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Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: IC 3463A-1
TCB ID: DE 0001

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

Accredited Bluetooth® Test Facility (BQTF)

Test report No.	**:**	**4-2601-01-02-C/07**
Applicant	**:**	**RADIO FREQUENCY SYSTEMS**
Type	**:**	**L-RUSMR800-2 (L-MU1(2)(4))**
Test Standard	**:**	**Part 90**
		RSS-131 Issue 2
FCC ID	**:**	**IWD-W1000176**
Certification No. IC	**:**	**1634B-W1000176**

Table of contents

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:	Stefan Bös 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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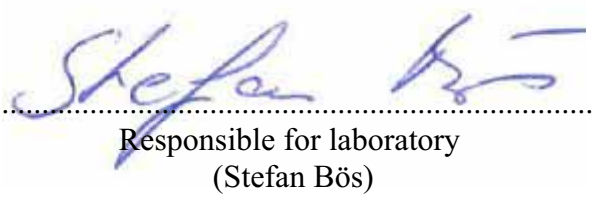
Responsible for testing
(Michael Berg)



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Responsible for laboratory
(Stefan Bös)

1.3 Details of Applicant

Name	:	RADIO FREQUENCY SYSTEMS
Address	:	Kabelkamp 20
City	:	D-30179 Hannover
Country	:	Germany
Phone	:	+49 511 676 00
Fax	:	+49 511 676 2188
Contact	:	Mr. Axel Schröder
Phone	:	+49 511 676 2390
Fax	:	+49 511 676 2188
e-mail	:	axel.schroeder@rfsworld.com

1.4 Application Details

Date of receipt of application	:	2008-06-11
Date of receipt of test item	:	2008-06-30
Date(s) of test	:	2008-06-29 to 2008-07-04
Date of report	:	2008-07-04

1.5 Additional EUT information for IC Canada (appendix 2)

Type of equipment	:	Fiber Fed Remote Unit
Type name	:	L-RUSMR800-2 (L-MU1(2)(4))
Manufacturer	:	RADIO FREQUENCY SYSTEMS
Address	:	Kabelkamp 20
City	:	D-30179 Hannover
Country	:	Germany
Frequency	:	Down link 851 to 869 MHz
Type of modulation	:	GXW (16QAM)
Number of channels	:	-.-
Antenna Type	:	N female connector (SMA female connector)
Power supply (normal)	:	115V AC
		Single Channel / Multi Channel (3)
Output power Down link / iDEN	:	cond : 22.8 dBm Peak / 22.8 dBm Peak
Transmitter Spurious (worst case)		0.1 µW / -40dBm
Receiver Spurious (worst case)		-.- µV/m @ 3 m
FCC ID	:	IWD-W1000176
Certification No. IC	:	1634B-W1000176
Open Area Test Site IC No.	:	IC 3463A-1
IC Standards	:	RSS131, Issue 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 :

2008-07-04	Michael Berg	
Date	Name	Signature

1.6 Test Setup

Hardware : L-RUSMR800-2, L-MU1(2)(4)
Software :

Equipment Under Test:

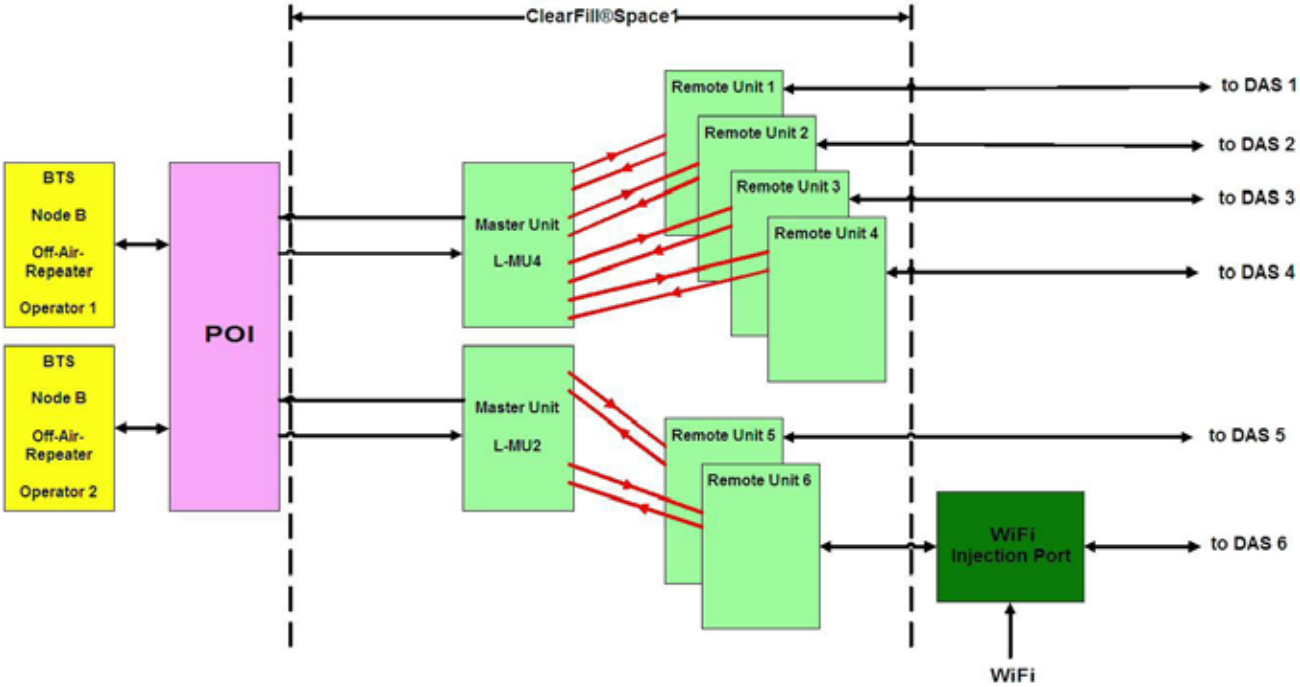
L-MU, L-RU

Description of the system :

ClearFill®Space1 is a modular RF-over-fiber distribution system that provides reliable and highest quality indoor coverage wireless services in airports, hospitals, campus, enterprises, convention centers, high-rise buildings and tunnels. The system is operated at a multi-operator and multi-carrier status.
The system contains following units:

L-MU	Optical Master Unit with 1, 2 or 4 optical ports (here measured the 4-port part)
L-RU	Optical Remote Unit

Example of ClearFill®Space1 System Topology



Both devices (L-MU and L-RU) include an automatic level control (ALC) in downlink that eliminates system gain variation, regardless of optical loss guarantying optimised system performance under minimised installation effort.

1.7 Test Standards

FCC:	**FCC 2-11-04/EAB/RF Amplifier, Booster and Repeater Reminder Sheet**
IC:	**RSS 131, Issue 2**

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
3.1.1	RF Exposure FCC §1.1307, §2.1091	pass
3.1.2	RF Power Output FCC §90.205 (a)	pass
3.1.3	Radiated Emissions FCC § 2.1053, §90.210	pass
3.1.4	Conducted Spurious Emissions FCC § 2.1051	pass
3.1.5	Block Edge Compliance FCC §2.1051,	pass
3.1.6	Occupied Bandwidth FCC §90.210	pass
3.1.7	Intermodulation Tests FCC § 2.1051, FCC 2-11-04/EAB/RF Amplifier, Booster and Repeater Reminder Sheet ,IC RSS-131 §6.3	pass
3.1.8	Out of Band Rejection	
3.1.9	Conducted Emissions <30 MHz FCC§15.107	pass

3 Measurements and results

3.1 IDEN

3.1.1 RF Exposure

FCC:	FCC §1.1307, §2.1091
IC:	RSS-131 §5.5

MPE calculation

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a "worst case" prediction.

$$S = PG/4\pi R^2$$

where S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units e.g. mW)
G = power gain of the antenna in the direction of interest relative to the isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units e.g. cm)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Antenna gain Worst case calculations: ($S4\pi R^2$ / P)

Downlink:
Maximum peak output power at antenna input terminal (dBm): 22.8
Maximum peak output power at antenna input terminal (mW): 191
Prediction distance (cm): 20
Prediction frequency (MHz): 858
MPE limit for uncontrolled exposure at predication frequency (mW/cm): 0.572
Maximum Antenna Gain (numeric): 15.05
Antenna Gain, typical (dBi): 11.8

Test result:

The device is compliant with the requirement MPE limit for uncontrolled exposure at predication frequency 0.572 mW/cm. The maximum allowed antenna gain for a distance of 20 cm is 11.8 dBi .
requirement.

3.1.1 RF Power Output

Reference

FCC:	CFR Part 90.205, 2.1046
IC:	RSS 131, Issue 2, Section 4.3 and 6.2

Method of Measurements:

The booster was set up for the max. output power with pseudo random data modulation.
The power was measured with R&S Signal Analyzer FSIQ 26
This measurements were done at 3 frequencies (bottom, middle and top of operational frequency range).in downlink and with one and two carriers.

Test Results: Output Power (conducted)
The maximum gain is DL 17 dB, (Limit : nominal + 1 dB)

Downlink

iDEN Band (dBm)				
Channel	Frequency	Modulation	Output Power Single Channel	Output Power 3 Channels
Low	851.0125	16 QAM	22.2	22.1
Middle	858.000		22.8	22.8
High	868.9875		21.7	22.8

3.1.3 Radiated Emissions

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 }.
(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.

Sample calculation:

Freg	SA Reading	SG Setting	Ant. gain	Dipol gain	Cable loss	ERP	Substitution Antenna
MHz	dBµV	dBm	dBi	dBd	dB	dBm	
848.8	123.9	38.57		-10.50	1.67	26.4	UHAP Schwarzbeck S/N 460

ERP = SG (dBm) - Cable Loss (dB) + Ant. gain (dB)
*ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.1dBi

Reference

FCC:	CFR Part 90.210, 2.1053
IC:	RSS 131, Issue 2, Section 4.4 and 6.4

Measurement Procedure:

All spurious emissions tests were measured with the two-tone method

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2003 requirements and is recognized by the FCC to be in compliance for a 3 and a10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency, which is the transmitted carrier that can be as high as 869 MHz. This was rounded up to 12 GHz. The resolution bandwidth is set as outlined in Part 22.917. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the CELLULAR SERVICE band.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) The antenna output was terminated in a 50 ohm load.
c) A double ridged wave guide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and I MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded. The equivalent power into a dipole antenna was calculated from the field intensity levels measured at 3 meters using the equation shown below:
e)Now each detected emissions were substituted by the Substitution method, in accordance with the TIA/EIA 603 .

Measurement Limit:

Sec. 90.210 Emission Limits.
(a) On any frequency outside a licensee' s frequency block within the CELLULAR SERVICE spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Measurement Results: Radiated Emissions

Measurement Results:

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the CELLULAR SERVICE band . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the CELLULAR SERVICE band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

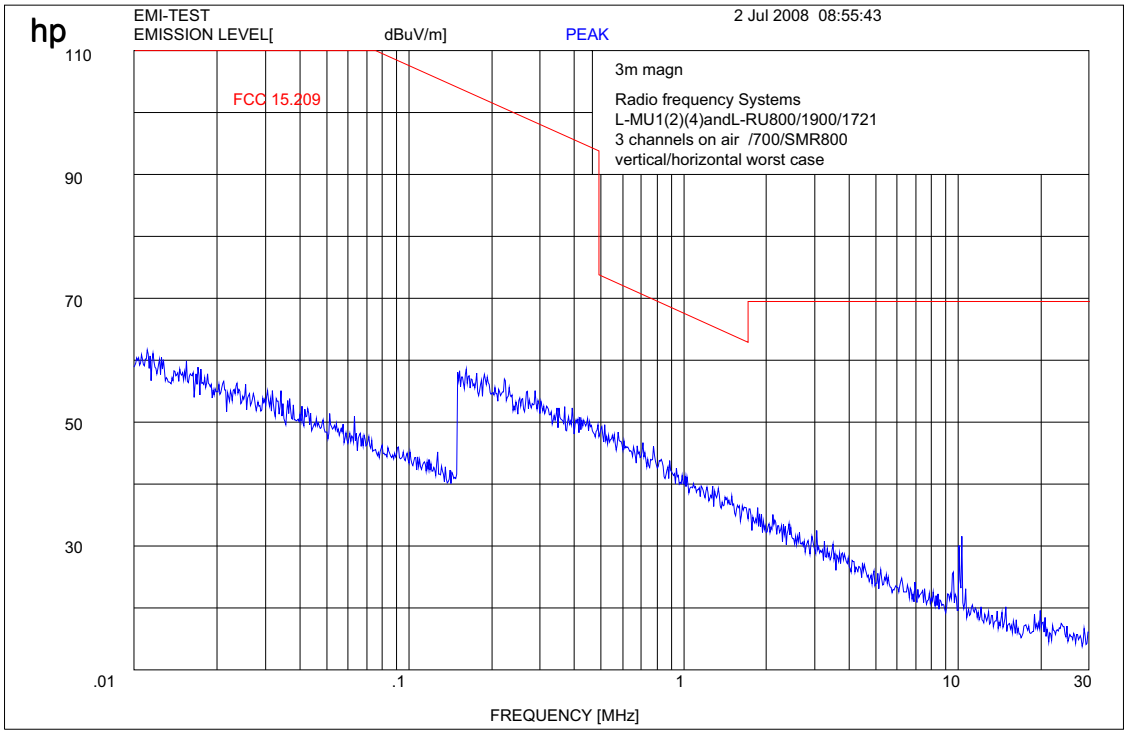
The final open field radiated levels are presented on the next pages.
All measurements were done in horizontal and vertical polarization, the plots shows the worst case.
As can be seen from this data, the emissions from the test item were within the specification limit.

Downlink

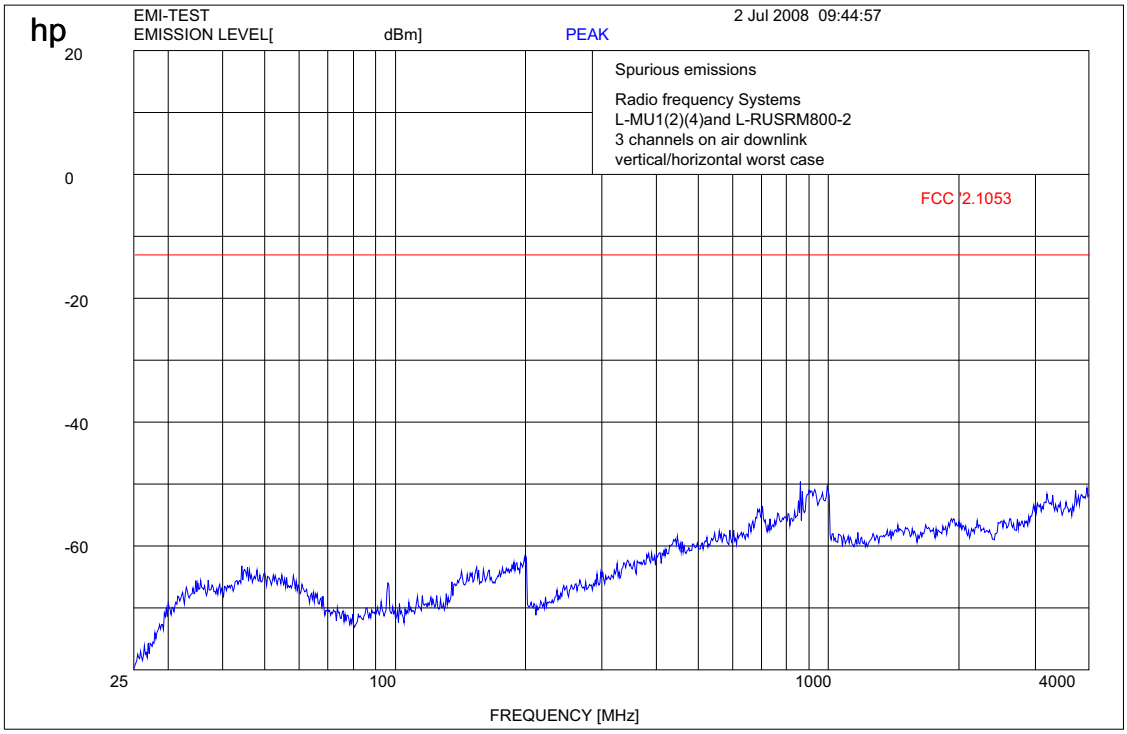
Harmonic	Low Freq. (MHz)	Level (dBm)	Mid Freq. (MHz)	Level (dBm)	High Freq. (MHz)	Level (dBm)
2	1702,025	-	1716	-	1737,975	-
3	2553,0375	-	2574	-	2606,9625	-
4	3404,05	-	3432	-	3475,95	-
5	4255,0625	-	4290	-	4344,9375	-
6	5106,075	-	5148	-	5213,925	-
7	5957,0875	-	6006	-	6082,9125	-
8	6808,1	-	6864	-	6951,9	-
9	7659,1125	-	7722	-	7820,8875	-
10	8510,125	-	8580	-	8689,875	-

No peaks found < 20 dB below limit.

Downlink up to 30 MHz (Valid for all 3 channels)

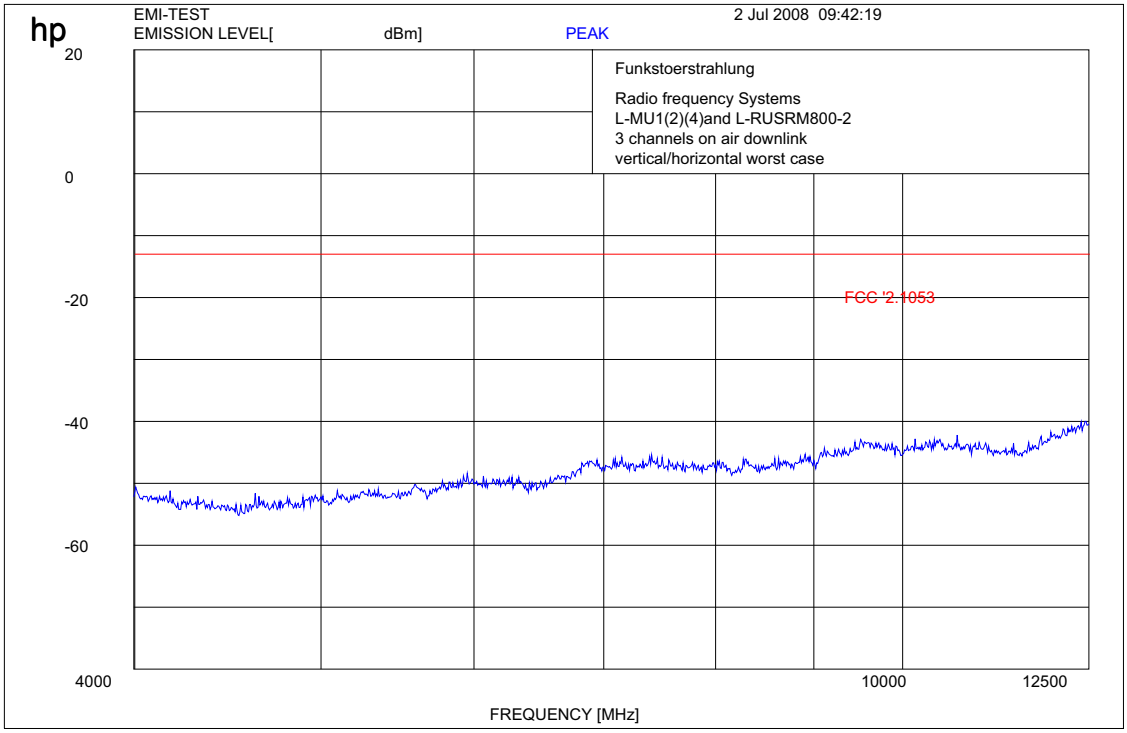


Downlink (30 MHz - 4 GHz)



f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW / VBW 1 MHz
Carrier suppressed with a rejection filter

Downlink (4 GHz – 12.5 GHz)



f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW / VBW 1 MHz

3.1.4 Conducted Spurious Emissions

Reference

FCC:	CFR Part 90.210, 1.1051
IC:	RSS 131, Issue 2, Section 4.4 and 6.4

Measurement Procedure

The following steps outline the procedure used to measure the conducted emissions from the mobile station.
1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the booster equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 12.5 GHz.
2. Determine mobile station transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

Measurement Limit:

(a) On any frequency outside frequency band of the CELLULAR SERVICE spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

Measurement Results:

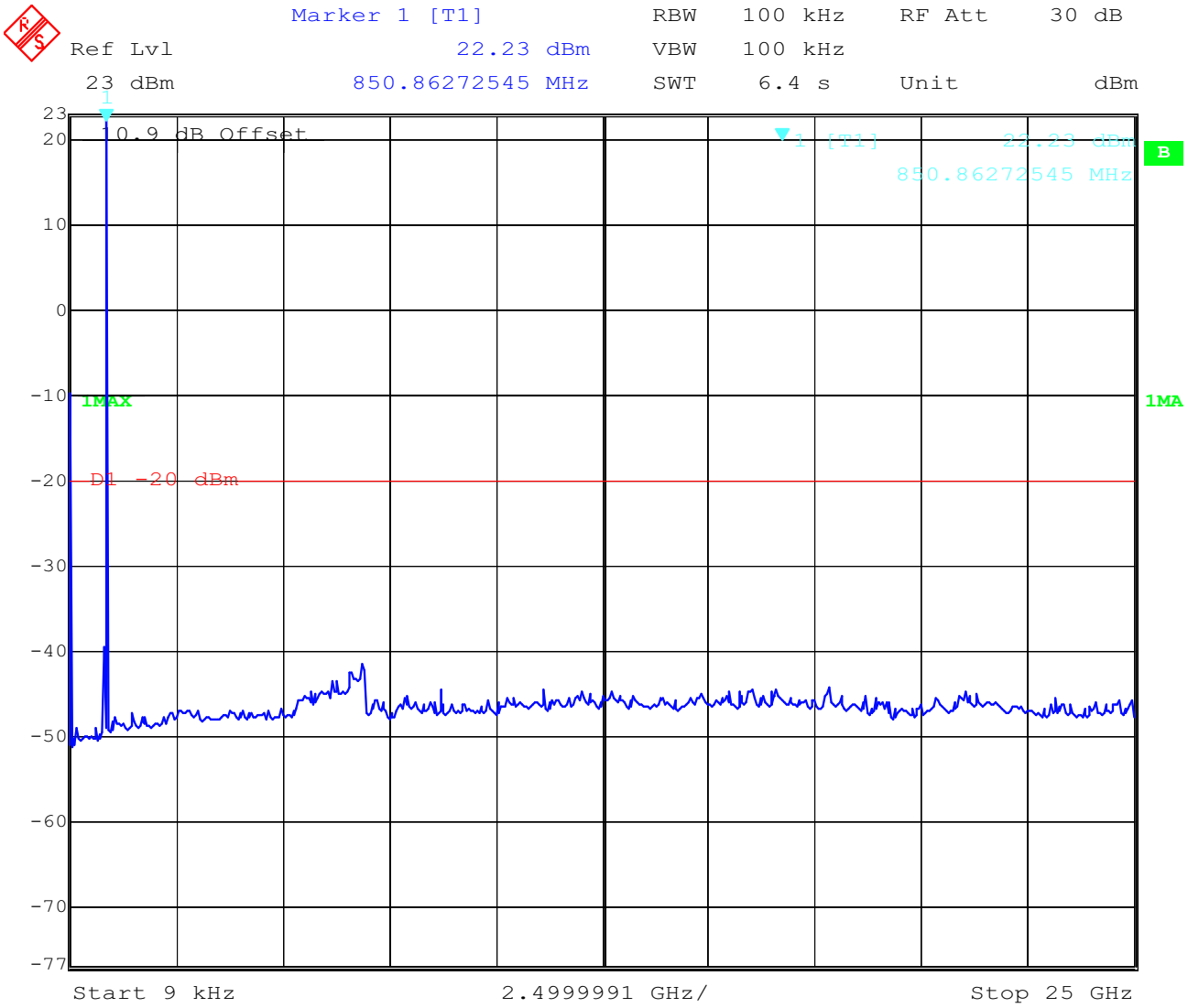
Downlink

Harmonic	Low Freq. (MHz)	Level (dBm)	Mid Freq. (MHz)	Level (dBm)	High Freq. (MHz)	Level (dBm)
2	1702,025	-	1716	-	1737,975	-
3	2553,0375	-	2574	-	2606,9625	-
4	3404,05	-	3432	-	3475,95	-
5	4255,0625	-	4290	-	4344,9375	-
6	5106,075	-	5148	-	5213,925	-
7	5957,0875	-	6006	-	6082,9125	-
8	6808,1	-	6864	-	6951,9	-
9	7659,1125	-	7722	-	7820,8875	-
10	8510,125	-	8580	-	8689,875	-

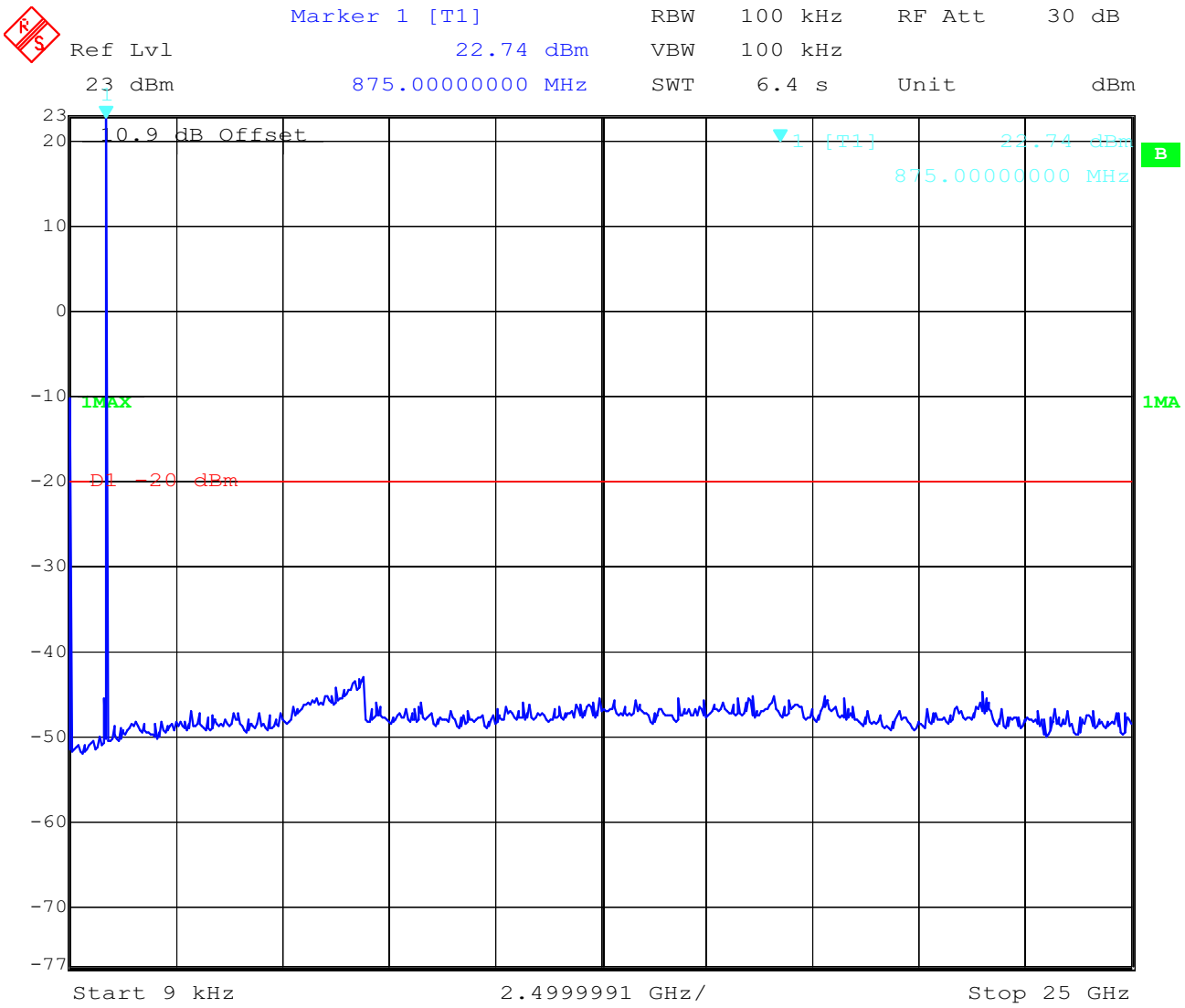
No peaks found < 20 dB below limit.

IDEN

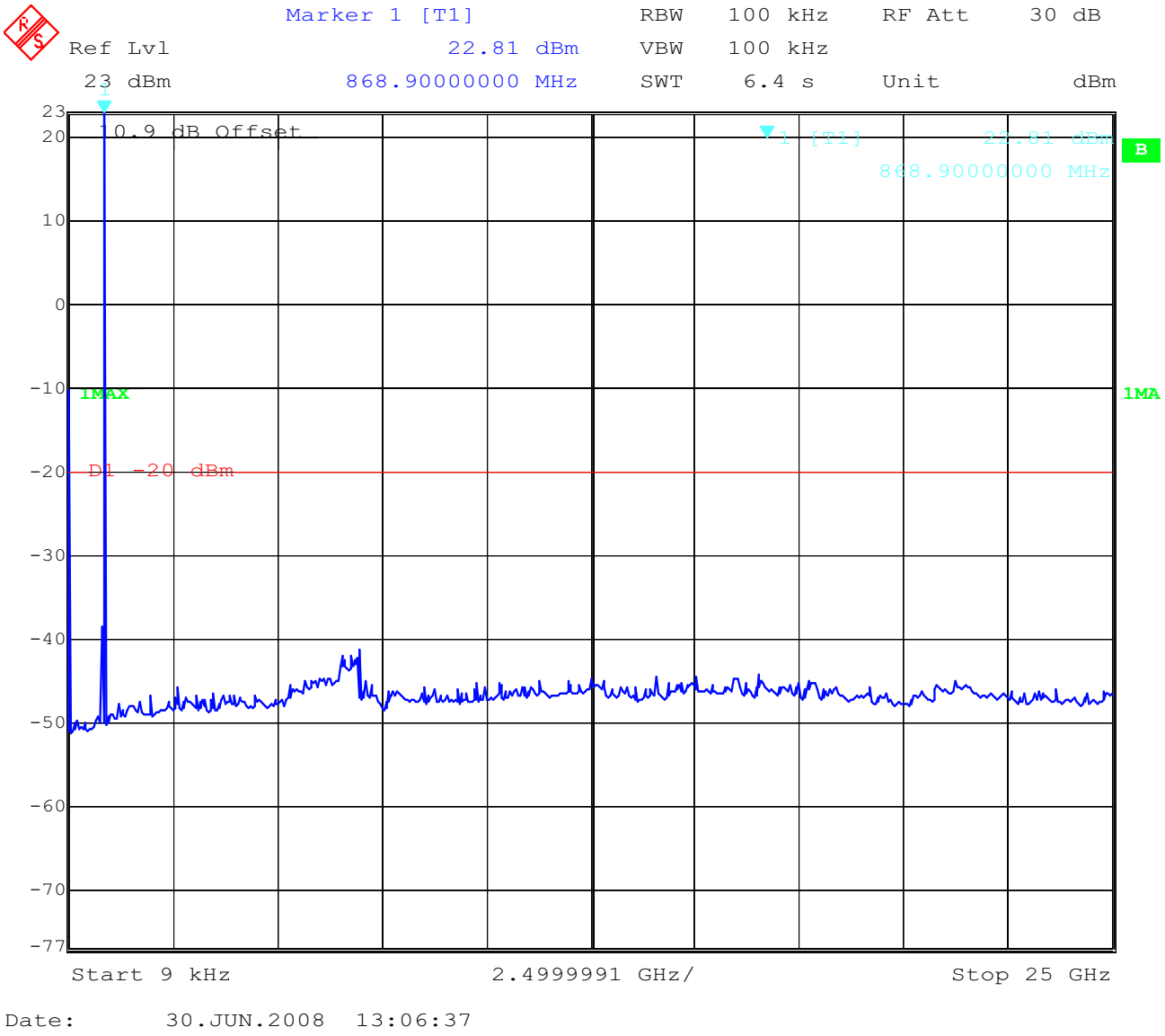
Downlink Low Channel



Downlink Middle Channel



Downlink High Channel



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3.1.6 Block Edge Compliance

Reference

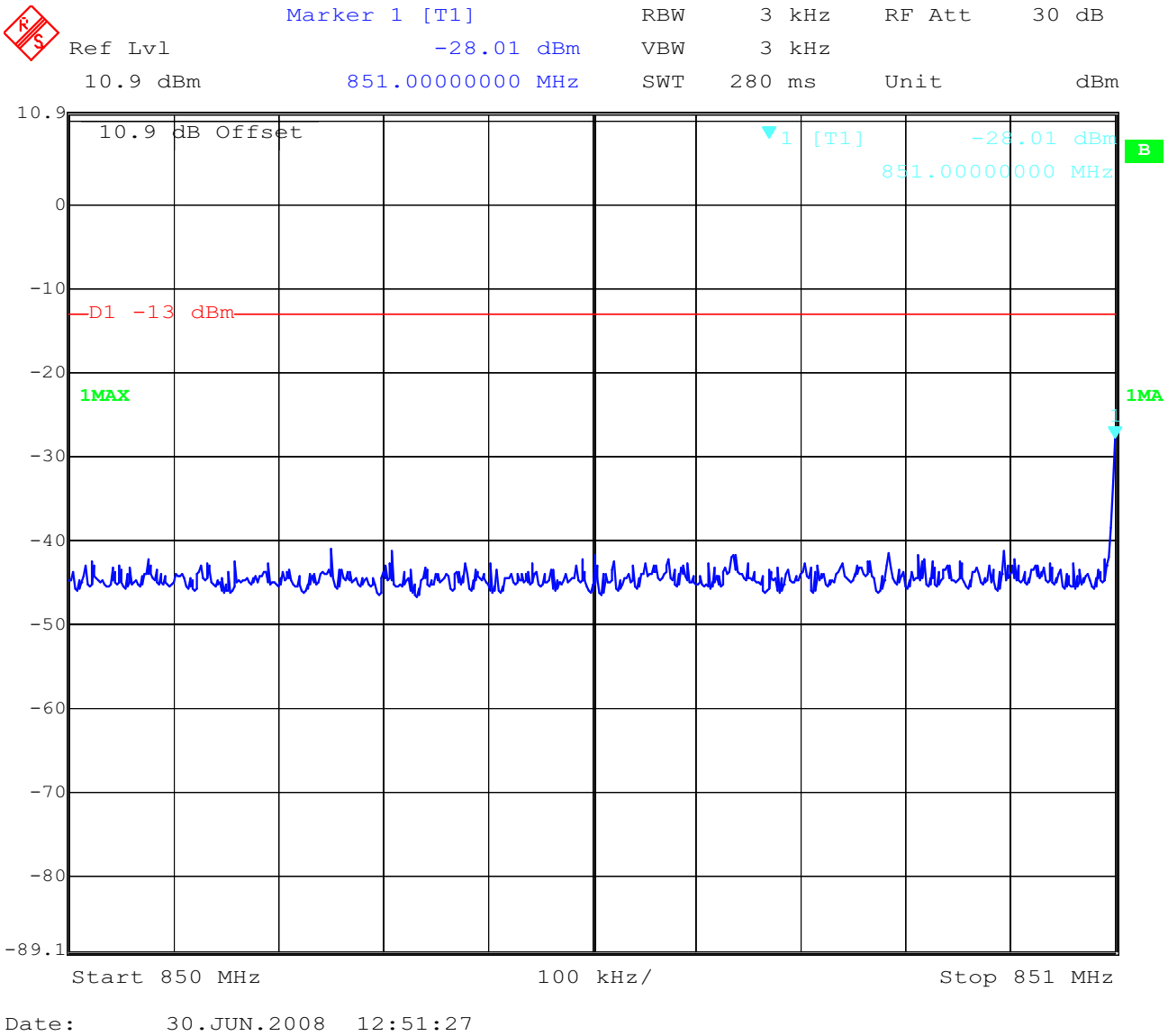
FCC:	CFR Part 2.1051
IC:	RSS 131, Issue 2, Section 4.4 and 6.4

Measurement Limit:

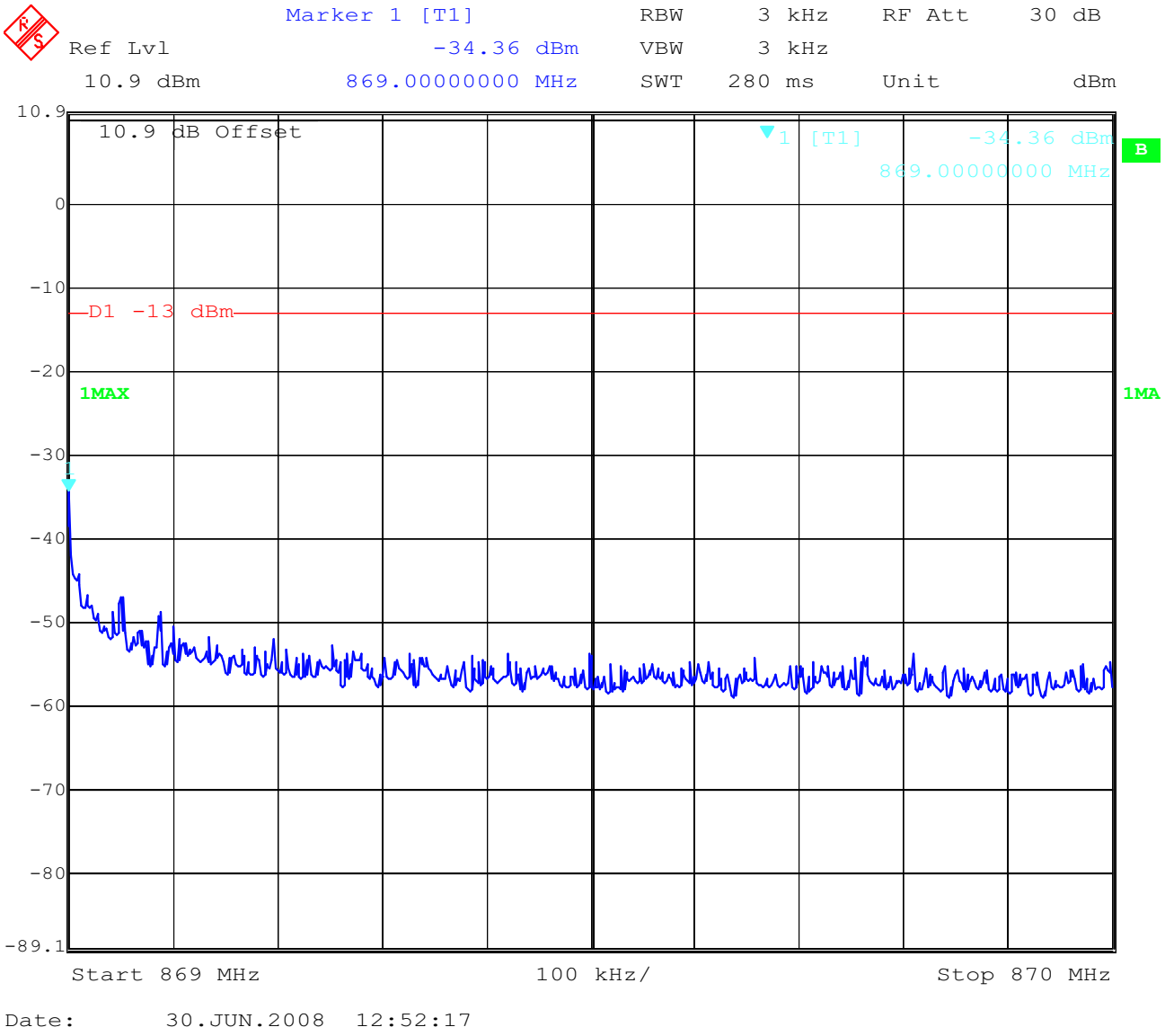
Sec. 90.210 Emission Limits.
(a) On any frequency outside frequency band of the CELLULAR SERVICE spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +33 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

IDEN Downlink

Lower Block Edge



Upper Block Edge



3.1.6 Occupied Bandwidth

Reference

FCC:	CFR Part 90.210, 2.1049
IC:	RSS 131, Issue 2, Section 4.2

Occupied Bandwidth Results

Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the CELLULAR SERVICE frequency band. Table 8.2 below lists the measured 99% occupied bandwidths. Spectrum analyzer plots are included on the following pages.

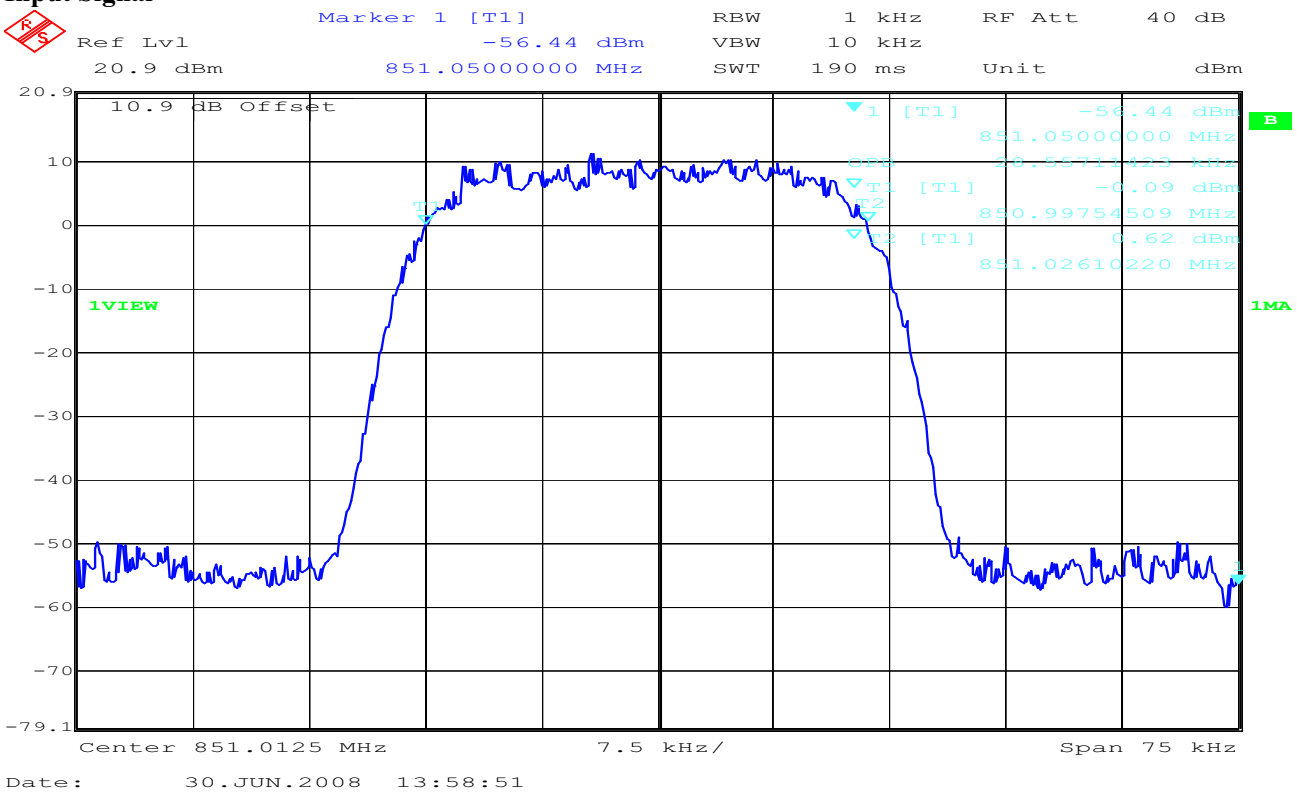
Analyzer Settings:
IDEN: RBW 1 kHz VBW 10 KHz Span : 75 kHz

Test results OBW Input / Output

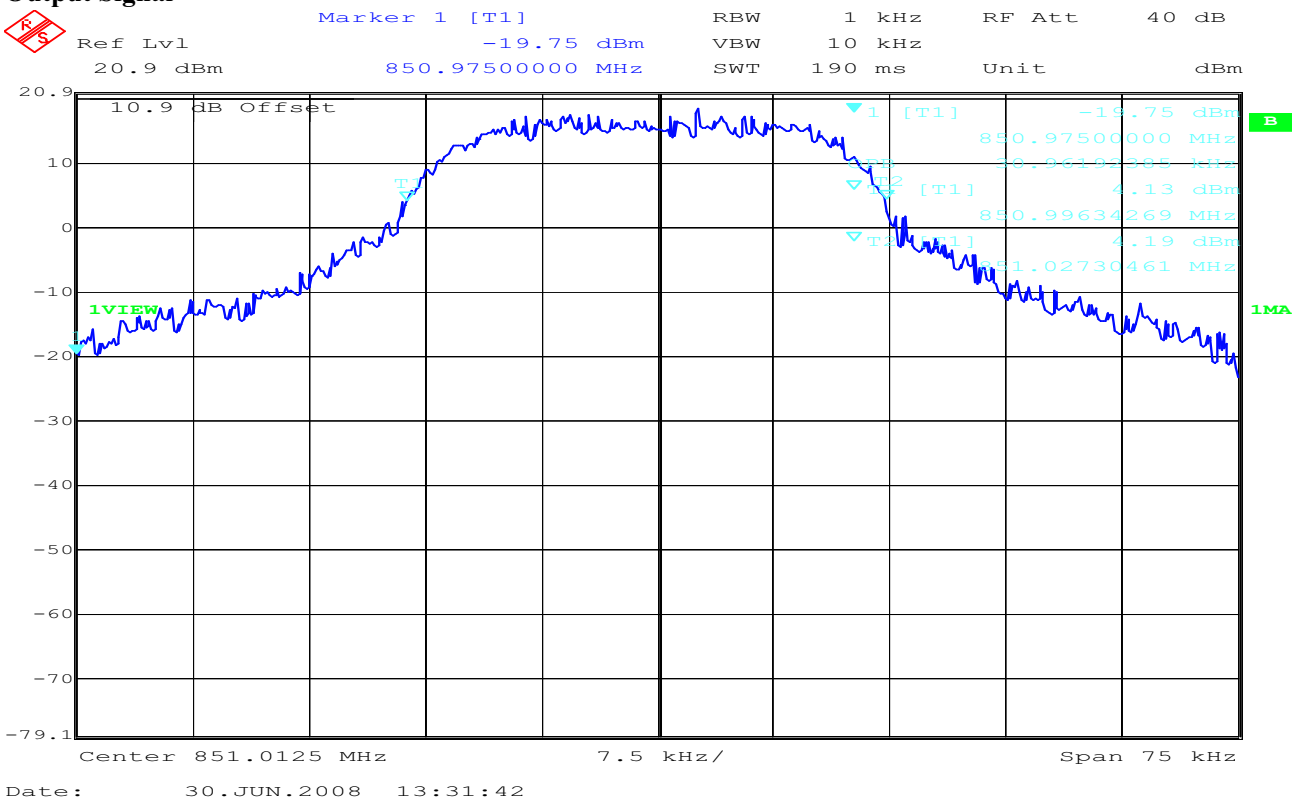
Downlink

iDEN Band (kHz)				
Channel	Frequency	Modulation	Input	Output
Low	851.0125	16QAM	28.56	30.96
Middle	858.000		29.00	31.11
High	868.9875		28.71	32.02

Plots of measurement
Downlink Low Channel
Input Signal

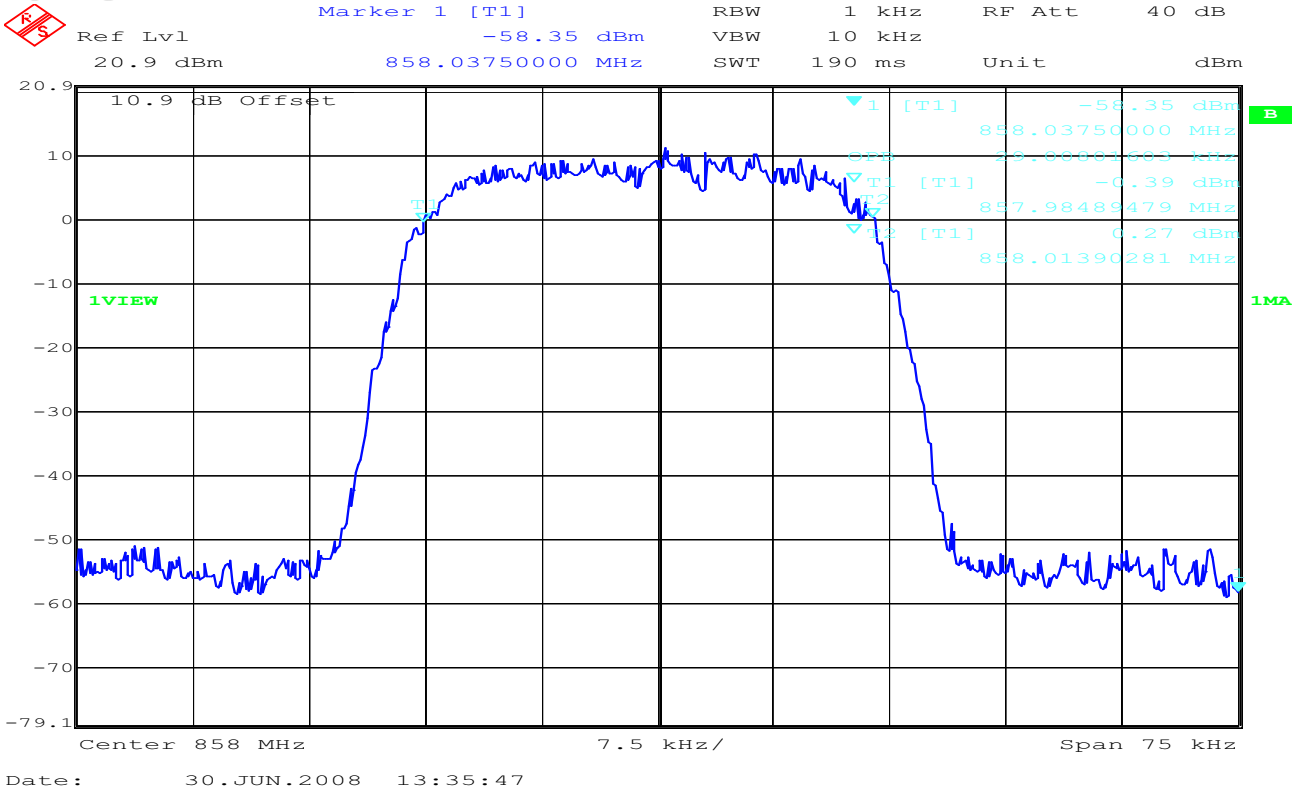


Output Signal

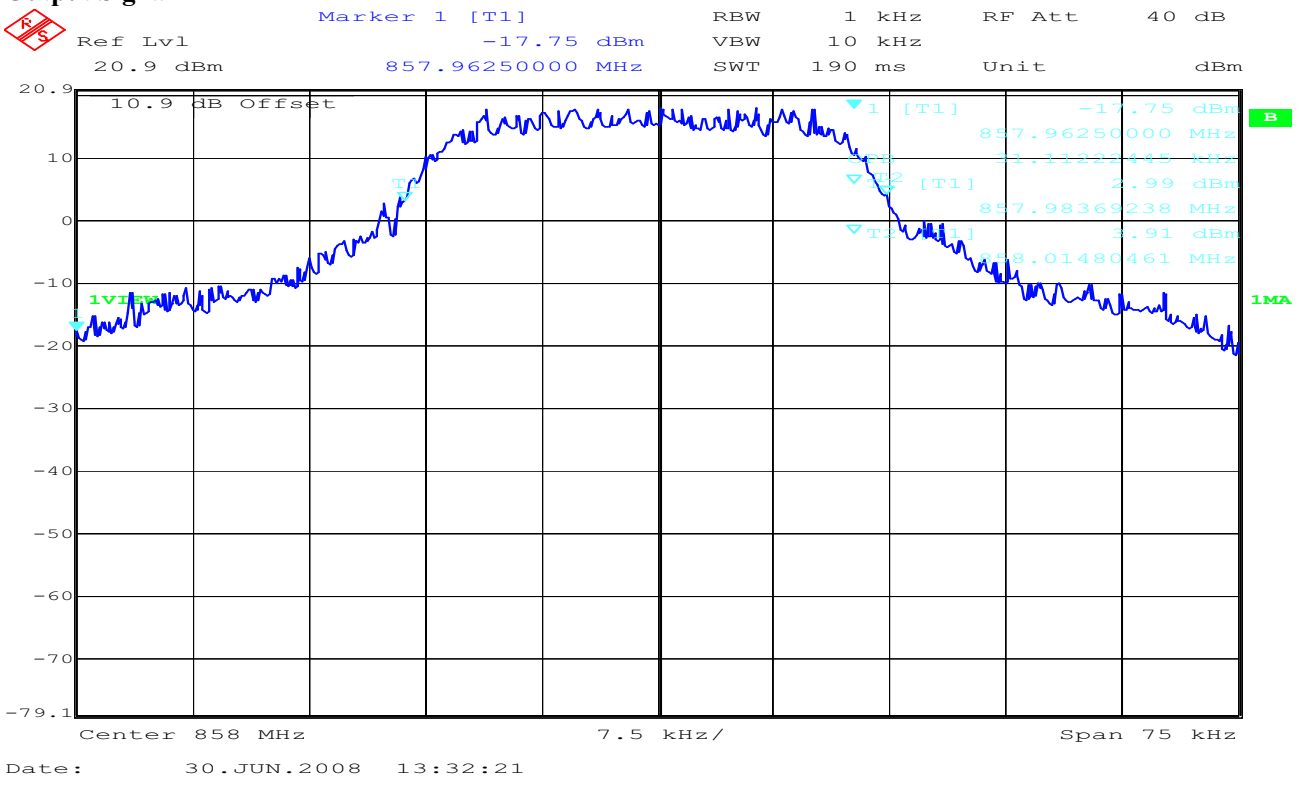


Downlink Middle Channel

Input Signal

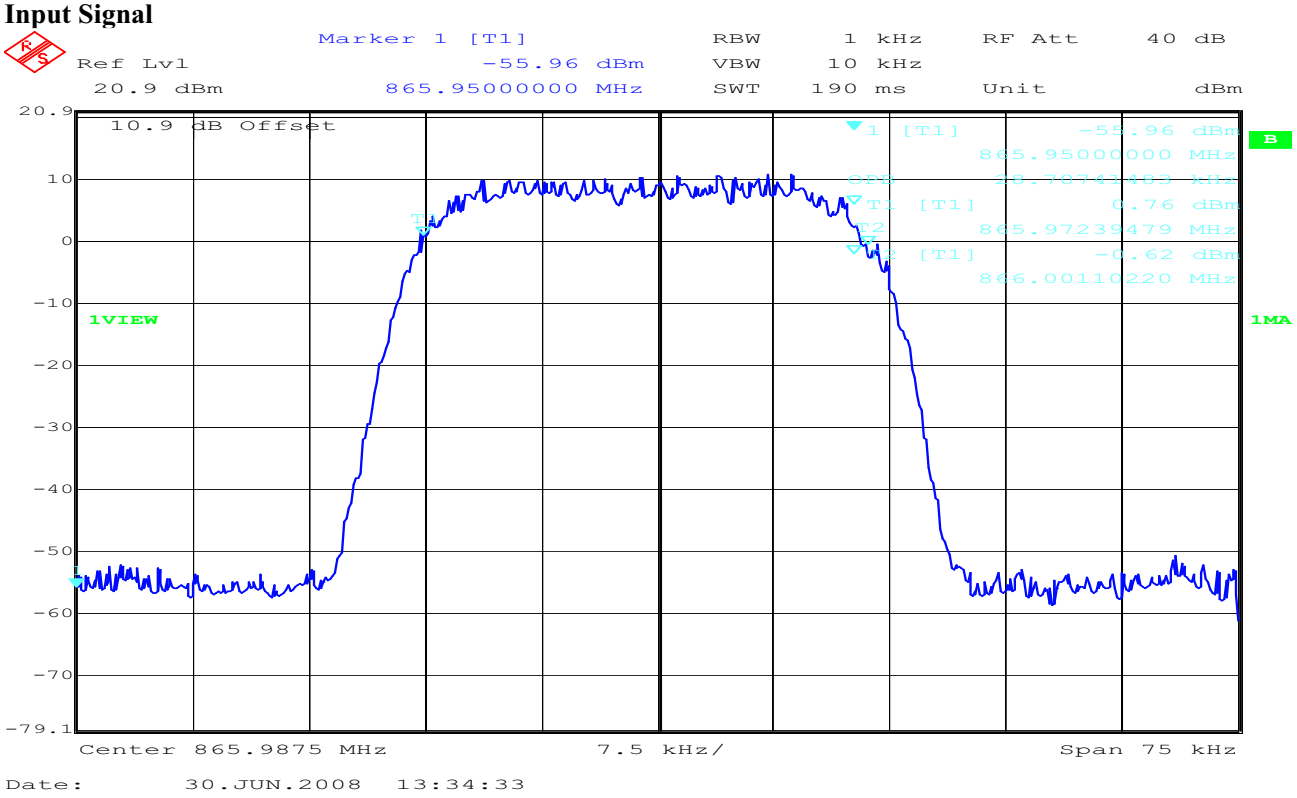


Output Signal

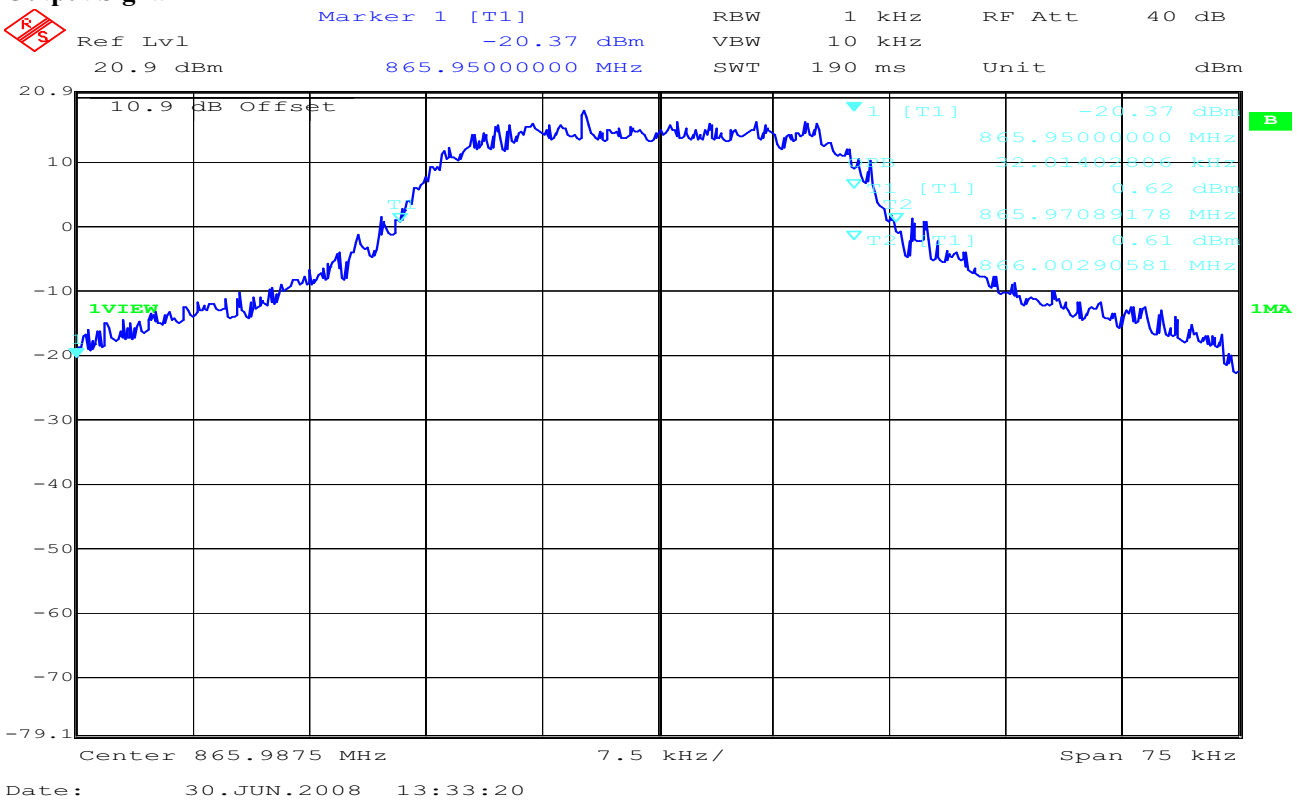


Downlink High Channel

Input Signal



Output Signal



3.1.7 Intermodulation Tests

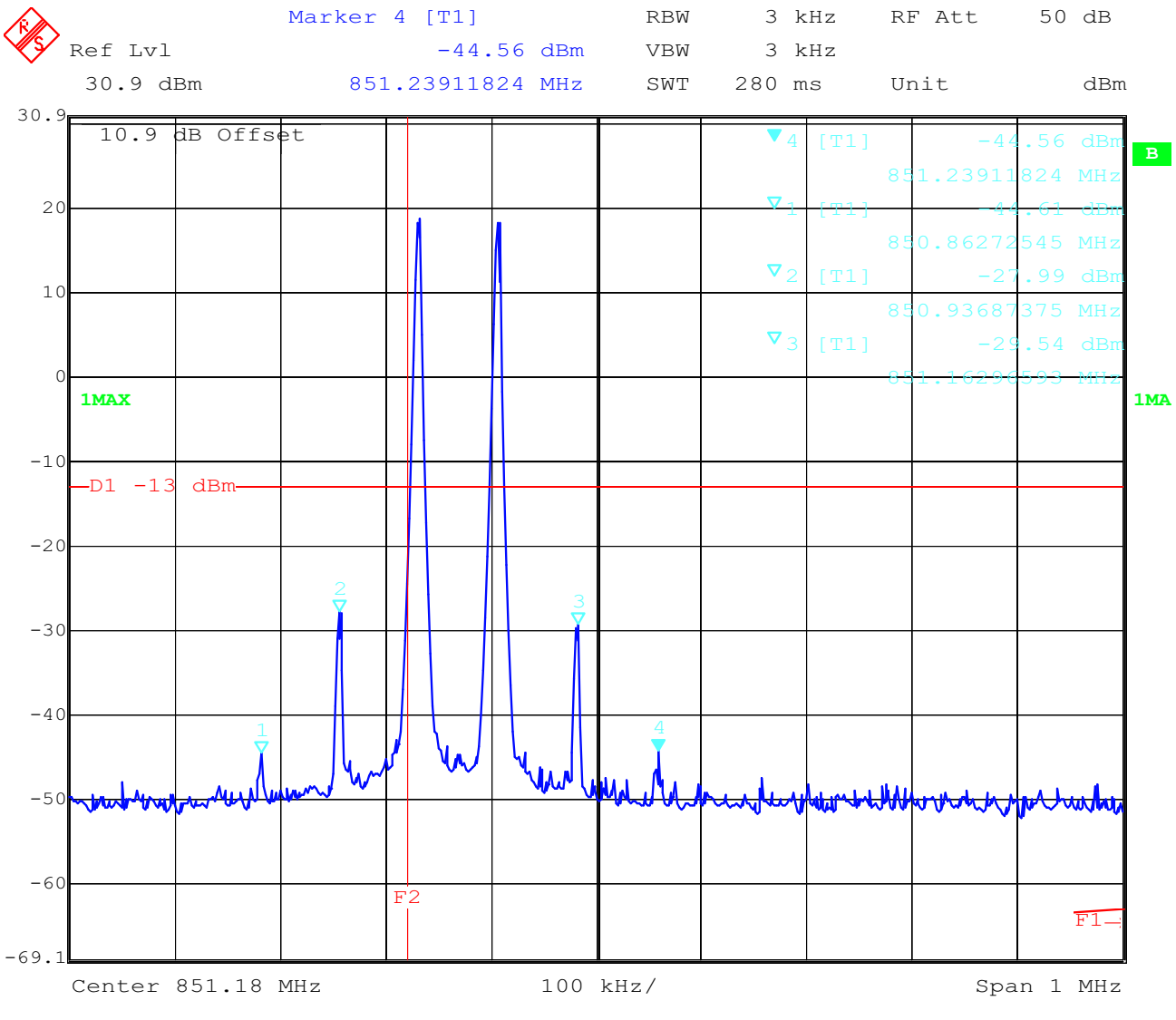
Reference

FCC:	FCC § 2.1051,
IC:	IC RSS-131 §6.3

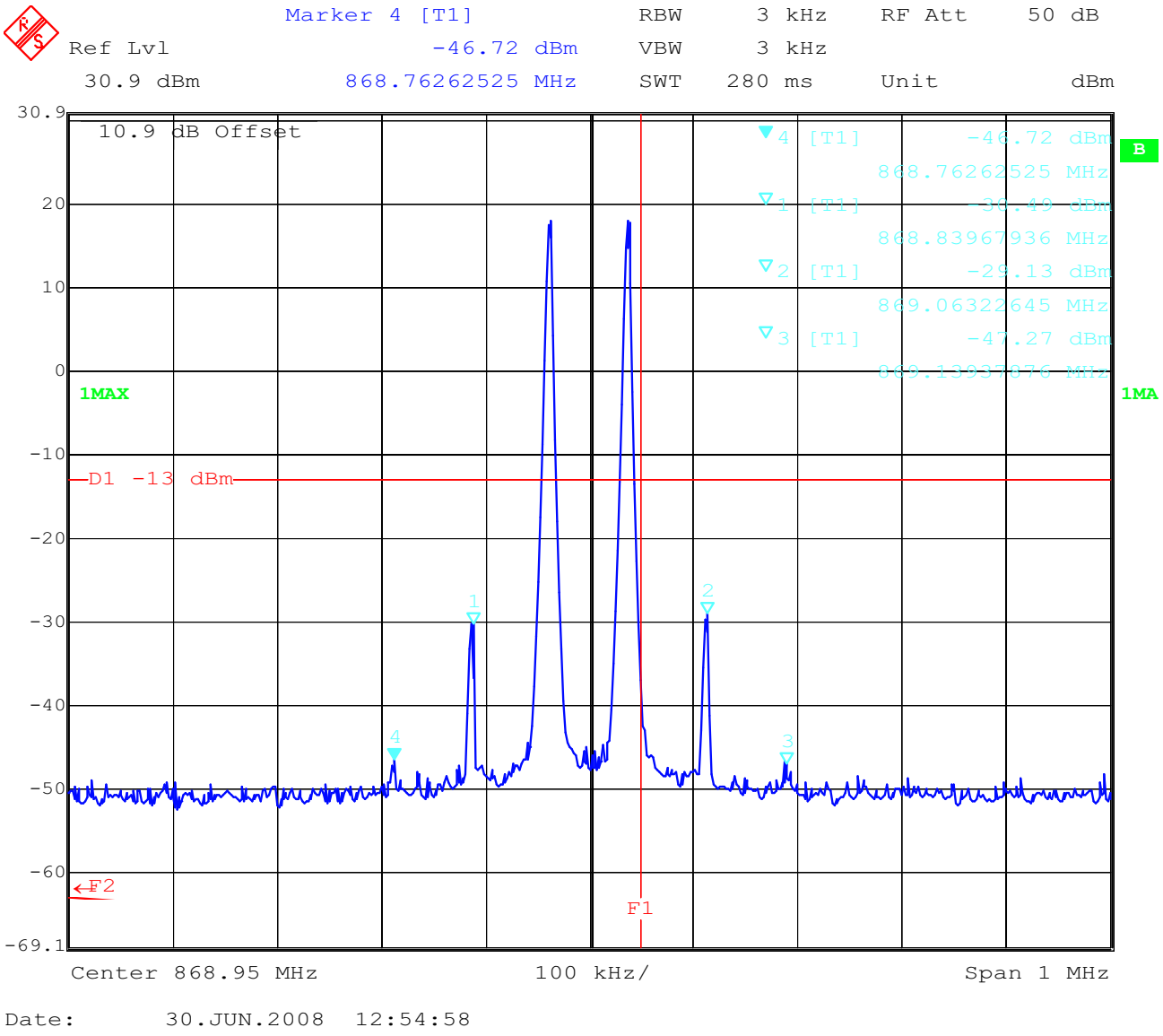
Method of Measurement:
Two RF signals set as inputs. The frequencies of both RF signals shall be within the repeater's operating band. The spacing between both RF signals shall be the minimum possible spacing applied in a network. The level of both RF input signals shall be increased, until the maximum rated output power per channel, as declared by the manufacturer, is reached.

IDEN Downlink

Lower Band Edge

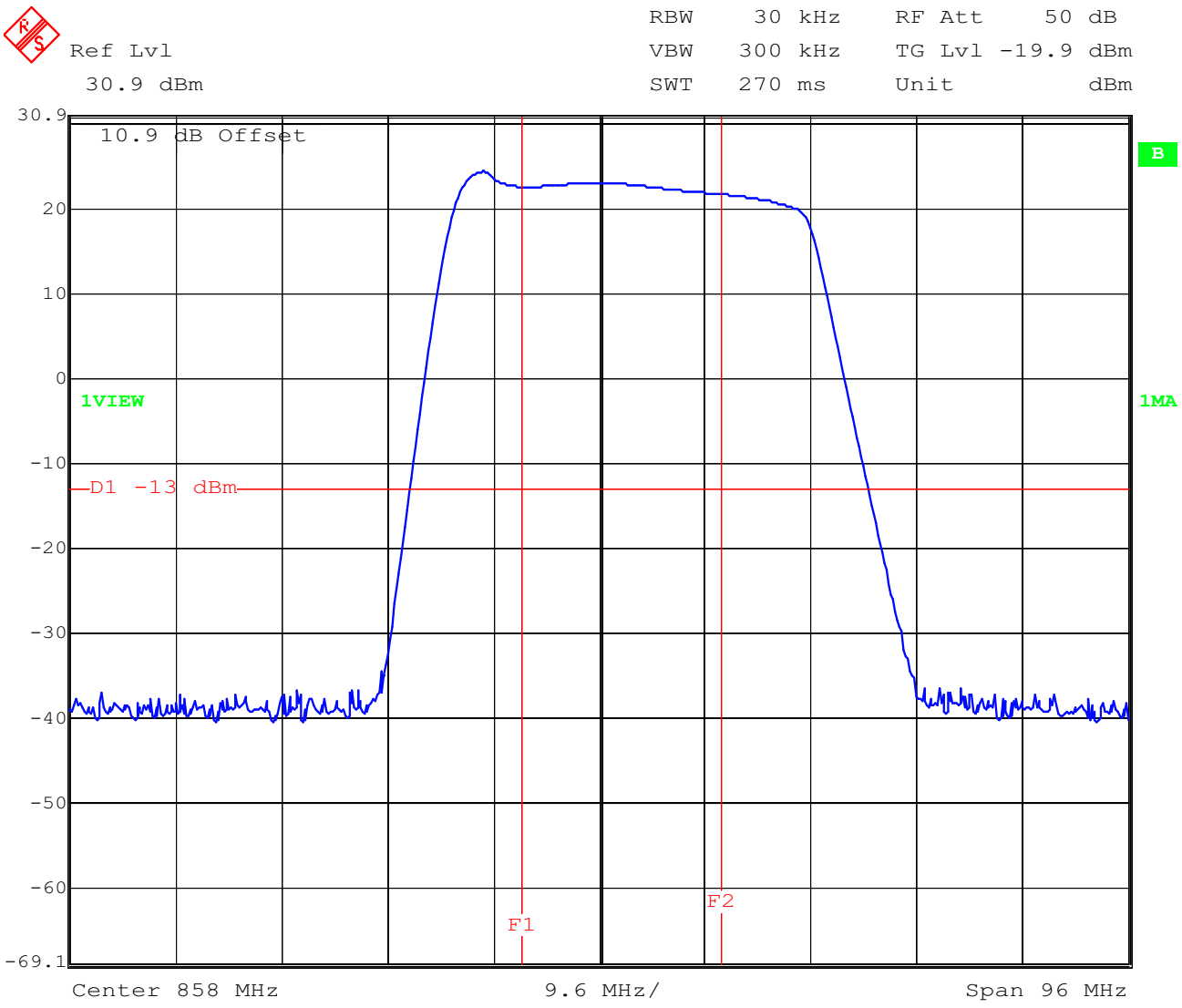


Upper Band Edge



3.1.8 Out of Band Rejection

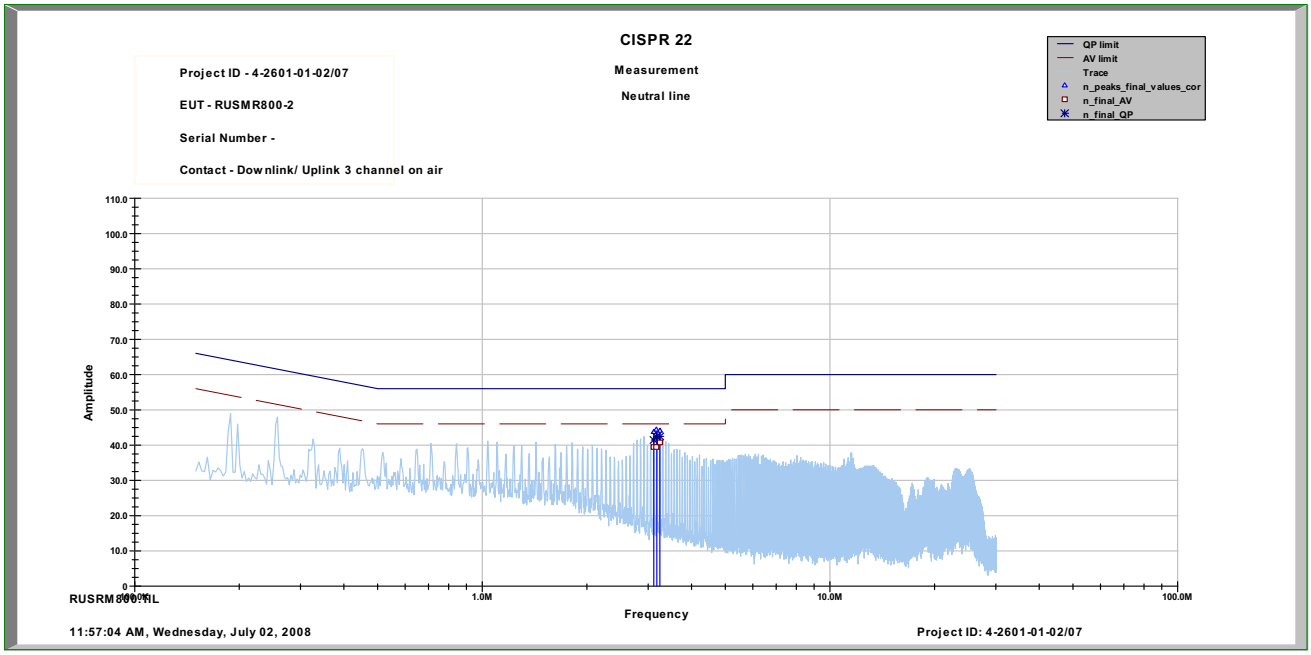
Down link Band Pass



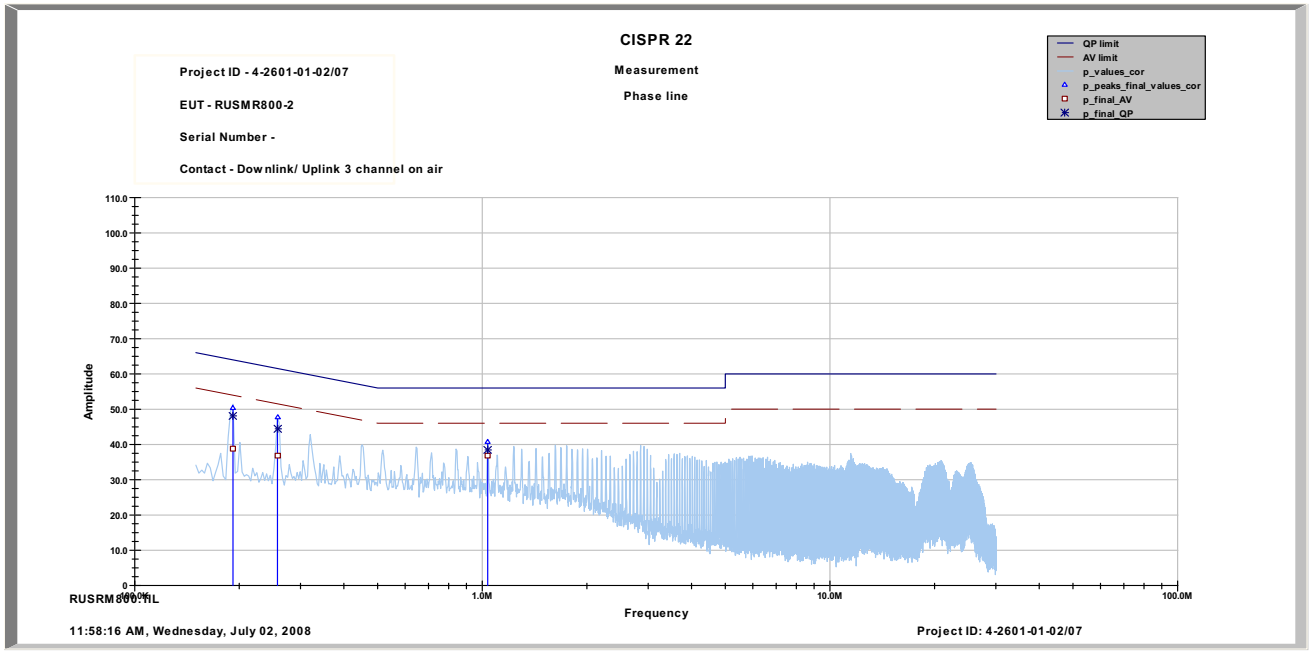
3.1.9 Conducted Emissions <30 MHz §15.107/207

Normal operating mode (up- and downlink)

L-RUSMR800-2
Neutral Line



Phase Line



We measured L1 and N floating and grounded, max value was hold.

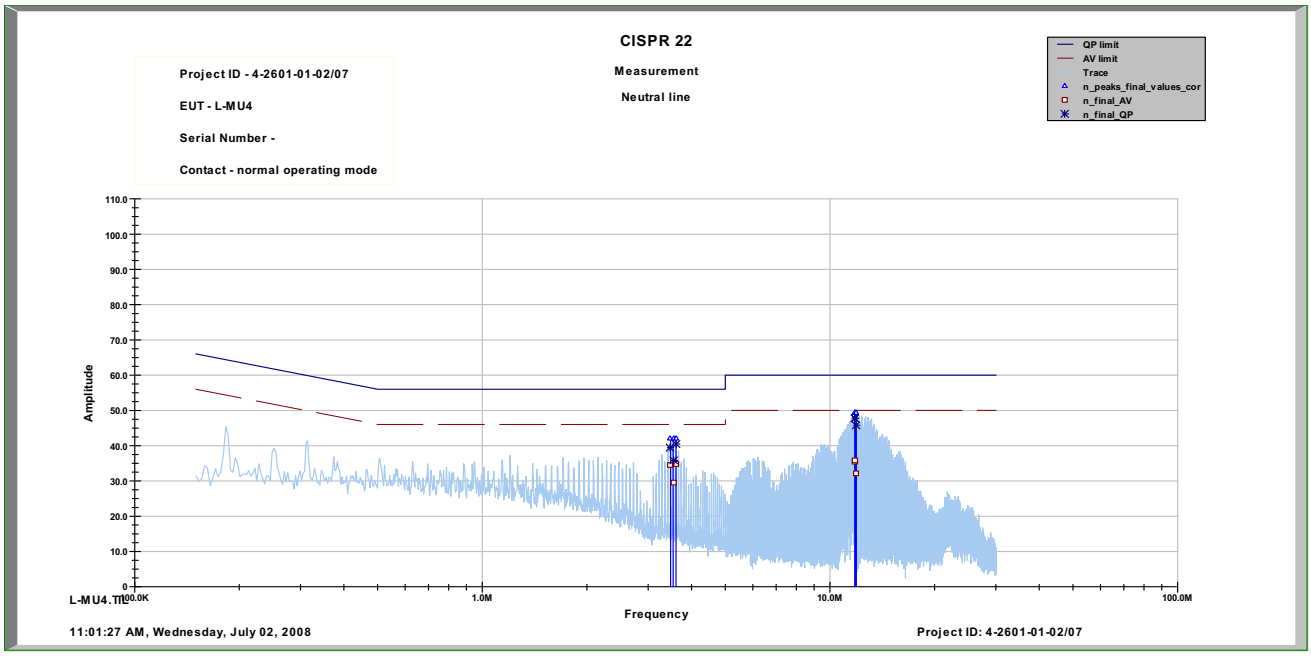
Results:

Frequency	Quasi Peak (dBµV/m)	Margin QP (dBµV/m)	Avergae (dBµV/m)	Margin AV (dBµV/m)
Phase Line				
191.790 kHz	48.0	-16.8	39.0	-16.0
257.460 kHz	44.3	-18.6	36.7	-16.2
1.037 MHz	38.3	-17.7	36.8	-9.2
Neutral Line				
3.111 MHz	41.3	-14.7	39.5	-6.5
3.174 MHz	42.5	-13.6	39.4	-6.6
3.239 MHz	42.6	-13.4	40.8	-5.2

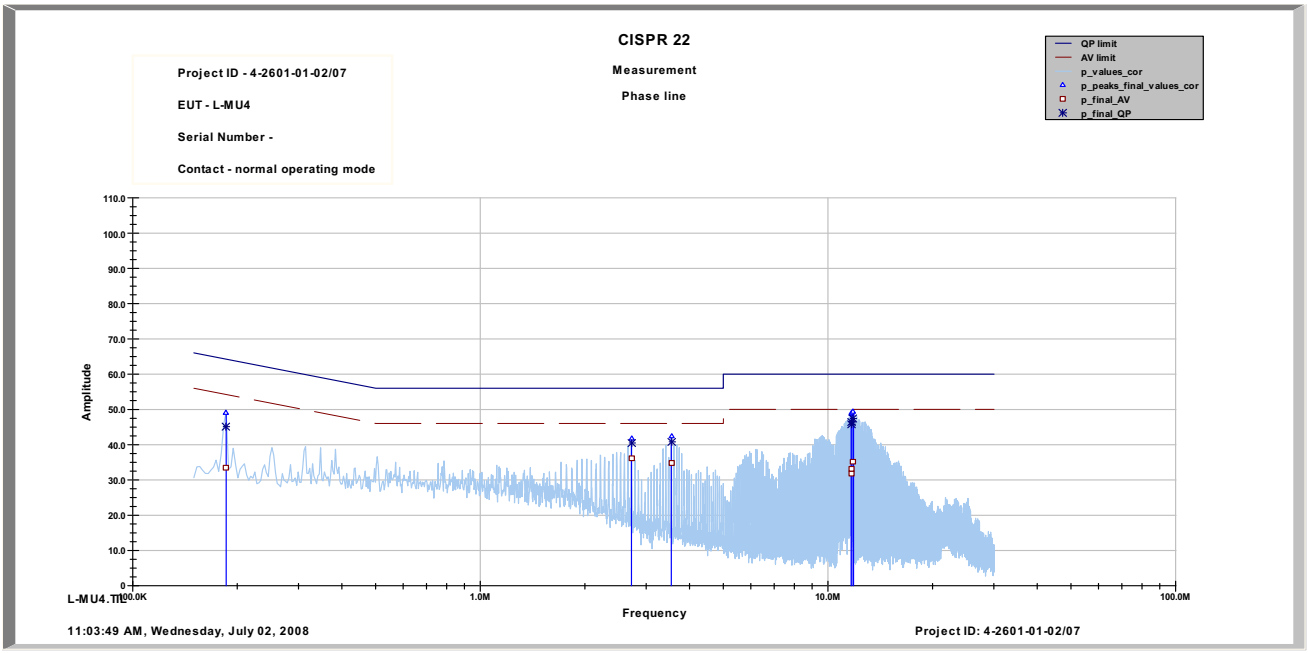
Limits :

Under normal test conditions only	0.15 to 0.5 MHz, 66-56 dbµV QP, 56-46 dBµV AV 0.5 to 5.0 MHz, 56 dBµV QP, 46 dBµV AV 5.0 to 30 MHz, 60 dBµV QP, 50 dBµV AV

L-MU4
Neutral Line



Phase Line



We measured L1 and N floating and grounded, max value was hold.

Results:

Frequency	Quasi Peak (dBµV/m)	Margin QP (dBµV/m)	Avergae (dBµV/m)	Margin AV (dBµV/m)
Phase Line				
185.82 KHz	45.239	-19.738	33.609	-21.368
2.7201 MHz	40.414	-15.586	35.978	-10.022
3.541 MHz	40.876	-15.124	34.857	-11.143
11.642 MHz	45.905	-14.095	31.821	-18.179
11.705 MHz	46.309	-13.691	33.304	-16.696
11.83 MHz	47.281	-12.719	35.162	-14.838
Neutral Line				
3.4783 MHz	39.601	-16.399	34.314	-11.686
3.538 MHz	35.762	-20.238	29.635	-16.365
3.6066 MHz	40.461	-15.539	34.722	-11.278
11.768 MHz	47.863	-12.137	35.345	-14.655
11.827 MHz	47.741	-12.259	35.813	-14.187
11.896 MHz	45.865	-14.135	32.042	-17.958

Limits :

Under normal test conditions only	0.15 to 0.5 MHz, 66-56 dbµV QP, 56-46 dBµV AV 0.5 to 5.0 MHz, 56 dBµV QP, 46 dBµV AV 5.0 to 30 MHz, 60 dBµV QP, 50 dBµV AV

4 Used Test Equipment

No.	Instrument/ Ancillary	Manufacturer	Type	Serial-No.	Internal ID No.		
	Anechoic chamber						
1.	Anechoic chamber	MWB		87400/02	300000996		
2.	Bi conical antenna	EMCO	3104C	9909-4868	300002590		
3.	Log. Per. antenna	EMCO	3146	2130	300001603		
4.	Double ridge horn	EMCO	3115P	3088	300001032		
5.	Active loop antenna	EMCO	6502	2210	300001015		
6.	Loop antenna	Rohde & Schwarz	HFH2-Z2	891847-35	300001169		
7.	Spectrum analyzer	Hewlett-Packard	8566B	2747A05306	300001000		
8.	Spectrum analyzer display	Hewlett-Packard	85662A	2816A16541	300002297		
9.	Quasi peak adapter	Hewlett-Packard	85650A	2811A01131	300000999		
10.	RF pre selector	Hewlett-Packard	85685A	2833A00768	400000081		
11.	Workstation	Hewlett-Packard	Vectra VL		300001688		
12.	Software	Hewlett-Packard	EMI Halle C		300000983		
13.	Power attenuator	Byrd	8325	1530	300001595		
14.	Band reject filter	Wainwright	WRCG1855/1910	7	300003350		
15.	Band reject filter	Wainwright	WRCG2400/2483	11	300003351		
16.	Power supply unit	Hewlett-Packard	6032A	2818A03450	300001040		
17.	Universal communication tester	Rohde & Schwarz	CMU 200	103992	300003231		
	Laboratories Short Range Devices						
18.	Amplifier	Parzich GMBH	js42-00502650-28-5a	928979	300003143		
19.	Analog-/Digital multi-meter		DF-971A	438309, 438320, 438361	400000082		
20.	Audio Analyzer 2Hz - 300 kHz	Rohde & Schwarz	UPD	841074/009	300001236		
21.	Bit error analyzer	Hewlett-Packard	37732A	3606U03073	300001446		
22.	Communication tester	Rohde & Schwarz	CMD55	831050/082	300003018		
23.	Communication test Set	Schlumberger	4040	1725117	300001387		
24.	Directional coupler	Amplifier Research	DC 3010	12709	300001226		
25.	Directional coupler	EMV	DC3010	12306	300001429		
26.	Field strength meter (Near field probe)	EMCO	7405	9202-2150	300001203		
27.	Frequency Counter	Hewlett-Packard	5386A	2704A01243	300000998		
28.	Climatic chamber	Heraeus Voetsch	VT 4002	5,8566E+13	300003019		
29.	Climatic chamber	Heraeus Voetsch	VT 4002	521/83761	300002326		
30.	Power sensor	Hewlett-Packard	8484A	2237A10156	300001140		
31.	Power sensor	Hewlett-Packard	8482A	2237A06016	300001139		
32.	Power sensor	Hewlett-Packard	8484A	2237A10494	300001666		
33.	Power sensor	Hewlett-Packard	8482A	1925A04674	300001667		
34.	Power sensor	Hewlett-Packard	8485A	2238A00849	300001668		
35.	Power sensor	Hewlett-Packard	8482A	2237A06009	300001267		
36.	Power sensor (attenuator)	Hewlett-Packard	8482B	2703A02586	300001492		
37.	Local Oscillator	Hewlett-Packard	70900A	2842A02221	300002019		
38.	Measurement Receiver	Rohde & Schwarz	ESH 2	871921/095	300002505		
39.	Multi-meter (Hand)	Siemens	Multizet		300001102		
40.	Multi-meter (Hand)	Goerz	6EP		300001116		
41.	Multi-meter (Hand)	MetraWatt	MA4S		300001740		
42.	Multi-meter digital	Rohde & Schwarz	UDS 5	872677/042	300001325		
43.	Power supply	Hewlett-Packard	6038A	3122A11097	300001204		
44.	Power supply	Hewlett-Packard	6038A	2848A07027	300001174		
45.	Power supply	Zentro	2X30V	2007	300001109		
46.	Power supply	Hewlett-Packard	6038A	2752A04866	300001161		
47.	Power supply	Heiden	1108-32	1701	300001392		
48.	Power supply	Heiden	1108-32	1802	300001383		
49.	Power supply	Heiden	1108-32	3202	300001187		

No.	Instrument/ Ancillary	Manufacturer	Type	Serial-No.	Internal ID No.		
50.	Power supply	Zentro	LA 2x30/5GB2	2012	300001275		
51.	Power supply	Systron	M5P 40/15A	828233	300001291		
52.	V-network AC	Rohde & Schwarz	ESH3-Z5	828576/020	300001210		
53.	Oscilloscope	Hewlett-Packard	54502A	2934A01917	300001374		
54.	Power meter	Hewlett-Packard	436A	2101A12378	300001136		
55.	Power meter	Hewlett-Packard	436A	2031U01461	300001105		
56.	Precision – frequency – reference	Hewlett-Packard	70310A	2736A00707	300002018		
57.	Radio communication analyzer	Rohde & Schwarz	CMTA 54	894043/010	300001175		
58.	Radio communication analyzer	Rohde & Schwarz	CMTA 84	894199/012	300001176		
59.	Radio communication analyzer	Rohde & Schwarz	CMTA 84	894581/013	300001355		
60.	Signal generator	Hewlett-Packard	8111A	2215G00867	300001117		
61.	Signal generator	Rohde & Schwarz	SMPC	882416/019	300001162		
62.	Function signal generator	Rohde & Schwarz	AFGU	862490/032	300001201		
63.	Function signal generator	Rohde & Schwarz	APN-04	894326/014	300001184		
64.	Signal generator 0.01-1280 MHz	Hewlett-Packard	8662A	2224A01012	300001110		
65.	Signal generator 0.01-1280 MHz	Hewlett-Packard	8662A	2232A01038	300001264		
66.	Signal generator 0.1-2000 MHz	Rohde & Schwarz	SMH	864219/033	300001410		
67.	Signal generator 0.1-2000 MHz	Rohde & Schwarz	SMH	883909/010	300001183		
68.	Signal generator 0.1-2060 MHz	Hewlett-Packard	8657A	2838U00736	300001009		
69.	Signal generator 0.1-4200 MHz	Hewlett-Packard	8665A	2833A00109	300001177		
70.	Signal generator 0.1-4200 MHz	Hewlett-Packard	8665A	2833A00112	300001373		
71.	Signal generator 0.1-4320 MHz	Rohde & Schwarz	SMHU	2790575	300001404		
72.	Signal generator 0.1-4320 MHz	Rohde & Schwarz	SMHU	894055/005	300001190		
73.	Signal generator DC-600 KHz	Hewlett-Packard	8904A	2822A01213	300001157		
74.	Signal generator DC-600 KHz	Hewlett-Packard	8904A	2822A01214	300001158		
75.	Signal generator DC-600 KHz	Hewlett-Packard	8904A	2822A01203	300001367		
76.	Function signal generator	Rohde & Schwarz	APN 04	2273637	300001395		
77.	Signal generator NF	Rohde & Schwarz	SPN	880139/068	300001142		
78.	Spectrum Analyzer	Rohde & Schwarz	FSiQ26	835111/0004	300002678		
79.	Spectrum analyzer	Hewlett-Packard	71210A (70000)	2731A02347	300000321		
80.	Spectrum analyzer	Rohde & Schwarz	FSMS	826067/004	300001223		
81.	Spectrum analyzer 2	Hewlett-Packard	85660B	3138A07614	300001207		
82.	Spectrum analyzer 3	Hewlett-Packard	8566A	1925A00257	300001098		
83.	Spectrum analyzer Display	Hewlett-Packard	70206A	2840A01553	300002017		
84.	Spectrum analyzer Display 2	Hewlett-Packard	85662A	3144A20627	300001208		
85.	Spectrum analyzer Display 3	Hewlett-Packard	85662	1925A00860	300002306		
86.	Isolating transformer	Erfi	913501		300001205		
87.	Isolating transformer	Erfi	MPL	91350	300001155		
88.	Isolating transformer	Erfi	MPL	91350	300001151		
89.	Isolating transformer	Erfi	6210		300001179		
90.	Isolating transformer	Grundig	RT5A	8781	300001277		
91.	Isolating transformer	Grundig	RT5A	9242	300001263		
92.	Amplifier	Hewlett-Packard	8447D	2648A04780	300001360		
93.	Amplifier	EMV	10W1000	9549	300001377		

No.	Instrument/ Ancillary	Manufacturer	Type	Serial-No.	Internal ID No.		
94.	Amplifier	EMV	25W1000	12948	300001440		
95.	Amplifier 5W	Amplifier Research	5W1000	9725	300001592		
	Laboratory Bluetooth						
96.	Power splitter	Inmet Corp.	1499382		300002841		
97.	Power sensor	Rohde & Schwarz	NRV-Z1	833894/011	300002681-0010		
98.	Signal generator	Rohde & Schwarz	SMIQ03	836206/0092	300002680		
99.	Bluetooth RF-test system	Rohde & Schwarz	TS8960		300002681-0000		
100.	Signal generator	Rohde & Schwarz	SMIQ03	835541/055	300002681-0001		
101.	Signal generator	Rohde & Schwarz	SMIQ03	835541/056	300002681-0002		
102.	Signal generator	Rohde & Schwarz	SMP02	835133/011	300002681-0003		
103.	Power meter	Rohde & Schwarz	NRVD	835430/044	300002681-0004		
104.	Spectrum - analyzer	Rohde & Schwarz	FSIQ	835540/018	300002681-0005		
105.	Switch unit	Rohde & Schwarz	SSCU		300002681-0006		
106.	Attenuator-step	Rohde & Schwarz	RSP	834500/010	300002681-0007		
107.	Frequency normal	Rohde & Schwarz	Rubidium		300002681-0009		
108.	Power sensor	Rohde & Schwarz	NRV-Z1	833894/012	300002681-0013		
	Conducted emission on AC line Room 006						
109.	Measurement receiver	Rohde & Schwarz	ESH3	881515/002	300002490		
110.	Measurement receiver	Rohde & Schwarz	ESVP	881487/021	300002491		
111.	Measurement receiver	Rohde & Schwarz	ESH3	890174/002	300000296		
112.	V-network AC	Rohde & Schwarz	ESH3 Z5	892475/017	300002209		
113.	V-network AC	Rohde & Schwarz	ESH3-Z5	892239/020	300002506		
114.	Software	Rohde & Schwarz	ESK-1				
115.	DC power supply	Hewlett-Packard	6032A	2743A02600	300001498		
116.	V-network AC	Rohde & Schwarz	ESH3-Z5	861189/014	300001458		
117.	V-network DC	Rohde & Schwarz	ESH3-Z6	893689/012	300001504		
118.	V-network DC	Rohde & Schwarz	ESH3-Z6	861406/005	300001518		
119.							
120.							
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124.							
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134.							

5 Photographs of Test Set-up

Photo 1: Radiated Emissions

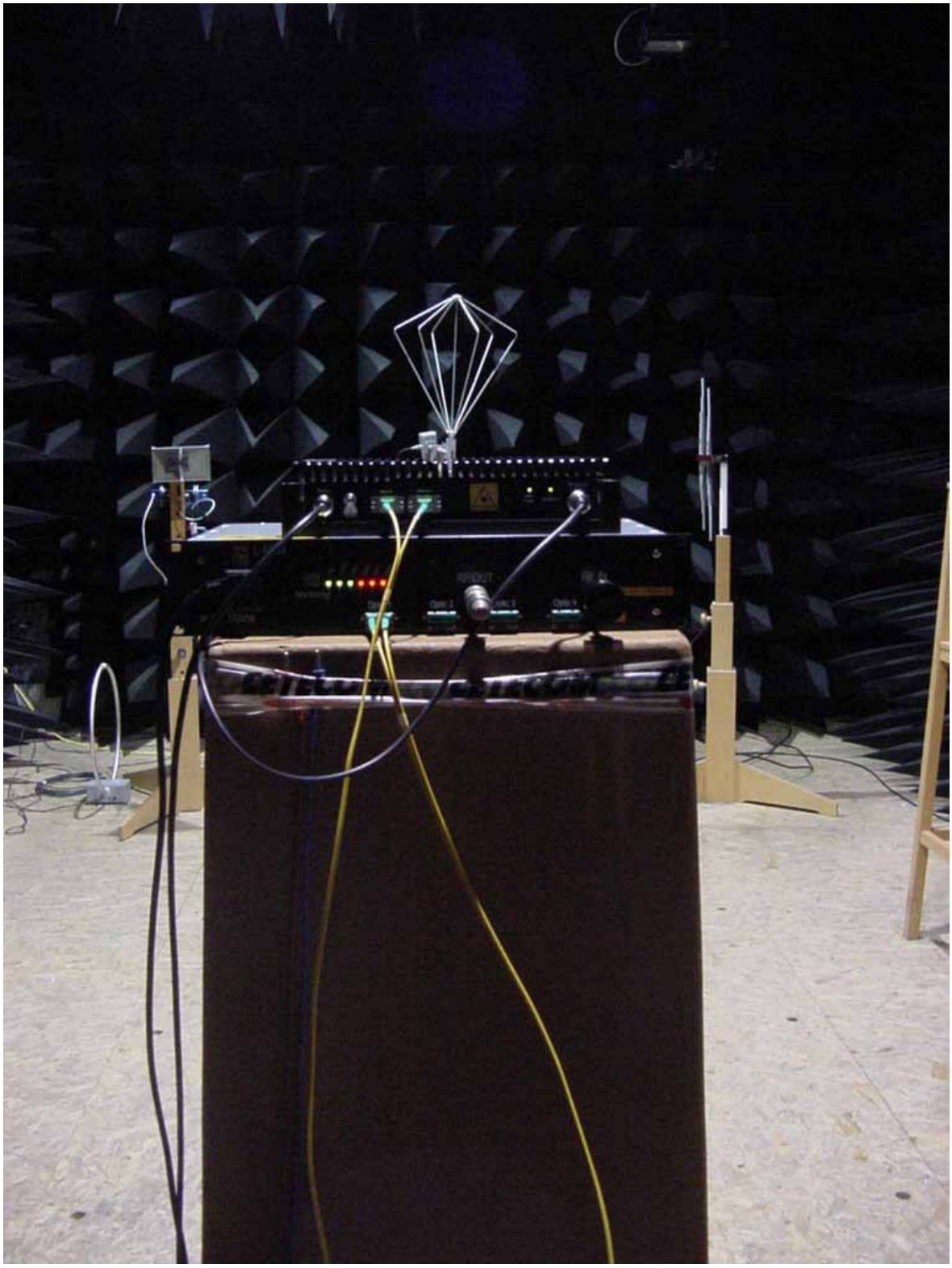


Photo 2: Radiated Emissions

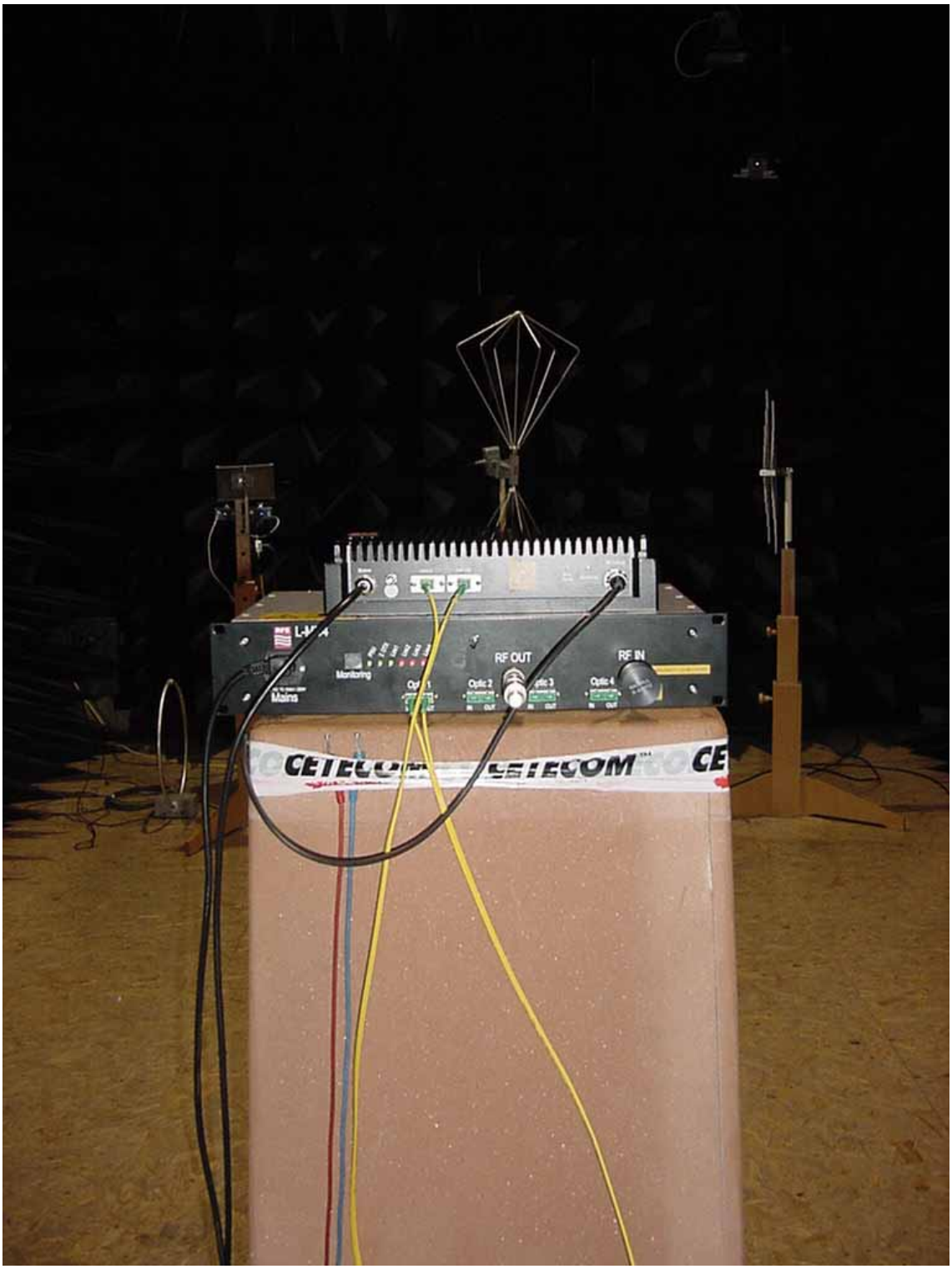


Photo 3: Conducted Emissions L-MU

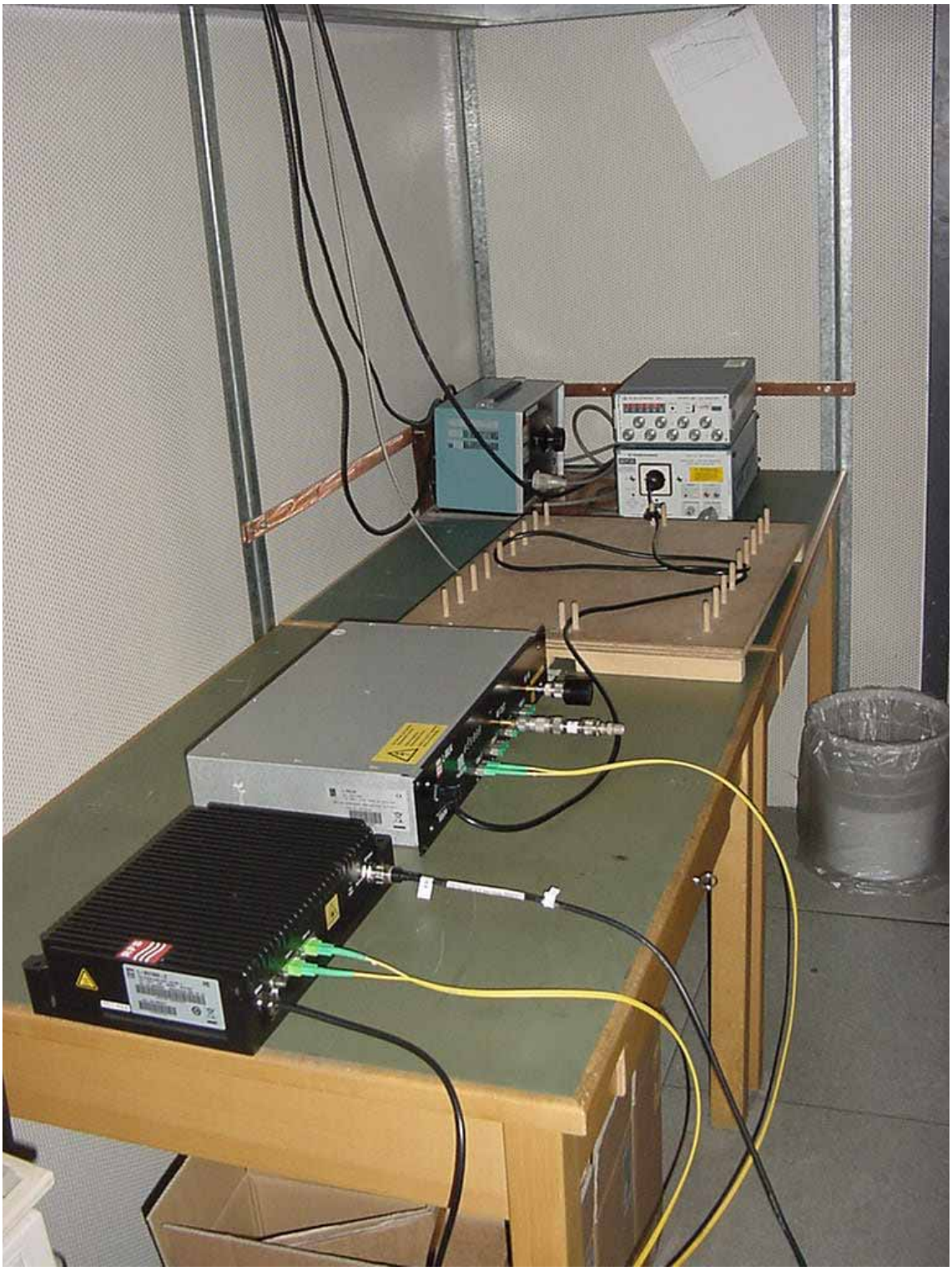


Photo 4: Conducted Emissions L-RU

6 Photographs of EUT

L-MU
Photo 1:

Photograph No.: 2

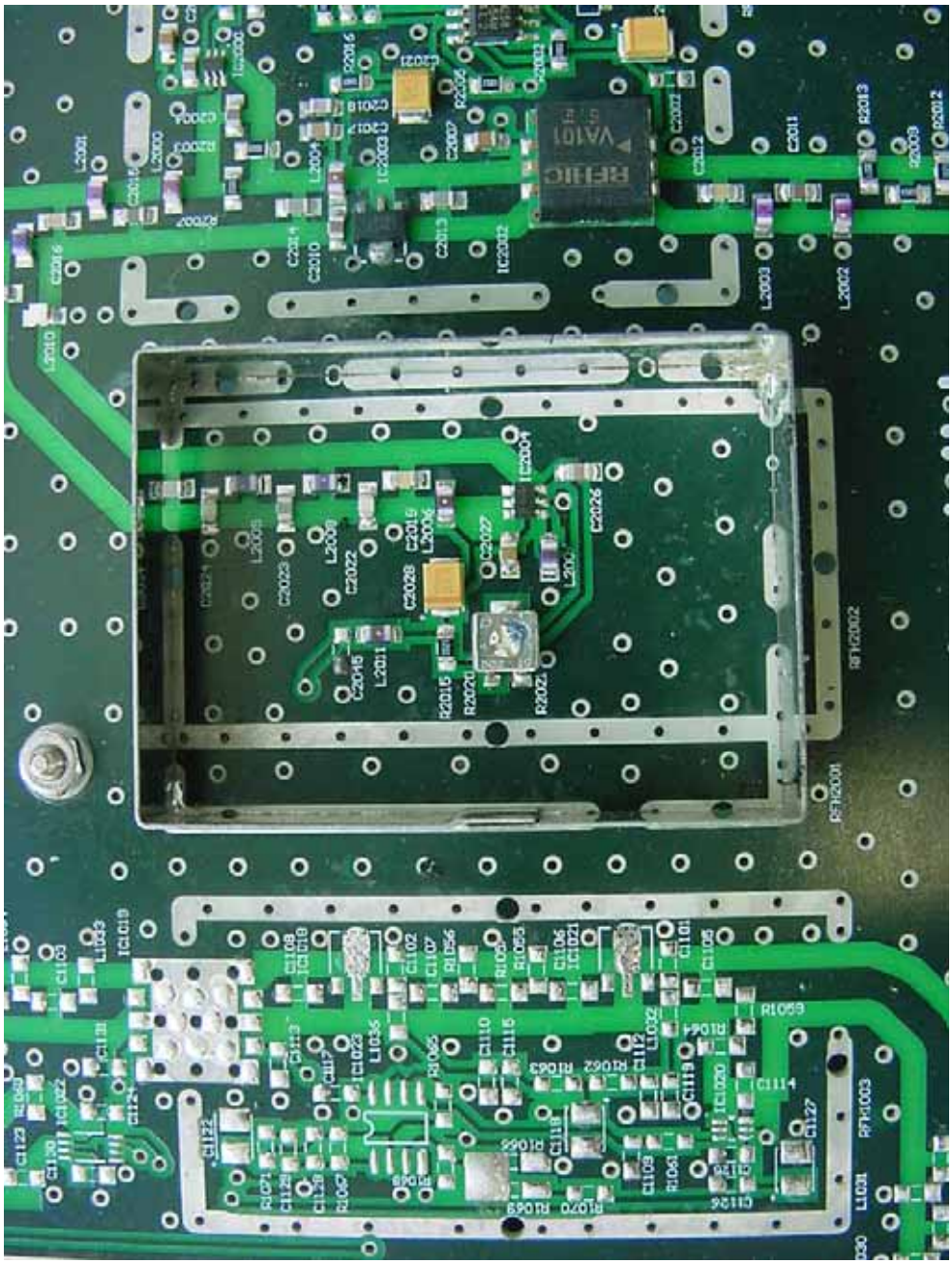
Photograph No.: 3

Photograph No.: 4 L-MU4

Photograph No.: 5

Photograph No.: 6 L-MU2

Photograph No.: 7



Photograph No.: 8 L-MU1

L-RU800-2

Photo 1:

Photo 2:


L-RUSMR800-2
FCC GRANTEE CODE: XXXL-RUSMR800-2
115 - 240 V 0.5A 50/60HZ 50 W MAX
Ser.-No.:080400201 Manufactured: 2008-04-14
LRUSMR800 0804002011
Part.-No.:16501015
16501015J
RFS

Photo 3:

Photo 4:


RFS
Optical Module
Mat.No. 159 0
Ser.No.
RoHS
F8J815-18
SGC Technologies Inc. D.C 0802
SDPX-815-8R8-860BP18C
815 ANT 860
Duplexer1

Photo 5:

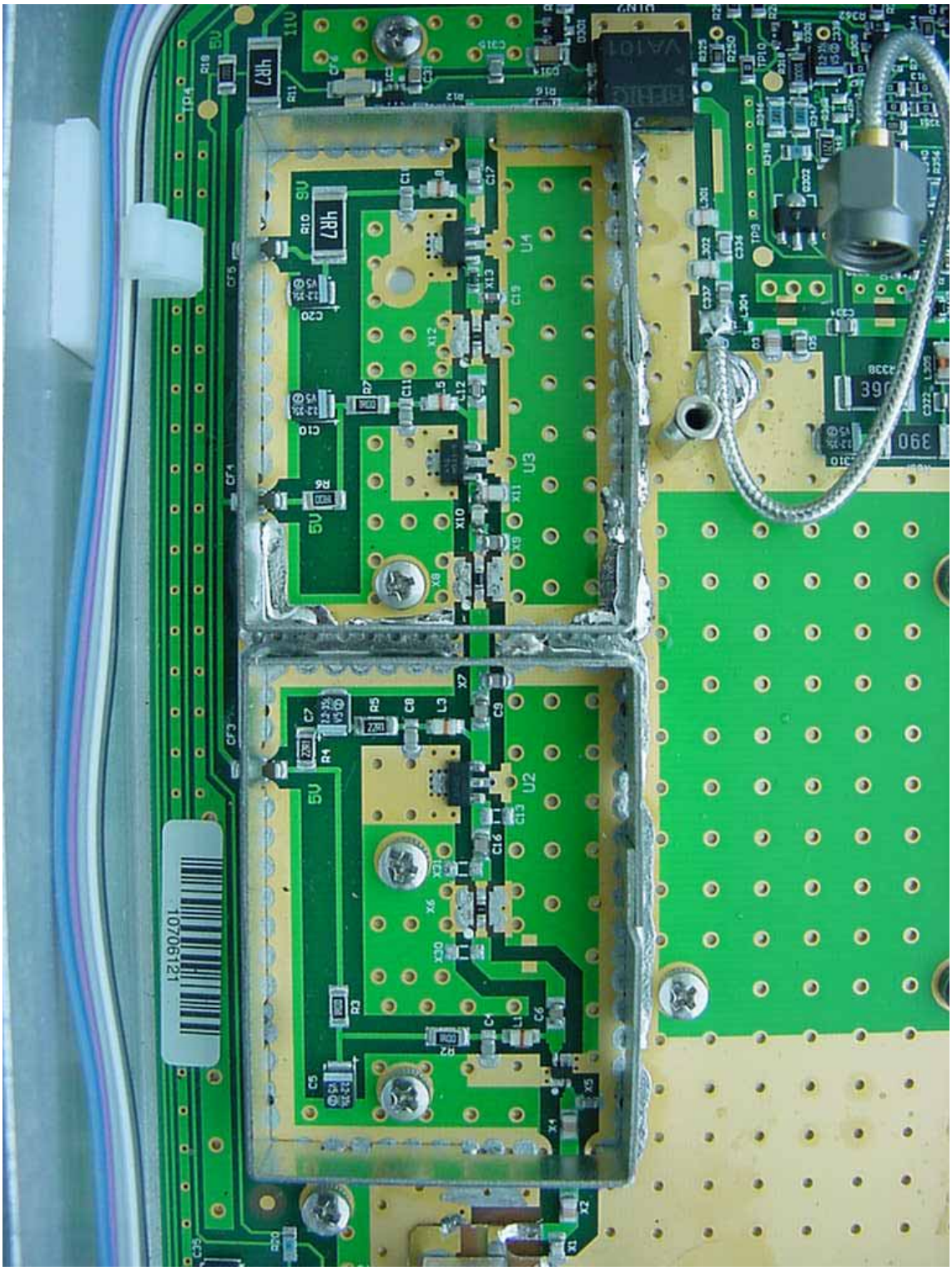


Photo 6: