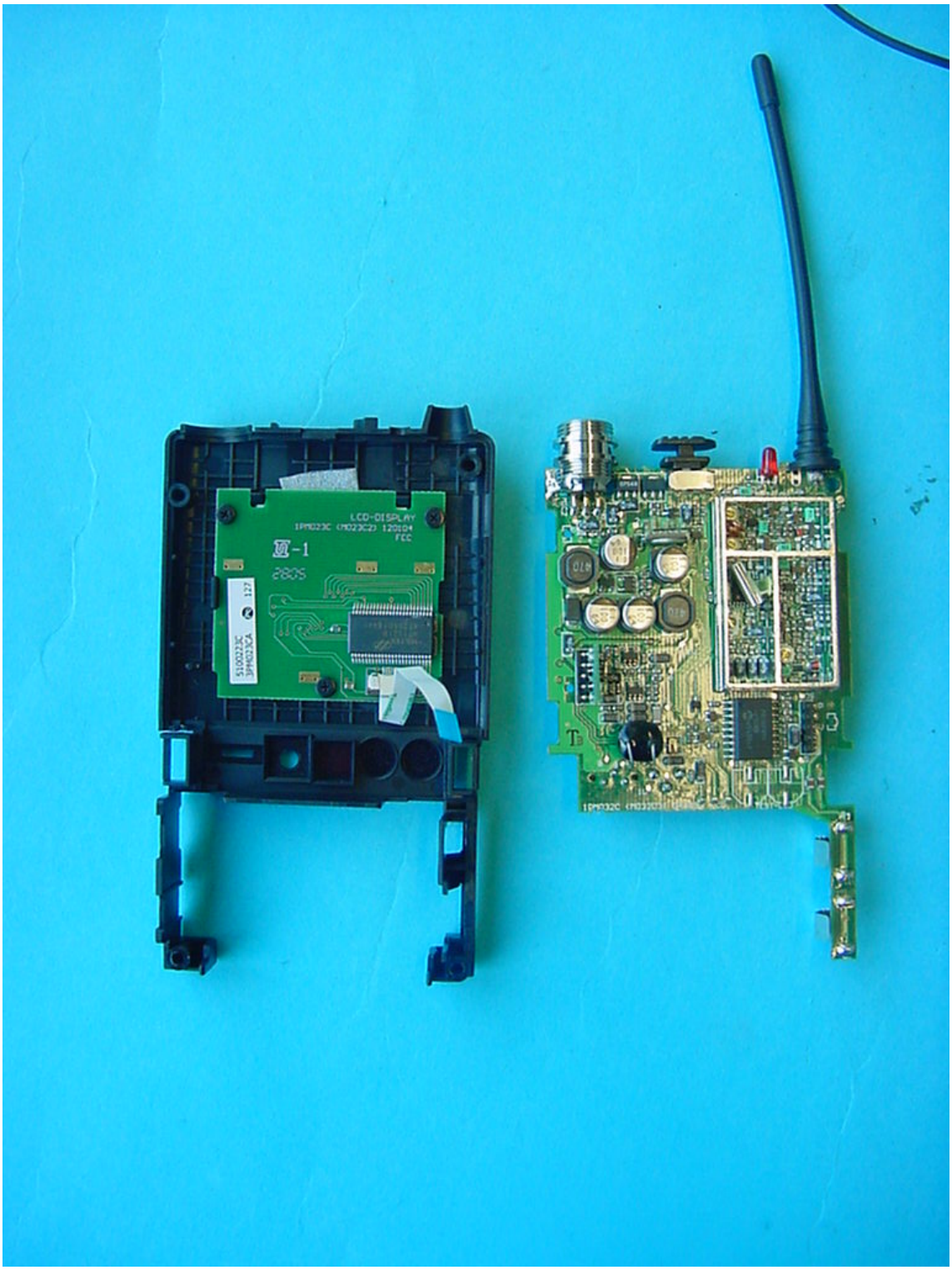


Photo 5:

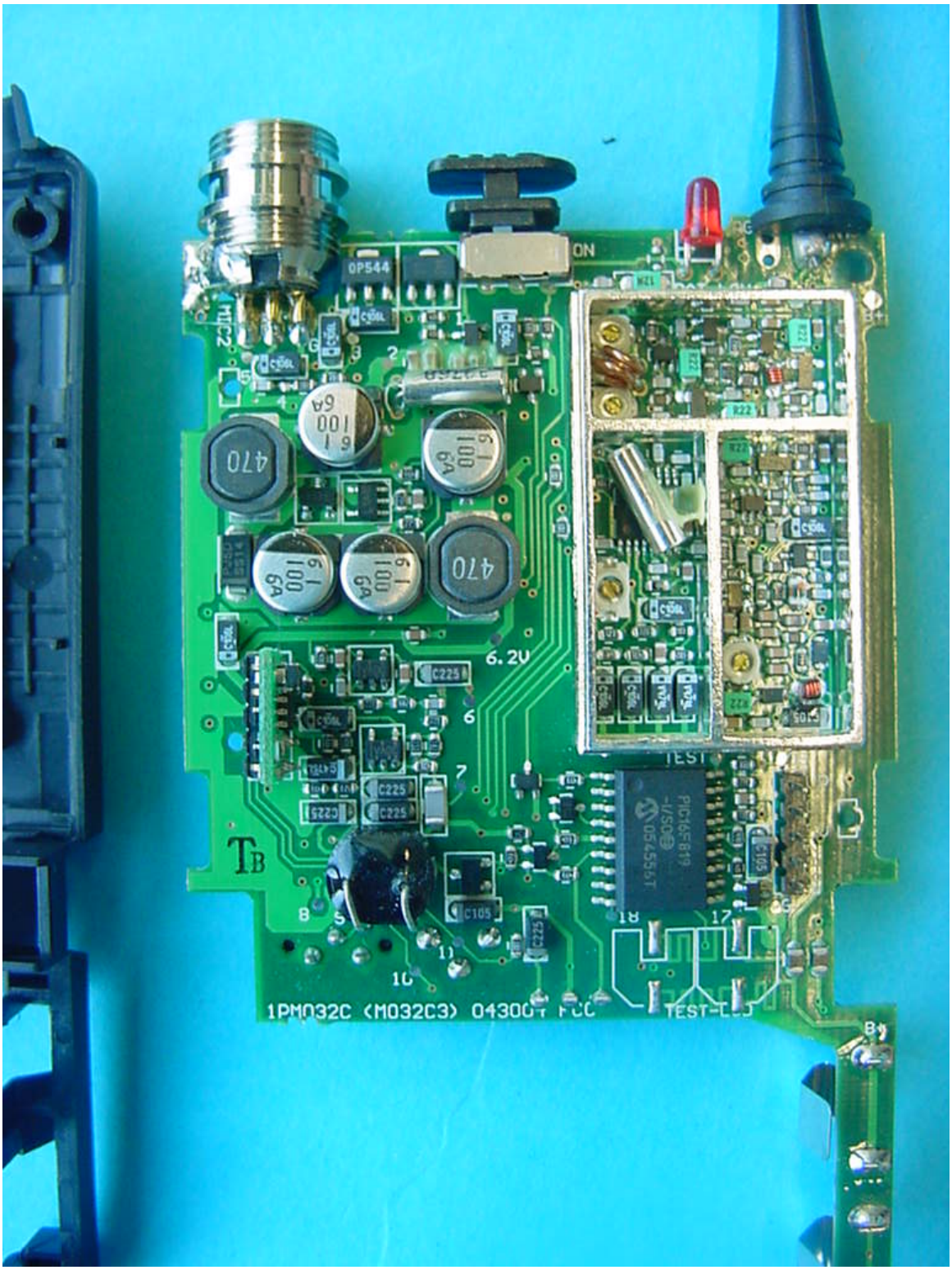
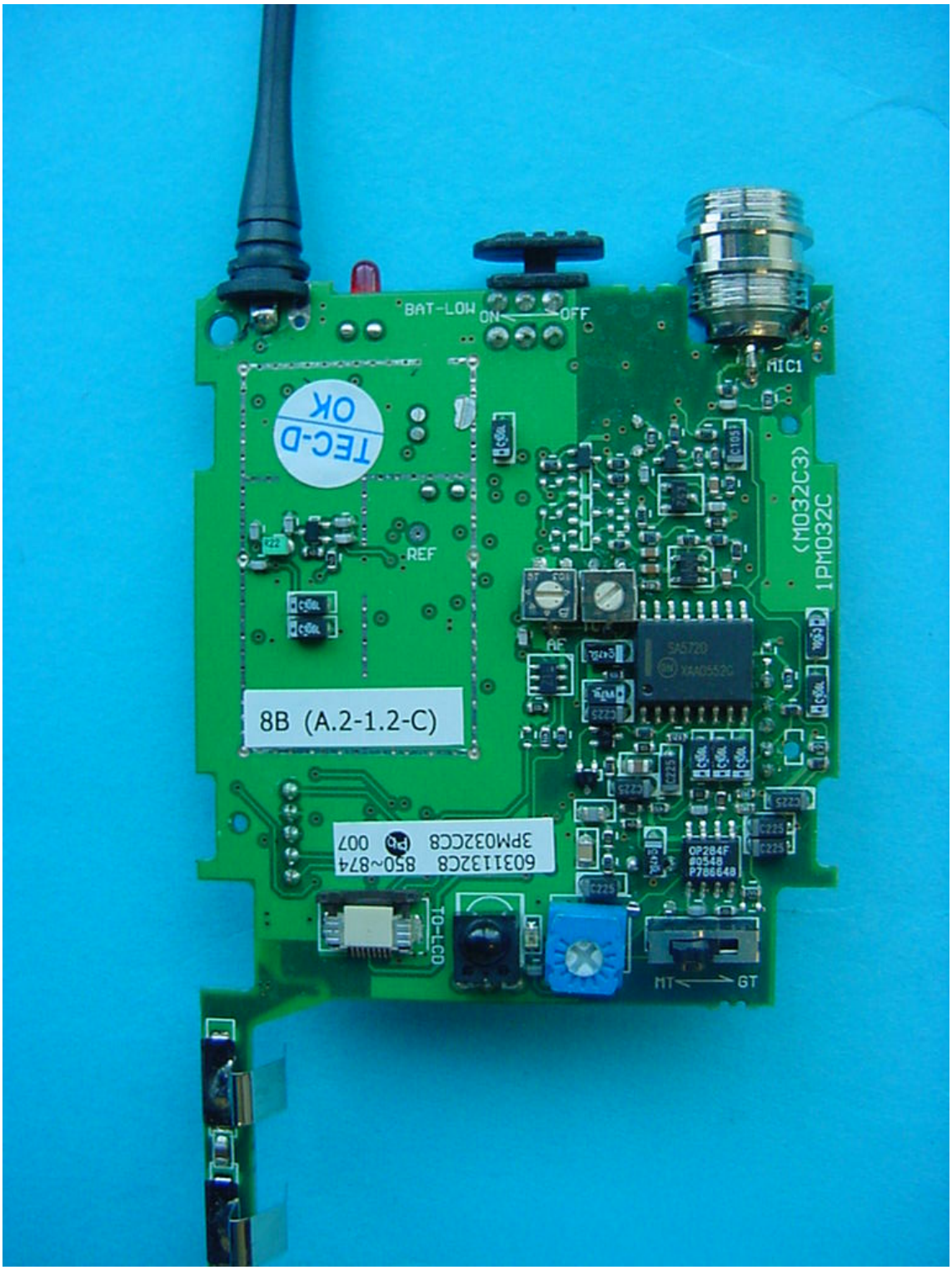


Photo 6:


BAT-LOW
ON
OFF
MIC1
TEC-D
OK
REF
8B (A.2-1.2-C)
(M032C3)
1PM032C
AF
MT
GT
TO-LCD