FCC PART 15, SUBPART B and C
TEST REPORT

for

2.4 GHz TRANSCEIVER MODULE

MODEL: 924-41484

Prepared for

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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested:	2.4 GHz Transceiver Module Model: 924-41484 S/N: N/A
Product Description:	See Expository Statement.
Modifications:	The EUT was not modified during the testing.
Manufacturer:	BEI Industrial Encoders 7230 Hollister Avenue Goleta, California 93117
Test Dates:	October 12, 15, 16, and 17, 2007
Test Specifications:	EMI requirements CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247
Test Procedure:	ANSI C63.4: 2003
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.209
3	Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 25000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(d)
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and section 15.247 (d)
6	20 dB Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(1) and (a)(1)(iii)
7	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(1)
8	RF Conducted Antenna Test	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (d)
9	Carrier Frequency Separation	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (a)(1) and 15.247 (a)(1)(iii)
10	Average Time of Occupancy	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (a)(1)(iii)
11	Peak Power Spectral Density from the Intentional Radiator to the Antenna	This test was not performed because the EUT is a frequency hopper.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the 2.4 GHz Transceiver Module Model: 924-41484 . The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

BEI Industrial Encoders

Glenn Avolio	General Manager
Michael Stephens	

Compatible Electronics, Inc.

Kyle Fujimoto	Test Engineer
Michael Christensen	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on October 1, 2007.

2.5 Disposition of the Test Sample

The sample has not been returned to BEI Industrial Encoders as of November 8, 2007.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
N/A	Not Applicable

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2003	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The 2.4 GHz Transceiver Module Model: 924-41484 (EUT) was connected to the power supply board via 10-centimeter cables. The power supply board was also connected to an AC Adapter via its power port. The EUT was continuously transmitting or receiving depending on the test performed. The EUT was tested in three orthogonal axis

The EUT was tested with the antenna having a short cable, and also with the antenna having a long cable and mounting bracket.

The final radiated as well as the conducted data was taken in the modes above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 10-centimeter unshielded cable connecting the EUT to the power supply board. The cable has a 5 pin connector at each end.

Cable 2 This is a 10-centimeter unshielded cable connecting the EUT to the power supply board. The cable has a 6 pin connector at each end.

Cable 3 This is a 2-meter unshielded cable connecting the AC Adapter to the power supply board. The cable is hard wired at each end.

Cable 4 **(For the Short Cable Configuration Only)**
This is a 10-centimeter braid shielded cable connecting the antenna to the EUT. The cable has a reverse polarity TNC connector at the antenna end a reverse polarity TNC to UFL connector at the EUT end. The shield of the cable was grounded to the chassis via the connectors.

Cable 5 (**For the Long Cable and Mounting Bracket Configuration Only)**
This is a 3-meter braid shielded cable connecting cable #6 to the Mounting Bracket. The cable has a reverse polarity TNC connector at each end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 6 (**For the Long Cable and Mounting Bracket Configuration Only)**
This is a 10-centimeter braid shielded cable connecting the EUT to cable #5. The cable has a reverse polarity TNC connector at the cable #5 end a reverse polarity TNC to UFL connector at the EUT end. The shield of the cable was grounded to the chassis via the connectors.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
2.4 GHz TRANSCEIVER MODULE (EUT)	BEI INDUSTRIAL ENCODERS	924-41484	N/A	**VSR-SWIFTCOMM07**
AC ADAPTER	COPAL	DC-630	N/A	**N/A**
POWER SUPPLY BOARD	SWIFTCOMM	N/A	N/A	**N/A**
ANTENNA	HYPERLINK TECHNOLOGIES, INC.	HG2405RD-RTP	N/A	**N/A**

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 4, 2007	June 4, 2008
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 4, 2007	June 4, 2008
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 4, 2007	June 4, 2008
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 15, 2005	Nov. 15, 2007
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Preamplifier	Com-Power	PA-103	1582	January 16, 2007	Jan. 16, 2008
Biconical Antenna	Com Power	AB-900	15251	March 8, 2007	March 8, 2008
Log Periodic Antenna	Com Power	AL-100	16241	July 9, 2007	July 9, 2008
Loop Antenna	Com Power	AL-130	17089	September 24, 2007	Sept. 24, 2008
Horn Antenna	Antenna Research	DRG-118/A	1053	March 6, 2006	March 6, 2008
Microwave Preamplifier	Com Power	PA-122	181921	February 27, 2007	Feb. 27, 2008
Microwave Preamplifier	Com Power	PA-840	711919	February 27, 2007	Feb. 27, 2008
Horn Antenna	Com Power	AH826	71957	December 12, 2005	Dec. 12, 2007
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Transient Limiter	Seaward	252A910	1	September 19, 2007	September 19, 2008
LISN	Com Power	LI-215	12082	September 26, 2007	September 26, 2008
LISN	Com Power	LI-215	12078	September 26, 2007	September 26, 2008

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Transmitter Power

Transmit power is herein defined as the power delivered to a 50 ohm load at the RF output of the EUT.

Power	Channel
17.60 dBm	LOW
17.73 dBm	MIDDLE
17.73 dBm	HIGH

7.2 Channel Number and Frequencies

There are a total of 78 channels. The low channel is at 2402.0 MHz and the high channel is at 2479.0 MHz. There is a 1 MHz separation between channels.

Channel 1: 2402MHz
Channel 2: 2403 MHz
(Etc.)

7.3 Antenna Gain

The antenna used is the HyperLink Technologies, Inc. Model: HG2405RD-RTP Reverse Polarity-TNC “Rubber Duck” Antenna. The gain of this antenna is 5.5 dBi.

8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2003. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Section 15.207 for conducted emissions.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, the Com Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz, and the Com Power Microwave Preamplifier Model: PA-840 was used for frequencies above 18 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the spectrum analyzer to keep the amplitude reading calibrated.

After the readings above 1 GHz were average manually, the reading was further adjusted by a "duty cycle correction factor", derived from 20 log (dwell time / 100 ms). Since the duty cycle was below 10%, the maximum allowed 20 dB was subtracted from the peak reading. The duty cycle correction factor is explained in Appendix E.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2003. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 10 meter test distance from 10 kHz to 30 MHz, and at a 3 meter test distance from 30 MHz to 25 GHz to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

8.3 20 dB Bandwidth

The 20 dB Bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF output of the EUT. The resolution bandwidth was 10 kHz and the video bandwidth was 30 kHz.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and (a)(1)(iii). The 20 dB bandwidth is less than the separation between channels. Please see the data sheets located in Appendix E.

8.4 Peak Output Power

The Peak Output Power was measured using the EMI Receiver. The peak output power was measured using a direct connection from the RF output of the EUT. The resolution bandwidth was 10 MHz and the video bandwidth was 10 MHz. The cable loss was also added back into the reading using the reference level offset.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (b)(2). The maximum peak output power is less than 125 mW. Please see the data sheets located in Appendix E.

8.5 RF Antenna Conducted Test

The RF antenna conducted test was performed using the EMI Receiver. The RF antenna conducted test measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 100 kHz, and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. Please see the radiated emission data sheets located in Appendix E.

8.6 RF Band Edges

The RF band edges were taken at the edges of the ISM spectrum (2400 MHz when the EUT was on the low channel and 2483.5 MHz when the EUT was on the high channel) using the EMI Receiver. A preamplifier was used to boost the signal level, with the plots being taken at a 3 meter test distance. The radiated emissions test procedure as describe in section 8.2 of this test report was used to maximize the emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the band edges at 2400 MHz and 2483.5 MHz meet the requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). Please see the data sheets located in Appendix E.

8.7 Carrier Frequency Separation

The Channel Hopping Separation Test was measured using the EMI Receiver. The EUT was operating in its normal operating mode. The resolution bandwidth was 100 kHz, and the video bandwidth 1 MHz. The frequency span was wide enough to include the peaks of two adjacent channels.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and 15.247 (a)(1)(iii). The Channel Hopping Separation is greater than the 20 dB bandwidth. Please see the data sheets located in Appendix D.

8.8 Number of Hopping Frequencies

The Channel Hopping Separation Test was measured using the EMI Receiver. The EUT was operating in its normal operating mode. The resolution bandwidth was 1 MHz, and the video bandwidth was 1 MHz. The frequency span was wide enough to include all of the peaks in the frequency band of operation.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and 15.247 (a)(1)(iii). The number of hopping frequencies is 78. Please see the data sheets located in Appendix E.

8.8 Average Time of Occupancy Test

The Average Time of Occupancy Test was measured using the EMI Receiver. The EUT was operating in normal operating mode. The frequency span was taken to 0 Hz with a sweep time of 5 msec to determine the time for each transmission.

The EUT was put into its normal transmitting mode. Please note that the EUT only transmits on 16 different channels at the most during normal operation.

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. This means the time of occupancy of any one channel cannot be greater than 0.4 seconds in a 6.4 second period (0.4 seconds * 16 channels).

The sweep time was then changed to 60 milliseconds and the number of pulses taken. The number of pulses was then multiplied by 106.67 to determine the number of pulses in a 6.4 second period. The number of pulses in a 6.4 second period was then multiplied by the time for each pulse to determine the average time of occupancy.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1)(iii). The EUT does not transmit for more than 400 msec in a 6.4 second period on any frequency. Please see the data sheets located in Appendix E.

8.9 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth 3 kHz, and the video bandwidth was 10 kHz. The highest 1.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

Test Results:

This test was not performed because the EUT is a frequency hopper.

9. CONCLUSIONS

The 2.4 GHz Transceiver Module Model: 924-41484 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	2.4 GHz Transceiver Module Model: 924-41484 S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

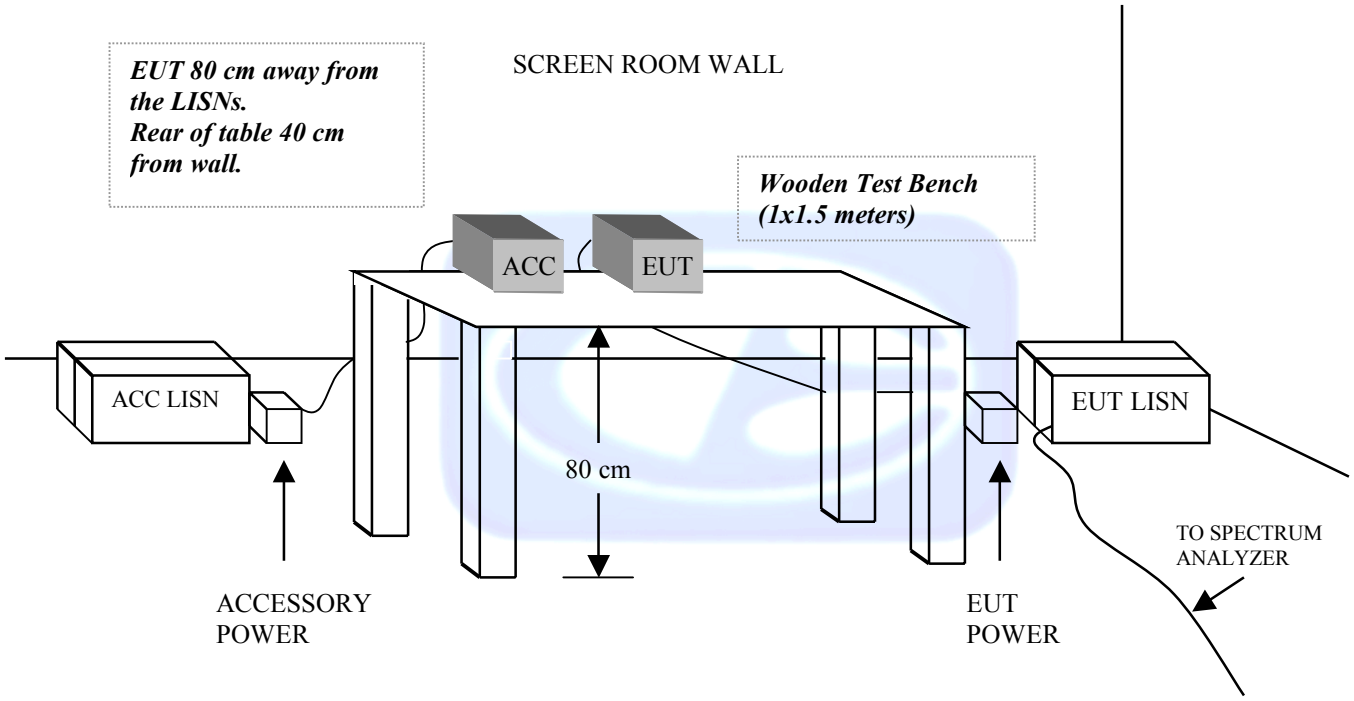
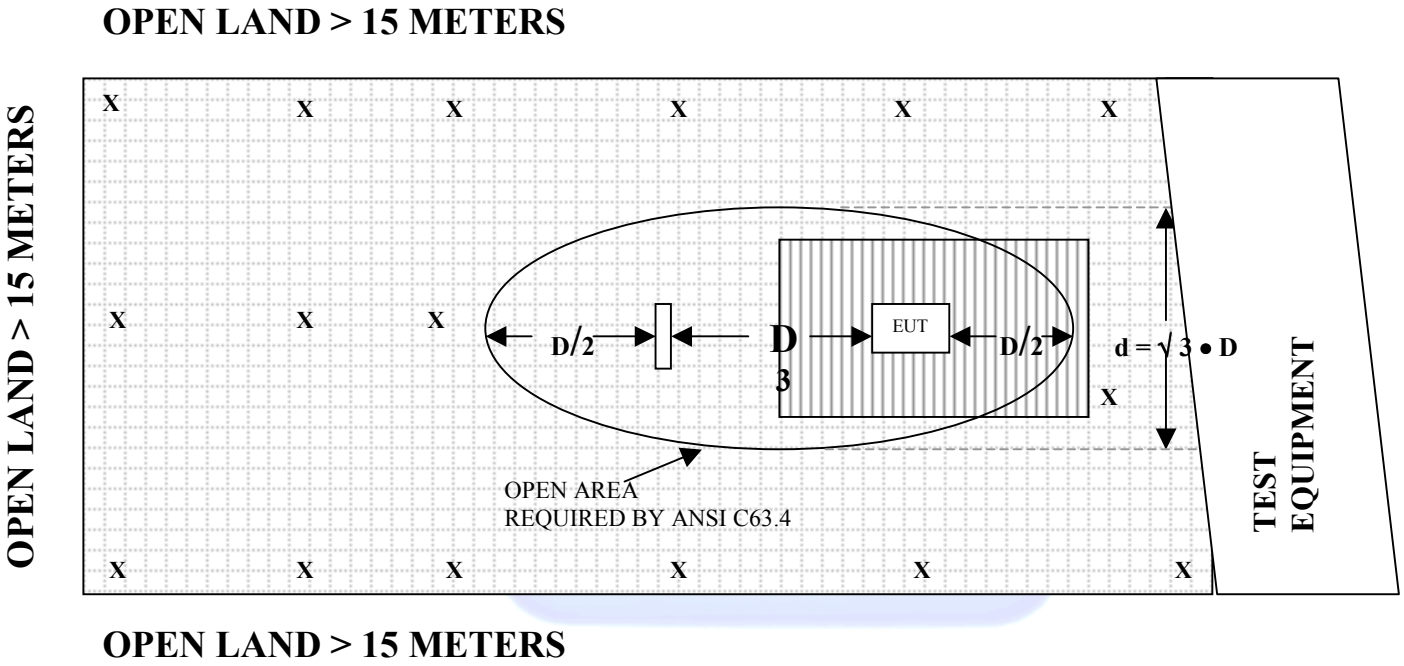


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS



OPEN LAND > 15 METERS

X = GROUND RODS	= GROUND SCREEN
D = TEST DISTANCE (meters)	= WOOD COVER

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15227

CALIBRATION DATE: MARCH 8, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	12.6	100	12.3
35	10.0	120	14.7
40	9.5	140	13.0
45	9.2	160	13.7
50	9.4	180	16.4
60	7.4	200	17.2
70	6.5	250	14.6
80	7.0	275	19.0
90	8.0	300	22.3

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16060

CALIBRATION DATE: JULY 9, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.5	700	20.5
400	15.8	800	21.6
500	17.0	900	21.3
600	19.2	1000	22.2

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 16, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.2
40	38.3	350	38.2
50	38.2	400	38.1
60	38.3	450	37.8
70	38.4	500	37.8
80	38.6	550	38.1
90	38.3	600	37.8
100	38.4	650	37.8
125	38.3	700	37.6
150	38.2	750	37.9
175	38.4	800	37.6
200	38.4	850	37.2
225	38.4	900	37.4
250	38.3	950	37.0
275	38.3	1000	37.2

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: FEBRUARY 27, 2007

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.2	10.0	35.1
1.5	35.4	10.5	34.8
2.0	34.7	11.0	33.5
2.5	34.8	11.5	33.9
3.0	34.8	12.0	34.0
3.5	34.6	12.5	34.4
4.0	34.2	13.0	34.4
4.5	34.1	13.5	34.7
5.0	34.1	14.0	36.0
5.5	34.7	14.5	35.7
6.0	35.6	15.0	36.1
6.5	36.8	15.5	35.6
7.0	36.7	16.0	35.4
7.5	34.9	16.5	35.3
8.0	33.3	17.0	34.9
8.5	33.6	17.5	33.7
9.0	34.6	18.0	33.3
9.5	35.9		

ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: MARCH 6, 2006

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.46	10.0	39.55
1.5	25.05	10.5	39.86
2.0	28.42	11.0	38.49
2.5	29.91	11.5	40.71
3.0	31.46	12.0	40.59
3.5	31.91	12.5	40.17
4.0	31.55	13.0	39.70
4.5	31.94	13.5	40.84
5.0	32.90	14.0	41.58
5.5	34.07	14.5	45.14
6.0	35.69	15.0	42.20
6.5	33.11	15.5	39.42
7.0	36.51	16.0	38.80
7.5	37.27	16.5	41.08
8.0	37.21	17.0	44.11
8.5	37.16	17.5	46.29
9.0	38.27	18.0	41.61
9.5	39.73		

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711919

CALIBRATION DATE: FEBRUARY 27, 2007

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	28.3	29.5	26.1
18.5	28.0	30.0	26.2
19.0	28.0	30.5	25.9
19.5	27.7	31.0	26.2
20.0	27.7	31.5	26.5
20.5	27.9	32.0	26.5
21.0	27.7	32.5	25.4
21.5	26.5	33.0	25.8
22.0	25.9	33.5	25.0
22.5	26.8	34.0	25.2
23.0	27.2	34.5	25.1
23.5	25.9	35.0	24.7
24.0	25.5	35.5	24.6
24.5	26.4	36.0	24.7
25.0	27.5	36.5	25.2
25.5	27.7	37.0	24.7
26.0	27.8	37.5	25.8
26.5	26.3	38.0	26.4
27.0	26.0	38.5	27.9
27.5	25.9	39.0	27.7
28.0	26.2	39.5	27.5
28.5	26.2	40.0	25.4
29.0	26.2		

COM-POWER AH826

HORN ANTENNA

S/N: 71957

CALIBRATION DATE: DECEMBER 12, 2005

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	32.4	22.5	32.0
18.5	31.4	23.0	32.2
19.0	31.5	23.5	31.2
19.5	30.9	24.0	33.1
20.0	33.1	24.5	33.1
20.5	33.4	25.0	33.4
21.0	32.1	25.5	33.4
21.5	32.5	26.0	32.9
22.0	32.3	26.5	33.6

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

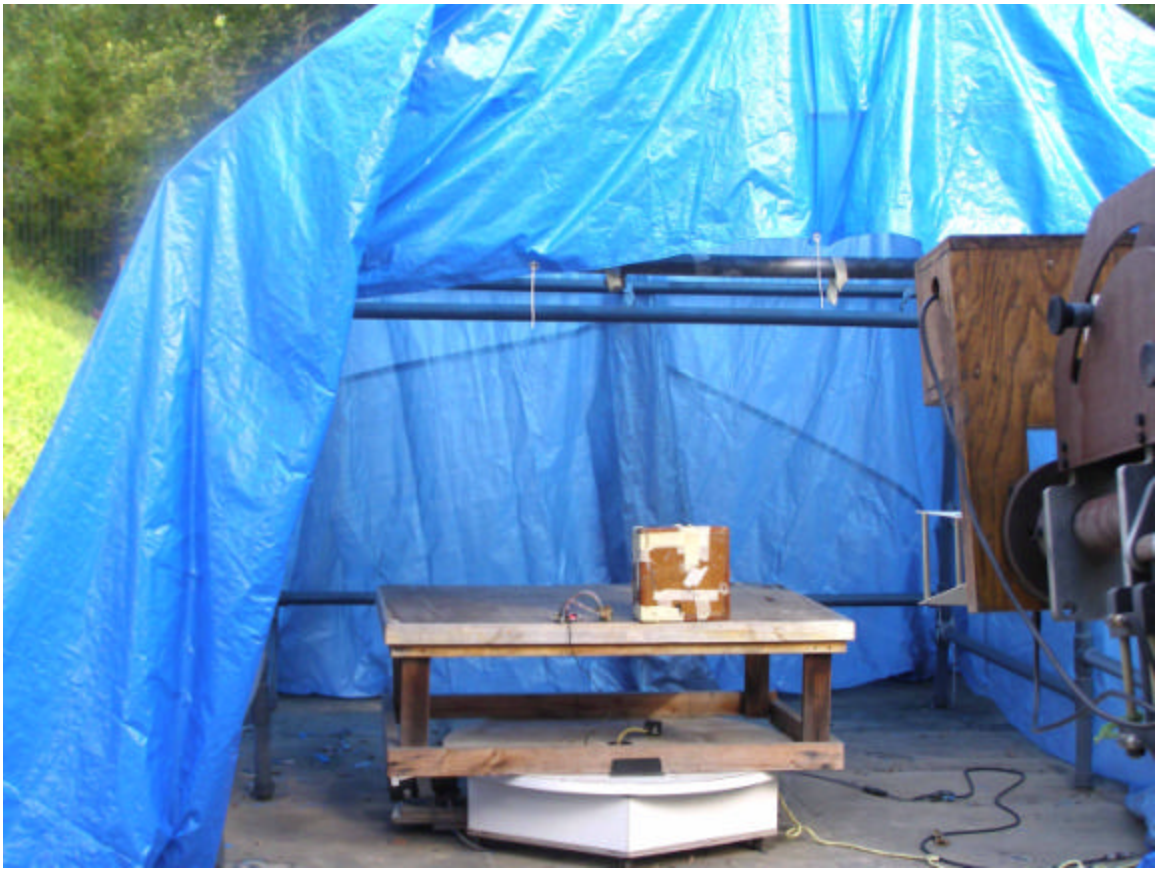
CALIBRATION DATE: SEPTEMBER 24, 2007

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.27	10.23
0.01	-41.96	9.54
0.02	-41.73	9.77
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.43	10.07
0.2	-43.9	7.9
0.3	-41.43	10.07
0.5	-41.40	10.1
0.7	-41.13	10.37
1	-40.83	10.67
2	-40.30	11.20
3	-40.60	10.90
4	-41.00	10.50
5	-40.20	11.30
10	-40.40	11.10
15	-41.67	9.83
20	-41.10	10.40
25	-42.80	8.70
30	-42.80	8.70

FRONT VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB A – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

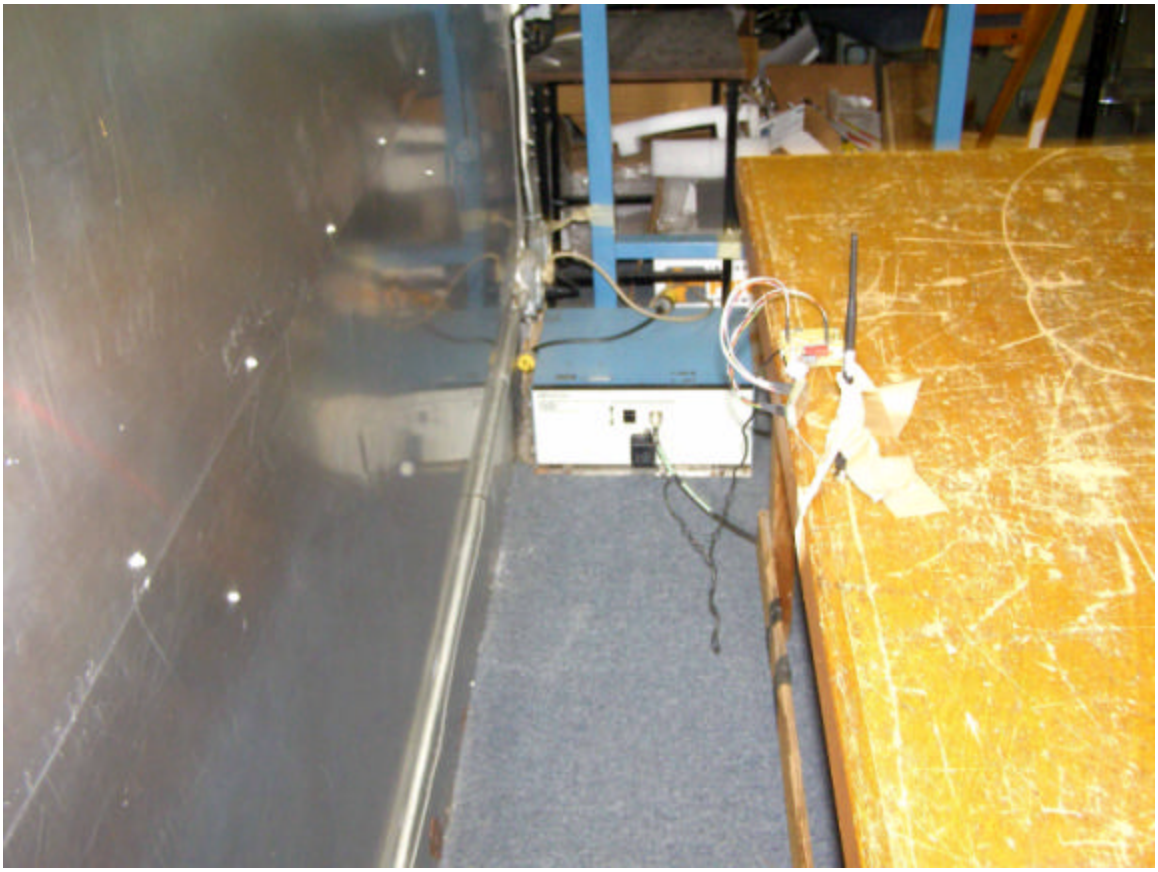
BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB A – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D – WITH SHORT ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B – WITH LONG ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B – WITH LONG ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

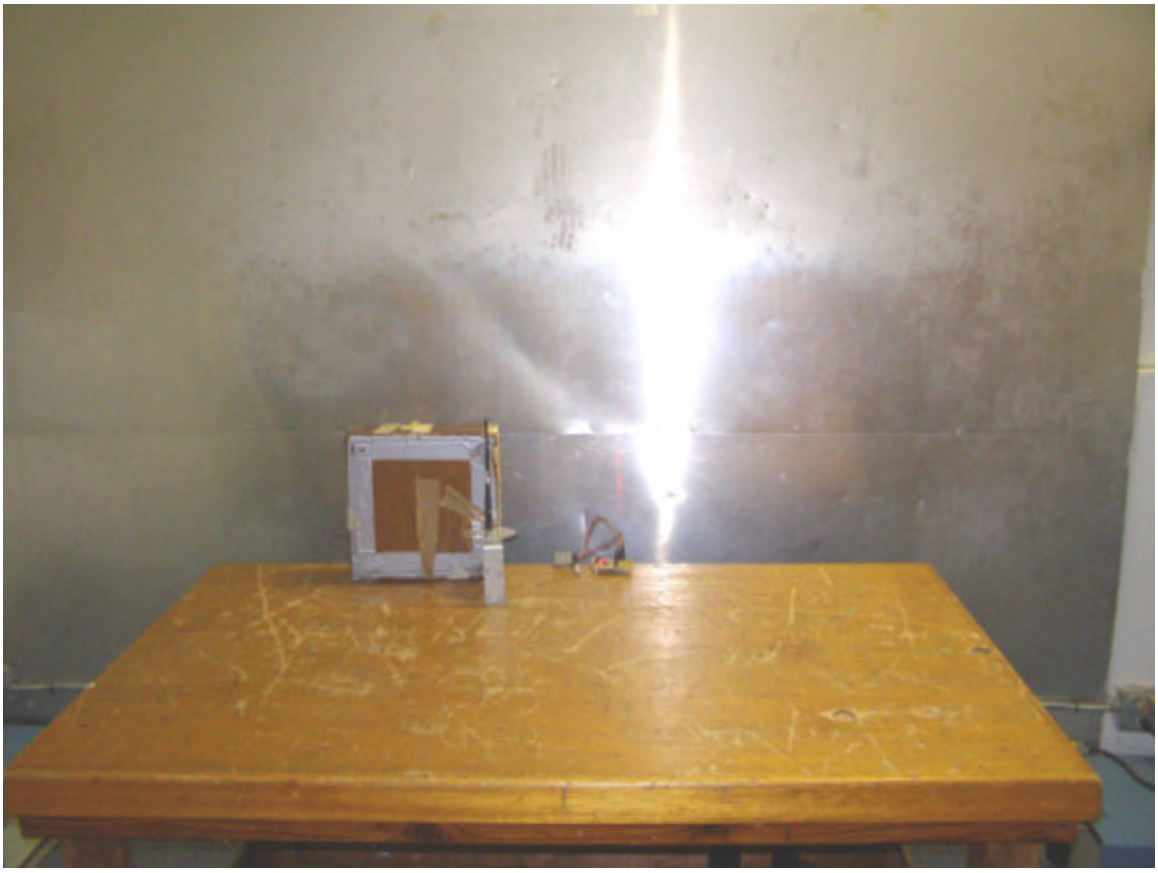
BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB A – WITH LONG ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB A – WITH LONG ANTENNA CABLE

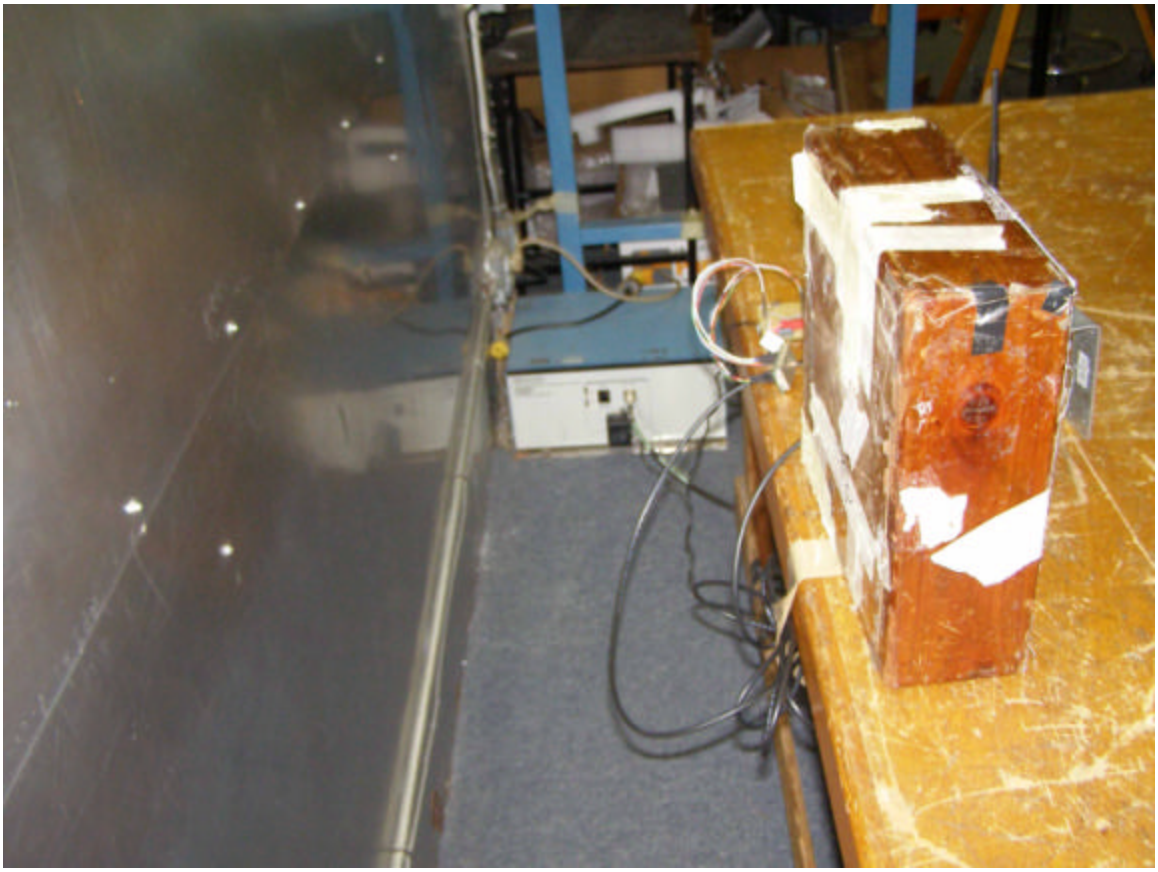
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D – WITH LONG ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

BEI INDUSTRIAL ENCODERS
2.4 GHz TRANSCEIVER MODULE
MODEL: 924-41484
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D – WITH LONG ANTENNA CABLE

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

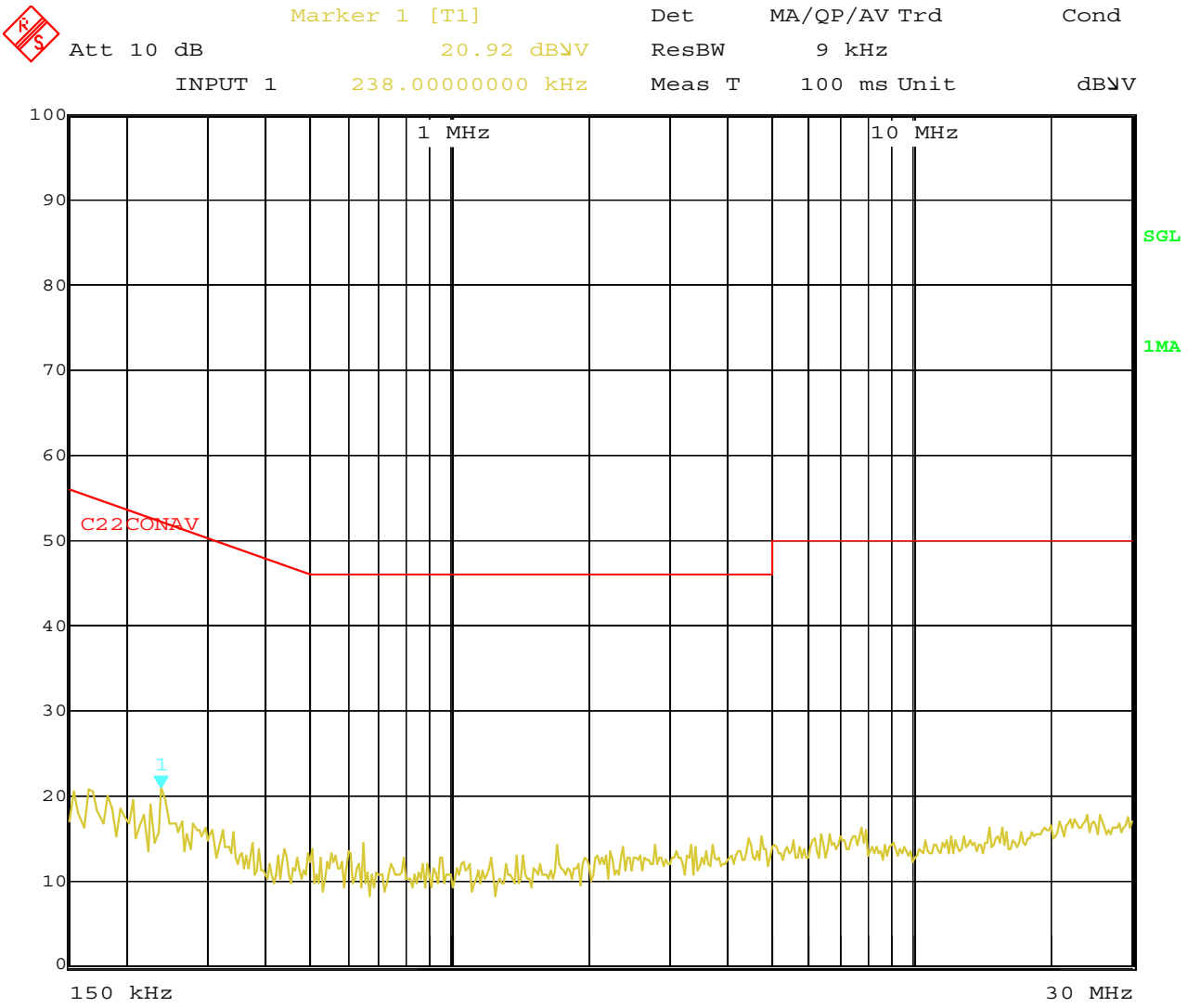
APPENDIX E

DATA SHEETS

CONDUCTED EMISISONS

DATA SHEETS

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – Black Lead
Transmit Mode (Worst Case) – With Short Antenna Cable
Tested By: Kyle Fujimoto



Date: 17.OCT.2007 14:45:40

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – Black Lead
Transmit Mode (Worst Case) – With Short Antenna Cable
Tested By: Kyle Fujimoto

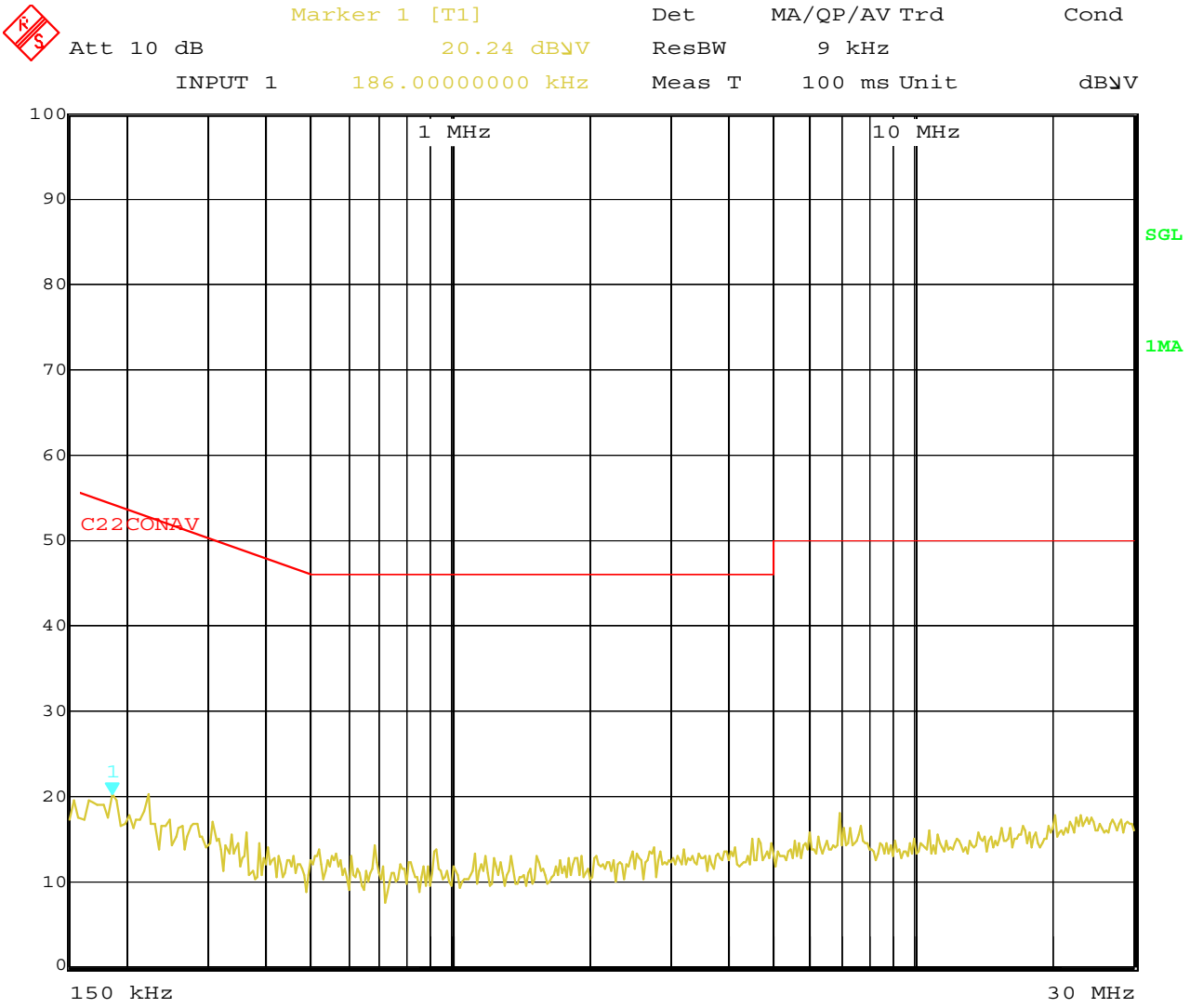
EDIT PEAK LIST (Final Results)

Trace1:	C22CONAV	Trace2:	---
Trace3:	---	Trace4:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	238.0000 kHz	20.92	-31.24
1 Max Peak	650.0000 kHz	14.37	-31.62
1 Max Peak	1.4460 MHz	12.90	-33.09
1 Max Peak	1.7100 MHz	14.18	-31.82
1 Max Peak	2.2340 MHz	13.29	-32.70
1 Max Peak	2.3780 MHz	13.91	-32.08
1 Max Peak	2.5900 MHz	12.96	-33.03
1 Max Peak	2.7780 MHz	14.21	-31.78
1 Max Peak	3.1100 MHz	13.29	-32.70
1 Max Peak	3.3300 MHz	14.21	-31.79
1 Max Peak	3.4180 MHz	13.91	-32.08
1 Max Peak	3.7140 MHz	14.21	-31.78
1 Max Peak	4.4580 MHz	14.78	-31.21
1 Max Peak	4.5020 MHz	14.22	-31.77
1 Max Peak	4.7540 MHz	15.05	-30.94
1 Max Peak	4.8340 MHz	13.63	-32.36
1 Max Peak	4.9900 MHz	13.94	-32.05
1 Max Peak	20.9220 MHz	16.97	-33.02
1 Max Peak	22.1660 MHz	17.17	-32.82
1 Max Peak	22.5980 MHz	17.24	-32.75

Date: 17.OCT.2007 14:46:39

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – White Lead
Transmit Mode (Worst Case) – With Short Antenna Cable
Tested By: Kyle Fujimoto



Date: 17.OCT.2007 14:47:33

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – White Lead
Transmit Mode (Worst Case) – With Short Antenna Cable
Tested By: Kyle Fujimoto

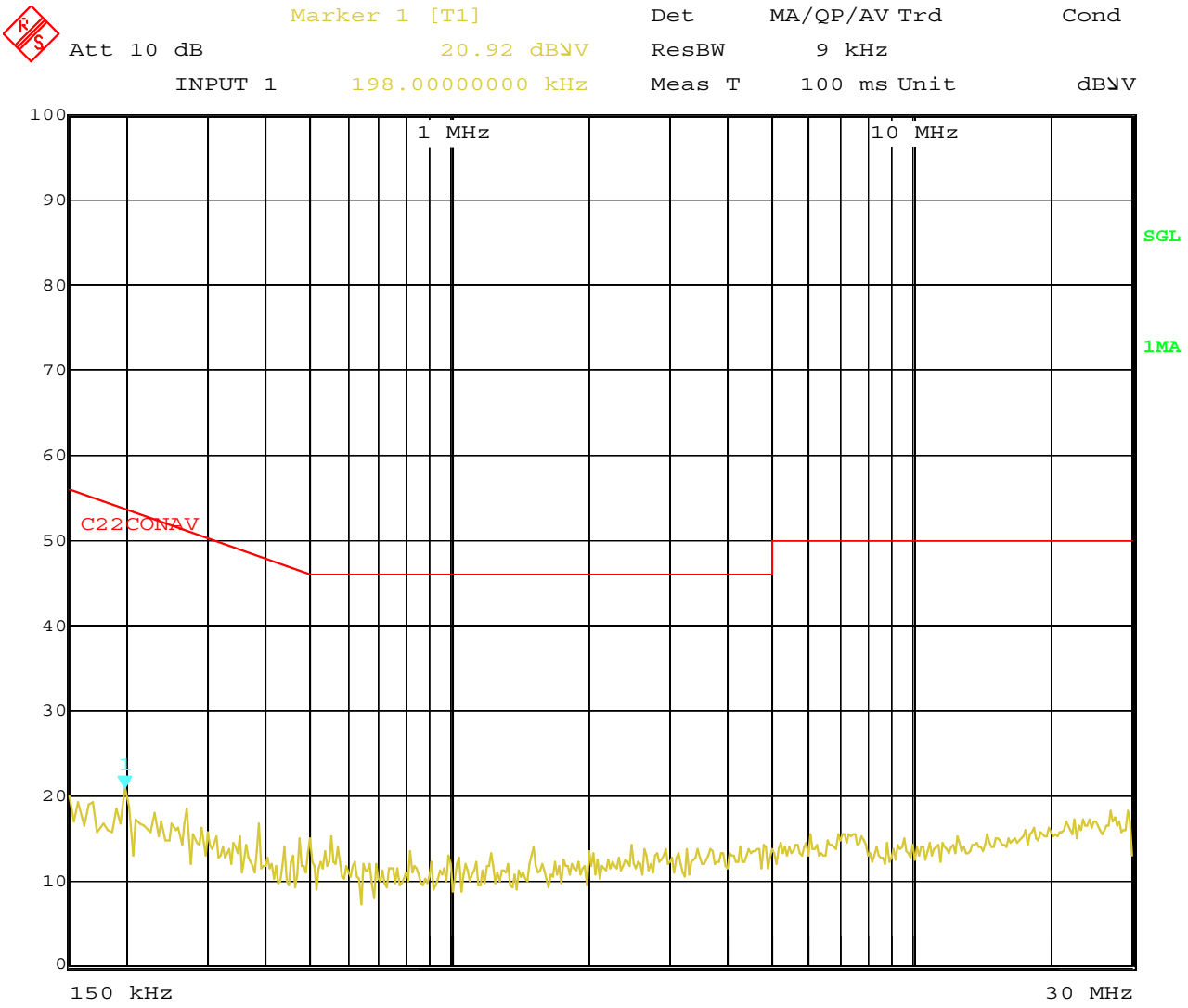
EDIT PEAK LIST (Final Results)

Trace1:	C22CONAV	Trace2:	---
Trace3:	---	Trace4:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	222.0000 kHz	20.22	-32.52
1 Max Peak	686.0000 kHz	14.01	-31.98
1 Max Peak	930.0000 kHz	13.73	-32.26
1 Max Peak	1.1300 MHz	13.19	-32.80
1 Max Peak	1.5340 MHz	12.97	-33.02
1 Max Peak	2.0700 MHz	12.87	-33.12
1 Max Peak	2.6980 MHz	13.43	-32.56
1 Max Peak	2.7740 MHz	13.85	-32.14
1 Max Peak	2.8420 MHz	13.43	-32.56
1 Max Peak	3.2140 MHz	13.57	-32.42
1 Max Peak	4.1260 MHz	13.85	-32.14
1 Max Peak	4.5180 MHz	14.96	-31.03
1 Max Peak	4.6420 MHz	14.83	-31.16
1 Max Peak	6.9500 MHz	17.89	-32.10
1 Max Peak	20.2580 MHz	17.61	-32.38
1 Max Peak	21.9180 MHz	16.92	-33.07
1 Max Peak	22.6140 MHz	17.43	-32.56
1 Max Peak	23.1380 MHz	17.62	-32.37
1 Max Peak	23.5580 MHz	16.96	-33.03
1 Max Peak	23.9060 MHz	17.26	-32.74

Date: 17.OCT.2007 14:48:19

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – Black Lead
Transmit Mode (Worst Case) – With Long Antenna Cable
Tested By: Kyle Fujimoto



Date: 17.OCT.2007 15:10:57

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – Black Lead
Transmit Mode (Worst Case) – With Long Antenna Cable
Tested By: Kyle Fujimoto

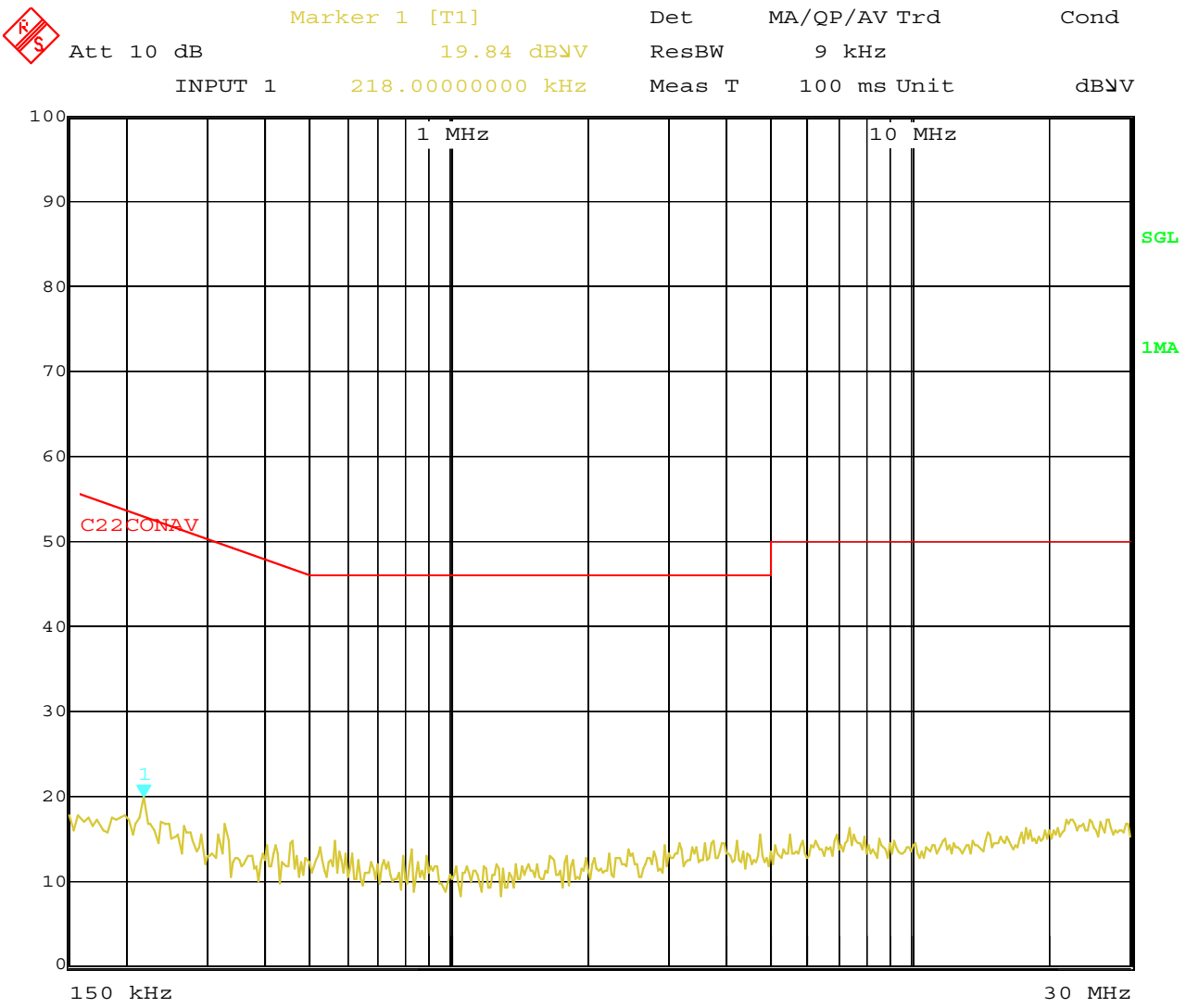
EDIT PEAK LIST (Prescan Results)

Trace1:	C22CONAV	Trace2:	---
Trace3:	---	Trace4:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	198.0000 kHz	20.91	-32.77
1 Max Peak	386.0000 kHz	16.50	-31.64
1 Max Peak	554.0000 kHz	15.10	-30.89
1 Max Peak	822.0000 kHz	13.31	-32.68
1 Max Peak	1.5260 MHz	13.80	-32.19
1 Max Peak	1.9980 MHz	13.42	-32.57
1 Max Peak	2.4860 MHz	14.13	-31.86
1 Max Peak	2.6460 MHz	13.71	-32.28
1 Max Peak	2.9420 MHz	13.71	-32.28
1 Max Peak	3.2780 MHz	13.71	-32.28
1 Max Peak	3.4420 MHz	13.71	-32.28
1 Max Peak	3.6940 MHz	13.71	-32.28
1 Max Peak	4.0340 MHz	13.16	-32.84
1 Max Peak	4.2700 MHz	13.86	-32.13
1 Max Peak	4.2860 MHz	13.44	-32.55
1 Max Peak	4.4460 MHz	13.72	-32.27
1 Max Peak	4.6500 MHz	13.59	-32.41
1 Max Peak	4.7060 MHz	13.59	-32.40
1 Max Peak	4.7860 MHz	14.01	-31.98
1 Max Peak	22.5940 MHz	17.16	-32.83

Date: 17.OCT.2007 15:11:23

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – White Lead
Transmit Mode (Worst Case) – With Long Antenna Cable
Tested By: Kyle Fujimoto



Date: 17.OCT.2007 15:09:27

FCC Conducted Emissions
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484
FCC Class B – White Lead
Transmit Mode (Worst Case) – With Long Antenna Cable
Tested By: Kyle Fujimoto

EDIT PEAK LIST (Prescan Results)

Trace1:	C22CONAV	Trace2:	---
Trace3:	---	Trace4:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	326.0000 kHz	16.53	-33.02
1 Max Peak	566.0000 kHz	14.56	-31.43
1 Max Peak	830.0000 kHz	13.59	-32.40
1 Max Peak	1.6660 MHz	12.98	-33.01
1 Max Peak	1.7980 MHz	12.99	-33.00
1 Max Peak	2.2260 MHz	13.01	-32.98
1 Max Peak	3.1660 MHz	14.27	-31.72
1 Max Peak	3.4420 MHz	13.99	-32.00
1 Max Peak	3.5900 MHz	14.27	-31.72
1 Max Peak	3.7460 MHz	14.54	-31.45
1 Max Peak	3.9140 MHz	14.27	-31.72
1 Max Peak	3.9620 MHz	14.27	-31.72
1 Max Peak	4.0340 MHz	13.02	-32.97
1 Max Peak	4.2340 MHz	14.68	-31.31
1 Max Peak	4.7500 MHz	15.37	-30.62
1 Max Peak	22.0220 MHz	17.22	-32.77
1 Max Peak	22.4500 MHz	17.00	-32.99
1 Max Peak	22.5460 MHz	17.02	-32.97
1 Max Peak	22.6500 MHz	16.89	-33.10
1 Max Peak	23.9380 MHz	16.71	-33.28

Date: 17.OCT.2007 15:09:00

RADIATED EMISSIONS

DATA SHEETS

FCC 15.247
BEI Industrial Encoders
2.4 GHz RF Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	51.19	V	74	-22.81	Peak	1.74	135	
4804	31.19	V	54	-22.81	Avg	1.74	135	
7206	52.26	V	74	-21.74	Peak	1.75	135	
7206	32.26	V	54	-21.74	Avg	1.75	135	
9608	71.33	V	--	--	Peak	1.78	45	Not in Restricted Band
9608	51.33	V	--	--	Avg	1.78	45	Not in Restricted Band
12010	56.56	V	74	-17.44	Peak	1.37	125	
12010	36.56	V	54	-17.44	Avg	1.37	125	
14412	61.01	V	74	-12.99	Peak	1.31	135	
14412	41.01	V	54	-12.99	Avg	1.31	135	
16814	61.43	V	--	--	Peak	1.29	125	Not in Restricted Band
16814	41.43	V	--	--	Avg	1.29	125	Not in Restricted Band
19216	49.29	V	74	-24.71	Peak	1.24	135	
19216	29.29	V	54	-24.71	Avg	1.24	135	
21618	51.22	V	--	--	Peak	1.77	150	Not in Restricted Band
21618	31.22	V	--	--	Avg	1.77	150	Not in Restricted Band
24020		V	--	--	Peak			No Emissions
24020		V	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz RF Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.74	H	74	-25.26	Peak	2.21	135	
4804	28.74	H	54	-25.26	Avg	2.21	135	
7206	51.79	H	74	-22.21	Peak	1.85	125	
7206	31.79	H	54	-22.21	Avg	1.85	125	
9608	69.01	H	--	--	Peak	1.84	125	Not in Restricted Band
9608	49.01	H	--	--	Avg	1.84	125	Not in Restricted Band
12010	59.84	H	74	-14.16	Peak	2.27	135	
12010	39.84	H	54	-14.16	Avg	2.27	135	
14412	61.62	H	74	-12.38	Peak	1.38	125	
14412	41.62	H	54	-12.38	Avg	1.38	125	
16814	59.17	H	--	--	Peak	2.06	135	Not in Restricted Band
16814	50.44	H	--	--	Avg	2.06	135	Not in Restricted Band
19216	47.71	H	74	-26.29	Peak	1.86	135	
19216	39.21	H	54	-14.79	Avg	1.86	135	
21618	51.59	H	--	--	Peak	1.35	125	Not in Restricted Band
21618	41.16	H	--	--	Avg	1.35	125	Not in Restricted Band
24020		H	--	--	Peak			No Emissions
24020		H	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz RF Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	51.96	V	74	-22.04	Peak	2.28	135	
4804	31.96	V	54	-22.04	Avg	2.28	135	
7206	52.28	V	74	-21.72	Peak	1.76	125	
7206	32.28	V	54	-21.72	Avg	1.76	125	
9608	71.59	V	--	--	Peak	1.48	125	Not in Restricted Band
9608	51.59	V	--	--	Avg	1.48	125	Not in Restricted Band
12010	57.05	V	74	-16.95	Peak	1.32	250	
12010	37.05	V	54	-16.95	Avg	1.32	250	
14412	58.31	V	74	-15.69	Peak	1.29	135	
14412	38.31	V	54	-15.69	Avg	1.29	135	
16814	60.22	V	--	--	Peak	1.58	125	Not in Restricted Band
16814	40.22	V	--	--	Avg	1.58	125	Not in Restricted Band
19216	46.54	V	74	-27.46	Peak	1.51	125	
19216	26.54	V	54	-27.46	Avg	1.51	125	
21618	52.43	V	--	--	Peak	1.74	125	Not in Restricted Band
21618	43.88	V	--	--	Avg	1.74	125	Not in Restricted Band
24020	47.46	V	74	-26.54	Peak	1.36	125	
24020	27.46	V	54	-26.54	Avg	1.36	125	
24370		V	--	--	Peak			No Emissions
24370		V	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz RF Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	49.51	H	74	-24.49	Peak	1.55	225	
4804	29.51	H	54	-24.49	Avg	1.55	225	
7206	48.47	H	74	-25.53	Peak	1.37	125	
7206	28.47	H	54	-25.53	Avg	1.37	125	
9608	71.06	H	--	--	Peak	2.01	125	Not in Restricted Band
9608	51.06	H	--	--	Avg	2.01	125	Not in Restricted Band
12010	57.37	H	74	-16.63	Peak	2.13	150	
12010	37.37	H	54	-16.63	Avg	2.13	150	
14412	58.49	H	74	-15.51	Peak	1.39	125	
14412	38.49	H	54	-15.51	Avg	1.39	125	
16814	63.59	H	--	--	Peak	1.39	125	Not in Restricted Band
16814	43.59	H	--	--	Avg	1.39	125	Not in Restricted Band
19216	46.28	H	74	-27.72	Peak	1.64	135	
19216	26.28	H	54	-27.72	Avg	1.64	135	
21618	52.81	H	--	--	Peak	1.38	125	Not in Restricted Band
21618	43.72	H	--	--	Avg	1.38	125	Not in Restricted Band
24020		H	--	--	Peak			No Emissions
24020		H	--	--	Avg			Detected

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Lab: B
Tested By: Kyle Fujimoto

Low Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.25	V	74	-25.75	Peak	1.84	180	
4804	28.25	V	54	-25.75	Avg	1.84	180	
7206	52.26	V	74	-21.74	Peak	1.74	125	
7206	32.26	V	54	-21.74	Avg	1.74	125	
9608	70.96	V	--	--	Peak	1.39	0	Not in Restricted Band
9608	50.96	V	--	--	Avg	1.39	0	Not in Restricted Band
12010	56.12	V	74	-17.88	Peak	2.14	125	
12010	36.12	V	54	-17.88	Avg	2.14	125	
14412	60.62	V	74	-13.38	Peak	1.39	150	
14412	40.62	V	54	-13.38	Avg	1.39	150	
16814	58.18	V	--	--	Peak	1.17	125	Not in Restricted Band
16814	38.18	V	--	--	Avg	1.17	125	Not in Restricted Band
19216	50.41	V	74	-23.59	Peak	1.24	125	
19216	30.41	V	54	-23.59	Avg	1.24	125	
21618	49.39	V	74	-24.61	Peak	1.81	125	
21618	29.39	V	54	-24.61	Avg	1.81	125	
24020		V	--	--	Peak			No Emissions
24020		V	--	--	Avg			Detected

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Low Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	46.08	H	74	-27.92	Peak	1.92	125	
4804	26.08	H	54	-27.92	Avg	1.92	125	
7206	50.39	H	74	-23.61	Peak	1.41	125	
7206	30.39	H	54	-23.61	Avg	1.41	125	
9608	70.61	H	--	--	Peak	1.94	125	Not in Restricted Band
9608	50.61	H	--	--	Avg	1.94	125	Not in Restricted Band
12010	56.13	H	74	-17.87	Peak	1.71	150	
12010	36.13	H	54	-17.87	Avg	1.71	150	
14412	62.91	H	74	-11.09	Peak	1.89	150	
14412	42.91	H	54	-11.09	Avg	1.89	150	
16814	60.62	H	--	--	Peak	1.87	180	Not in Restricted Band
16814	40.62	H	--	--	Avg	1.87	180	Not in Restricted Band
19216	48.22	H	74	-25.78	Peak	1.89	125	
19216	28.22	H	54	-25.78	Avg	1.89	125	
21618	51.61	H	74	-22.39	Peak	1.37	125	
21618	43.16	H	54	-10.84	Avg	1.37	125	
24020		H	--	--	Peak			No Emissions
24020		H	--	--	Avg			Detected

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Middle Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.71	V	74	-24.29	Peak	1.56	150	
4880	29.71	V	54	-24.29	Avg	1.56	150	
7320	53.69	V	74	-20.31	Peak	1.56	150	
7320	33.69	V	54	-20.31	Avg	1.56	150	
9760	63.41	V	--	--	Peak	1.78	45	Not in Restricted Band
9760	43.41	V	--	--	Avg	1.78	45	Not in Restricted Band
12200	55.13	V	74	-18.87	Peak	1.37	125	
12200	35.13	V	54	-18.87	Avg	1.37	125	
14640	57.93	V	74	-16.07	Peak	1.31	135	
14640	37.93	V	54	-16.07	Avg	1.31	135	
17080	59.97	V	--	--	Peak	1.29	125	Not in Restricted Band
17080	39.97	V	--	--	Avg	1.29	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	--	--	Peak			No Emissions
21960		V	--	--	Avg			Detected
24400		V	--	--	Peak			No Emissions
24400		V	--	--	Avg			Detected

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Middle Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.53	H	74	-24.47	Peak	2.38	150	
4880	29.53	H	54	-24.47	Avg	2.38	150	
7320	53.51	H	74	-20.49	Peak	2.51	180	
7320	33.51	H	54	-20.49	Avg	2.51	180	
9760	65.05	H	--	--	Peak	1.84	125	Not in Restricted Band
9760	45.05	H	--	--	Avg	1.84	125	Not in Restricted Band
12200	56.78	H	74	-17.22	Peak	2.35	150	
12200	36.78	H	54	-17.22	Avg	2.35	150	
14640	64.56	H	74	-9.44	Peak	1.38	125	
14640	44.56	H	54	-9.44	Avg	1.38	125	
17080	63.38	H	--	--	Peak	2.06	135	Not in Restricted Band
17080	43.38	H	--	--	Avg	2.06	135	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-54	Avg			Detected
21960		H	--	--	Peak			No Emissions
21960		H	--	--	Avg			Detected
24400		H	--	--	Peak			No Emissions
24400		H	--	--	Avg			Detected

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Middle Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	51.03	V	74	-22.97	Peak	1.61	125	
4880	31.03	V	54	-22.97	Avg	1.61	125	
7320	51.56	V	74	-22.44	Peak	1.27	150	
7320	31.56	V	54	-22.44	Avg	1.27	150	
9760	66.75	V	--	--	Peak	1.12	125	Not in Restricted Band
9760	46.75	V	--	--	Avg	1.12	125	Not in Restricted Band
12200	55.09	V	74	-18.91	Peak	1.16	255	
12200	35.09	V	54	-18.91	Avg	1.16	255	
14640	60.81	V	74	-13.19	Peak	1.17	150	
14640	40.81	V	54	-13.19	Avg	1.17	150	
17080	61.21	V	--	--	Peak	1.58	125	Not in Restricted Band
17080	41.21	V	--	--	Avg	1.58	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	--	--	Peak			No Emissions
21960		V	--	--	Avg			Detected
24400		V	74	-74	Peak			No Emissions
24400		V	54	-54	Avg			Detected

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Middle Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	50.32	H	74	-23.68	Peak	2.16	135	
4880	30.32	H	54	-23.68	Avg	2.16	135	
7320	51.99	H	74	-22.01	Peak	1.66	135	
7320	31.99	H	54	-22.01	Avg	1.66	135	
9760	62.23	H	--	--	Peak	1.78	150	Not in Restricted Band
9760	42.23	H	--	--	Avg	1.78	150	Not in Restricted Band
12200	55.75	H	74	-18.25	Peak	1.78	180	
12200	35.75	H	54	-18.25	Avg	1.78	180	
14640	59.24	H	74	-14.76	Peak	1.78	135	
14640	39.24	H	54	-14.76	Avg	1.78	135	
17080	61.93	H	--	--	Peak	1.78	150	Not in Restricted Band
17080	41.93	H	--	--	Avg	1.78	150	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-54	Avg			Detected
21960		H	--	--	Peak			No Emissions
21960		H	--	--	Avg			Detected
24400		H	74	-74	Peak			No Emissions
24400		H	54	-54	Avg			Detected

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Middle Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.9	V	74	-24.1	Peak	1.84	180	
4880	29.9	V	54	-24.1	Avg	1.84	180	
7320	53.67	V	74	-20.33	Peak	1.74	125	
7320	33.67	V	54	-20.33	Avg	1.74	125	
9760	62.79	V	--	--	Peak	1.39	0	Not in Restricted Band
9760	42.79	V	--	--	Avg	1.39	0	Not in Restricted Band
12200	55.88	V	74	-18.12	Peak	2.14	125	
12200	35.88	V	54	-18.12	Avg	2.14	125	
14640	59.54	V	74	-14.46	Peak	1.39	150	
14640	39.54	V	54	-14.46	Avg	1.39	150	
17080	59.31	V	--	--	Peak	1.17	125	Not in Restricted Band
17080	39.31	V	--	--	Avg	1.17	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	74	-74	Peak			No Emissions
21960		V	54	-54	Avg			Detected
24400		V	--	--	Peak			No Emissions
24400		V	--	--	Avg			Detected

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Middle Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	48.13	H	74	-25.87	Peak	2.16	150	
4880	28.13	H	54	-25.87	Avg	2.16	150	
7320	52.73	H	74	-21.27	Peak	2.11	150	
7320	32.73	H	54	-21.27	Avg	2.11	150	
9760	63.16	H	--	--	Peak	1.94	125	Not in Restricted Band
9760	43.16	H	--	--	Avg	1.94	125	Not in Restricted Band
12200	56.46	H	74	-17.54	Peak	2.13	180	
12200	36.46	H	54	-17.54	Avg	2.13	180	
14640	61.59	H	74	-12.41	Peak	1.89	150	
14640	41.59	H	54	-12.41	Avg	1.89	150	
17080	62.07	H	--	--	Peak	1.87	180	Not in Restricted Band
17080	42.07	H	--	--	Avg	1.87	180	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-54	Avg			Detected
21960		H	74	-74	Peak			No Emissions
21960		H	54	-54	Avg			Detected
24400		H	--	--	Peak			No Emissions
24400		H	--	--	Avg			Detected

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Middle Channel - X-Axis (Worst Case)
Receive Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2790.84	51.26	V	74	-22.74	Peak	1.42	0	Fundamental of LO for
2790.84	49.07	V	54	-4.93	Avg	1.42	0	Middle Channel
5581.69	43.53	V	74	-30.47	Peak	1.45	45	2nd Harmonic of LO for
5581.7	31.33	V	54	-22.67	Avg	1.45	45	Middle Channel
8372.5	47.02	V	74	-26.98	Peak	1.45	150	3rd Harmonic of LO for
8372.5	34.99	V	54	-19.01	Avg	1.45	150	Middle Channel
2790.8	45.98	H	74	-28.02	Peak	1.43	125	Fundamental of LO for
2790.8	41.41	H	54	-12.59	Avg	1.43	125	Middle Channel
5581.7	45.55	H	74	-28.45	Peak	1.45	125	2nd Harmonic of LO for
5581.7	33.16	H	54	-20.84	Avg	1.45	125	Middle Channel
8372.5	51.66	H	74	-22.34	Peak	1.43	135	3rd Harmonic of LO for
8372.5	37.89	H	54	-16.11	Avg	1.43	135	Middle Channel

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High Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	48.53	V	74	-25.47	Peak	1.23	150	
4958	28.53	V	54	-25.47	Avg	1.23	150	
7437	54.76	V	74	-19.24	Peak	1.49	150	
7437	34.76	V	54	-19.24	Avg	1.49	150	
9916	63.75	V	--	--	Peak	1.52	225	Not in Restricted Band
9916	43.75	V	--	--	Avg	1.52	225	Not in Restricted Band
12395	56.63	V	74	-17.37	Peak	1.21	135	
12395	36.63	V	54	-17.37	Avg	1.21	135	
14874	57.36	V	74	-16.64	Peak	1.21	125	
14874	37.36	V	54	-16.64	Avg	1.21	125	
17353	57.68	V	--	--	Peak	1.25	135	Not in Restricted Band
17353	37.68	V	--	--	Avg	1.25	135	Not in Restricted Band
19832		V	74	-74	Peak			No Emissions
19832		V	54	-54	Avg			Detected
22311		V	--	--	Peak			No Emissions
22311		V	--	--	Avg			Detected
24790		V	--	--	Peak			No Emissions
24790		V	--	--	Avg			Detected

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High Channel - X-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	46.63	H	74	-27.37	Peak	1.37	150	
4958	26.63	H	54	-27.37	Avg	1.37	150	
7437	50.97	H	74	-23.03	Peak	1.18	135	
7437	30.97	H	54	-23.03	Avg	1.18	135	
9916	63.64	H	--	--	Peak	1.62	125	Not in Restricted Band
9916	43.64	H	--	--	Avg	1.62	125	Not in Restricted Band
12395	55.86	H	74	-18.14	Peak	1.19	125	
12395	35.86	H	54	-18.14	Avg	1.19	125	
14874	57.91	H	74	-16.09	Peak	1.19	135	
14874	37.91	H	54	-16.09	Avg	1.19	135	
17353	59.2	H	--	--	Peak	1.18	125	Not in Restricted Band
17353	39.2	H	--	--	Avg	1.18	125	Not in Restricted Band
19832		H	74	-74	Peak			No Emissions
19832		H	54	-54	Avg			Detected
22311		H	--	--	Peak			No Emissions
22311		H	--	--	Avg			Detected
24790		H	--	--	Peak			No Emissions
24790		H	--	--	Avg			Detected

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High Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	52.29	V	74	-21.71	Peak	1.01	125	
4958	32.29	V	54	-21.71	Avg	1.01	125	
7437	54.62	V	74	-19.38	Peak	1.76	125	
7437	34.62	V	54	-19.38	Avg	1.76	125	
9916	58.54	V	--	--	Peak	1.48	125	Not in Restricted Band
9916	38.54	V	--	--	Avg	1.48	125	Not in Restricted Band
12395	56.79	V	74	-17.21	Peak	1.19	250	
12395	36.79	V	54	-17.21	Avg	1.19	250	
14874	60.51	V	74	-13.49	Peak	1.19	125	
14874	40.51	V	54	-13.49	Avg	1.19	125	
17353	64.19	V	--	--	Peak	1.31	150	Not in Restricted Band
17353	44.19	V	--	--	Avg	1.31	150	Not in Restricted Band
19832		V	74	-74	Peak			No Emissions
19832		V	54	-54	Avg			Detected
22311		V	--	--	Peak			No Emissions
22311		V	--	--	Avg			Detected
24790		V	74	-74	Peak			No Emissions
24790		V	54	-54	Avg			Detected

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High Channel - Y-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	52.68	H	74	-21.32	Peak	1.73	125	
4958	32.68	H	54	-21.32	Avg	1.73	125	
7437	48.47	H	74	-25.53	Peak	1.37	125	
7437	28.47	H	54	-25.53	Avg	1.37	125	
9916	60.41	H	--	--	Peak	2.01	125	Not in Restricted Band
9916	40.41	H	--	--	Avg	2.01	125	Not in Restricted Band
12395	57.37	H	74	-16.63	Peak	2.13	150	
12395	37.37	H	54	-16.63	Avg	2.13	150	
14874	58.49	H	74	-15.51	Peak	1.39	125	
14874	38.49	H	54	-15.51	Avg	1.39	125	
17353	63.59	H	--	--	Peak	1.39	125	Not in Restricted Band
17353	43.59	H	--	--	Avg	1.39	125	Not in Restricted Band
19832		H	74	-74	Peak			No Emissions
19832		H	54	-54	Avg			Detected
22311		H	--	--	Peak			No Emissions
22311		H	--	--	Avg			Detected
24790		H	74	-74	Peak			No Emissions
24790		H	54	-54	Avg			Detected

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Lab: B
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High Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	50.26	V	74	-23.74	Peak	1.31	125	
4958	30.26	V	54	-23.74	Avg	1.31	125	
7437	54.01	V	74	-19.99	Peak	2.29	135	
7437	34.01	V	54	-19.99	Avg	2.29	135	
9916	66.99	V	--	--	Peak	2.19	125	Not in Restricted Band
9916	46.99	V	--	--	Avg	2.19	125	Not in Restricted Band
12395	56.45	V	74	-17.55	Peak	1.22	135	
12395	36.45	V	54	-17.55	Avg	1.22	135	
14874	56.11	V	74	-17.89	Peak	1.15	135	
14874	36.11	V	54	-17.89	Avg	1.15	135	
17353	62.28	V	--	--	Peak	1.17	125	Not in Restricted Band
17353	42.28	V	--	--	Avg	1.17	125	Not in Restricted Band
19832		V	74	-74	Peak			No Emissions
19832		V	54	-54	Avg			Detected
22311		V	74	-74	Peak			No Emissions
22311		V	54	-54	Avg			Detected
24790		V	--	--	Peak			No Emissions
24790		V	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/12/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - Z-Axis
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	47.18	H	74	-26.82	Peak	2.04	135	
4958	27.18	H	54	-26.82	Avg	2.04	135	
7437	51.74	H	74	-22.26	Peak	2.06	135	
7437	31.74	H	54	-22.26	Avg	2.06	135	
9916	65.47	H	--	--	Peak	1.29	153	Not in Restricted Band
9916	45.47	H	--	--	Avg	1.29	135	Not in Restricted Band
12395	54.05	H	74	-19.95	Peak	2.02	135	
12395	34.05	H	54	-19.95	Avg	2.02	135	
14874	56.58	H	74	-17.42	Peak	1.29	125	
14874	36.58	H	54	-17.42	Avg	1.29	125	
17353	61.22	H	--	--	Peak	1.87	180	Not in Restricted Band
17353	41.22	H	--	--	Avg	1.87	180	Not in Restricted Band
19832		H	74	-74	Peak			No Emissions
19832		H	54	-54	Avg			Detected
22311		H	74	-74	Peak			No Emissions
22311		H	54	-54	Avg			Detected
24790		H	--	--	Peak			No Emissions
24790		H	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/12/07
Labs: B and D
Tested By: Kyle Fujimoto

Digital Portion and Non-Harmonic Emissions from 1 GHz to 25000 MHz
Vertical and Horizontal Polarizations
X-Axis (Worst Case) - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from 1 GHz to 25000 MHz
								for the Digital Portion
								No Emissions Found
								from 1 GHz to 25000 MHz
								for the Non-Harmonic Emissions
								from the Transmitter

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	49.76	V	74	-24.24	Peak	3.38	125	
4804	29.76	V	54	-24.24	Avg	3.38	125	
7206	52.71	V	74	-21.29	Peak	3.62	125	
7206	32.71	V	54	-21.29	Avg	3.62	125	
9608	59.52	V	--	--	Peak	3.51	125	Not in Restricted Band
9608	39.52	V	--	--	Avg	3.51	125	Not in Restricted Band
12010	58.18	V	74	-15.82	Peak	3.26	135	
12010	38.18	V	54	-15.82	Avg	3.26	135	
14412	57.67	V	74	-16.33	Peak	1.25	150	
14412	37.67	V	54	-16.33	Avg	1.25	150	
16814	59.56	V	--	--	Peak	3.34	125	Not in Restricted Band
16814	39.56	V	--	--	Avg	3.34	125	Not in Restricted Band
19216		V	74	-74	Peak			No Emissions
19216		V	54	-54	Avg			Detected
21618		V	--	--	Peak			No Emissions
21618		V	--	--	Avg			Detected
24020		V	--	--	Peak			No Emissions
24020		V	--	--	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.15	H	74	-25.85	Peak	2.01	135	
4804	28.15	H	54	-25.85	Avg	2.01	135	
7206	51.68	H	74	-22.32	Peak	2.54	135	
7206	31.68	H	54	-22.32	Avg	2.54	135	
9608	56.81	H	--	--	Peak	2.56	135	Not in Restricted Band
9608	36.81	H	--	--	Avg	2.56	135	Not in Restricted Band
12010	57.79	H	74	-16.21	Peak	1.59	125	
12010	37.79	H	54	-16.21	Avg	1.59	125	
14412	54.28	H	74	-19.72	Peak	1.59	125	
14412	34.28	H	54	-19.72	Avg	1.59	125	
16814	62.11	H	--	--	Peak	3.54	150	Not in Restricted Band
16814	42.11	H	--	--	Avg	3.54	150	Not in Restricted Band
19216		H	74	-74	Peak			No Emissions
19216		H	54	-54	Avg			Detected
21618		H	--	--	Peak			No Emissions
21618		H	--	--	Avg			Detected
24020		H	--	--	Peak			No Emissions
24020		H	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	51.49	V	74	-22.51	Peak	3.38	125	
4804	31.49	V	54	-22.51	Avg	3.38	125	
7206	52.11	V	74	-21.89	Peak	3.15	125	
7206	32.11	V	54	-21.89	Avg	3.15	125	
9608	58.71	V	--	--	Peak	3.89	125	Not in Restricted Band
9608	38.71	V	--	--	Avg	3.89	125	Not in Restricted Band
12010	56.06	V	74	-17.94	Peak	3.57	125	
12010	36.06	V	54	-17.94	Avg	3.57	125	
14412	49.54	V	74	-24.46	Peak	3.57	125	
14412	29.54	V	54	-24.46	Avg	3.57	125	
16814	50.26	V	--	--	Peak	1.28	150	Not in Restricted Band
16814	30.26	V	--	--	Avg	1.28	150	Not in Restricted Band
19216	47.09	V	74	-26.91	Peak	1.26	125	
19216	27.09	V	54	-26.91	Avg	1.26	125	
21618	48.82	V	--	--	Peak	1.25	160	Not in Restricted Band
21618	28.82	V	--	--	Avg	1.2	160	Not in Restricted Band
24020		V	74	-74	Peak			No Emissions
24020		V	54	-54	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	49.94	H	74	-24.06	Peak	1.01	125	
4804	29.94	H	54	-24.06	Avg	1.01	125	
7206	52.75	H	74	-21.25	Peak	1.61	125	
7206	32.75	H	54	-21.25	Avg	1.61	125	
9608	69.18	H	--	--	Peak	1.93	0	Not in Restricted Band
9608	49.18	H	--	--	Avg	1.93	0	Not in Restricted Band
12010	57.94	H	74	-16.06	Peak	1.79	135	
12010	37.94	H	54	-16.06	Avg	1.79	135	
14412	59.81	H	74	-14.19	Peak	1.27	225	
14412	39.81	H	54	-14.19	Avg	1.27	225	
16814	59.97	H	--	--	Peak	1.23	150	Not in Restricted Band
16814	39.97	H	--	--	Avg	1.23	150	Not in Restricted Band
19216	50.67	H	74	-23.33	Peak	1.29	125	
19216	30.67	H	54	-23.33	Avg	1.29	125	
21618	50.33	H	--	--	Peak	1.76	150	Not in Restricted Band
21618	40.93	H	--	--	Avg	1.76	150	Not in Restricted Band
24020		H	74	-74	Peak			No Emissions
24020		H	54	-54	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	52.62	V	74	-21.38	Peak	3.36	135	
4804	32.62	V	54	-21.38	Avg	3.36	135	
7206	51.17	V	74	-22.83	Peak	3.27	125	
7206	31.17	V	54	-22.83	Avg	3.27	125	
9608	60.94	V	--	--	Peak	3.19	125	Not in Restricted Band
9608	40.94	V	--	--	Avg	3.19	125	Not in Restricted Band
12010	58.85	V	74	-15.15	Peak	3.76	125	
12010	38.85	V	54	-15.15	Avg	3.76	125	
14412	57.58	V	74	-16.42	Peak	3.76	150	
14412	37.58	V	54	-16.42	Avg	3.76	150	
16814	53.37	V	--	--	Peak	3.37	125	Not in Restricted Band
16814	33.37	V	--	--	Avg	3.37	125	Not in Restricted Band
19216	45.18	V	74	-28.82	Peak	1.98	225	
19216	25.18	V	54	-28.82	Avg	1.98	225	
21618	48.61	V	74	-25.39	Peak	1.98	225	
21618	28.61	V	54	-25.39	Avg	1.98	225	
24020		V	--	--	Peak			No Emissions
24020		V	--	--	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	45.59	H	74	-28.41	Peak	1.93	225	
4804	25.59	H	54	-28.41	Avg	1.93	225	
7206	52.75	H	74	-21.25	Peak	2.07	125	
7206	32.75	H	54	-21.25	Avg	2.07	125	
9608	69.11	H	--	--	Peak	2.08	125	Not in Restricted Band
9608	49.11	H	--	--	Avg	2.08	125	Not in Restricted Band
12010	59.23	H	74	-14.77	Peak	1.78	150	
12010	39.23	H	54	-14.77	Avg	1.78	150	
14412	59.91	H	74	-14.09	Peak	2.07	135	
14412	39.91	H	54	-14.09	Avg	2.07	135	
16814	60.25	H	--	--	Peak	1.68	135	Not in Restricted Band
16814	40.25	H	--	--	Avg	1.68	135	Not in Restricted Band
19216	45.91	H	74	-28.09	Peak	1.64	45	
19216	25.91	H	54	-28.09	Avg	1.64	45	
21618	52.86	H	74	-21.14	Peak	1.47	315	
21618	43.34	H	54	-10.66	Avg	1.47	315	
24020		H	--	--	Peak			No Emissions
24020		H	--	--	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.49	V	74	-24.51	Peak	2.66	135	
4880	29.49	V	54	-24.51	Avg	2.66	135	
7320	52.79	V	74	-21.21	Peak	2.17	225	
7320	32.79	V	54	-21.21	Avg	2.17	225	
9760	65.78	V	--	--	Peak	2.34	125	Not in Restricted Band
9760	45.78	V	--	--	Avg	2.34	125	Not in Restricted Band
12200	56.38	V	74	-17.62	Peak	2.59	135	
12200	36.38	V	54	-17.62	Avg	2.59	135	
14640	61.62	V	74	-12.38	Peak	2.59	135	
14640	41.62	V	54	-12.38	Avg	2.59	135	
17080	59.47	V	--	--	Peak	2.59	125	Not in Restricted Band
17080	39.47	V	--	--	Avg	2.59	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	--	--	Peak			No Emissions
21960		V	--	--	Avg			Detected
24400		V	--	--	Peak			No Emissions
24400		V	--	--	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	46.37	H	74	-27.63	Peak	2.76	125	
4880	26.37	H	54	-27.63	Avg	2.76	125	
7320	52.43	H	74	-21.57	Peak	2.76	125	
7320	32.43	H	54	-21.57	Avg	2.76	125	
9760	65.79	H	--	--	Peak	2.93	135	Not in Restricted Band
9760	45.79	H	--	--	Avg	2.93	135	Not in Restricted Band
12200	56.06	H	74	-17.94	Peak	2.41	315	
12200	36.06	H	54	-17.94	Avg	2.41	315	
14640	58.98	H	74	-15.02	Peak	2.42	135	
14640	38.98	H	54	-15.02	Avg	2.42	135	
17080	59.38	H	--	--	Peak	2.62	135	Not in Restricted Band
17080	39.38	H	--	--	Avg	2.62	135	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-54	Avg			Detected
21960		H	--	--	Peak			No Emissions
21960		H	--	--	Avg			Detected
24400		H	--	--	Peak			No Emissions
24400		H	--	--	Avg			Detected

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BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.25	V	74	-24.75	Peak	2.79	125	
4880	29.25	V	54	-24.75	Avg	2.79	125	
7320	55.81	V	74	-18.19	Peak	2.41	135	
7320	35.81	V	54	-18.19	Avg	2.41	135	
9760	64.21	V	--	--	Peak	2.49	125	Not in Restricted Band
9760	44.21	V	--	--	Avg	2.49	125	Not in Restricted Band
12200	57.73	V	74	-16.27	Peak	2.91	125	
12200	37.73	V	54	-16.27	Avg	2.91	125	
14640	61.62	V	74	-12.38	Peak	2.53	125	
14640	41.62	V	54	-12.38	Avg	2.53	125	
17080	61.58	V	--	--	Peak	1.97	125	Not in Restricted Band
17080	41.58	V	--	--	Avg	1.97	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	--	--	Peak			No Emissions
21960		V	--	--	Avg			Detected
24400		V	74	-74	Peak			No Emissions
24400		V	54	-54	Avg			Detected

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Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	48.59	H	74	-25.41	Peak	2.74	135	
4880	28.59	H	54	-25.41	Avg	2.74	135	
7320	52.85	H	74	-21.15	Peak	2.45	150	
7320	32.85	H	54	-21.15	Avg	2.45	150	
9760	67.95	H	--	--	Peak	2.04	125	Not in Restricted Band
9760	47.95	H	--	--	Avg	2.04	125	Not in Restricted Band
12200	55.38	H	74	-18.62	Peak	2.04	150	
12200	35.38	H	54	-18.62	Avg	2.04	150	
14640	59.85	H	74	-14.15	Peak	2.04	150	
14640	39.85	H	54	-14.15	Avg	2.04	150	
17080	61.97	H	--	--	Peak	1.78	150	Not in Restricted Band
17080	41.97	H	--	--	Avg	1.78	150	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-74	Avg			Detected
21960		H	--	--	Peak			No Emissions
21960		H	--	--	Avg			Detected
24400		H	74	-74	Peak			No Emissions
24400		H	54	-54	Avg			Detected

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2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	47.25	V	74	-26.75	Peak	2.67	125	
4880	27.25	V	54	-26.75	Avg	2.67	125	
7320	54.95	V	74	-19.05	Peak	2.38	135	
7320	34.95	V	54	-19.05	Avg	2.38	135	
9760	65.14	V	--	--	Peak	2.05	125	Not in Restricted Band
9760	45.14	V	--	--	Avg	2.05	125	Not in Restricted Band
12200	56.29	V	74	-17.71	Peak	2.06	135	
12200	36.29	V	54	-17.71	Avg	2.09	135	
14640	61.65	V	74	-12.35	Peak	1.96	180	
14640	41.65	V	54	-12.35	Avg	1.96	180	
17080	62.16	V	--	--	Peak	2.27	125	Not in Restricted Band
17080	42.16	V	--	--	Avg	2.27	125	Not in Restricted Band
19520		V	74	-74	Peak			No Emissions
19520		V	54	-54	Avg			Detected
21960		V	74	-74	Peak			No Emissions
21960		V	54	-54	Avg			Detected
24400		V	--	--	Peak			No Emissions
24400		V	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	46.09	H	74	-27.91	Peak	2.23	150	
4880	26.09	H	54	-27.91	Avg	2.23	150	
7320	53.57	H	74	-20.43	Peak	2.89	125	
7320	33.57	H	54	-20.43	Avg	2.89	125	
9760	67.22	H	--	--	Peak	2.91	125	Not in Restricted Band
9760	47.22	H	--	--	Avg	2.91	125	Not in Restricted Band
12200	56.46	H	74	-17.54	Peak	2.29	125	
12200	36.46	H	54	-17.54	Avg	2.29	125	
14640	59.66	H	74	-14.34	Peak	2.29	125	
14640	39.66	H	54	-14.34	Avg	2.29	125	
17080	57.98	H	--	--	Peak	2.51	135	Not in Restricted Band
17080	37.98	H	--	--	Avg	2.51	135	Not in Restricted Band
19520		H	74	-74	Peak			No Emissions
19520		H	54	-54	Avg			Detected
21960		H	74	-74	Peak			No Emissions
21960		H	54	-54	Avg			Detected
24400		H	--	--	Peak			No Emissions
24400		H	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - X-Axis (Worst Case)
Receive Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2790.84	53.25	V	74	-20.75	Peak	1.01	135	Fundamental of LO for
2790.84	51.19	V	54	-2.81	Avg	1.01	135	Middle Channel
5581.69	45.97	V	74	-28.03	Peak	1.12	125	2nd Harmonic of LO for
5581.7	33.56	V	54	-20.44	Avg	1.12	125	Middle Channel
8372.5	49.42	V	74	-24.58	Peak	1.13	135	3rd Harmonic of LO for
8372.5	38.14	V	54	-15.86	Avg	1.13	135	Middle Channel
2790.8	47.77	H	74	-26.23	Peak	1.01	135	Fundamental of LO for
2790.8	39.74	H	54	-14.26	Avg	1.01	135	Middle Channel
5581.7	45.92	H	74	-28.08	Peak	1.12	125	2nd Harmonic of LO for
5581.7	33.49	H	54	-20.51	Avg	1.12	125	Middle Channel
8372.5	50.48	H	74	-23.52	Peak	1.13	135	3rd Harmonic of LO for
8372.5	38.18	H	54	-15.82	Avg	1.13	135	Middle Channel

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	52.13	V	74	-21.87	Peak	1.23	150	
4958	32.13	V	54	-21.87	Avg	1.23	150	
7437	55.29	V	74	-18.71	Peak	2.36	125	
7437	35.29	V	54	-18.71	Avg	2.36	125	
9916	61.49	V	--	--	Peak	2.56	135	Not in Restricted Band
9916	41.49	V	--	--	Avg	2.56	135	Not in Restricted Band
12395	56.14	V	74	-17.86	Peak	2.11	150	
12395	36.14	V	54	-17.86	Avg	2.11	150	
14874	61.29	V	74	-12.71	Peak	1.21	125	
14874	41.29	V	54	-12.71	Avg	1.21	125	
17353	61.08	V	--	--	Peak	2.51	150	Not in Restricted Band
17353	41.08	V	--	--	Avg	2.51	150	Not in Restricted Band
19832	50.03	V	74	-23.97	Peak	1.24	45	
19832	30.03	V	54	-23.97	Avg	1.24	45	
22311	49.38	V	--	--	Peak	1.22	125	Not in Restricted Band
22311	29.38	V	--	--	Avg	1.22	125	Not in Restricted Band
24790		V	--	--	Peak			No Emissions
24790		V	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - X-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	49.68	H	74	-24.32	Peak	2.49	0	
4958	29.68	H	54	-24.32	Avg	2.49	0	
7437	52.99	H	74	-21.01	Peak	2.11	150	
7437	32.99	H	54	-21.01	Avg	2.11	150	
9916	57.34	H	--	--	Peak	2.68	135	Not in Restricted Band
9916	37.34	H	--	--	Avg	2.68	135	Not in Restricted Band
12395	55.36	H	74	-18.64	Peak	2.41	135	
12395	35.36	H	54	-18.64	Avg	2.41	135	
14874	58.91	H	74	-15.09	Peak	2.41	150	
14874	38.91	H	54	-15.09	Avg	2.41	150	
17353	58.12	H	--	--	Peak	2.16	150	Not in Restricted Band
17353	38.12	H	--	--	Avg	2.16	150	Not in Restricted Band
19832		H	74	-74	Peak			No Emissions
19832		H	54	-54	Avg			Detected
22311		H	--	--	Peak			No Emissions
22311		H	--	--	Avg			Detected
24790		H	--	--	Peak			No Emissions
24790		H	--	--	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	49.15	V	74	-24.85	Peak	2.06	135	
4958	29.15	V	54	-24.85	Avg	2.06	135	
7437	55.47	V	74	-18.53	Peak	1.76	125	
7437	35.47	V	54	-18.53	Avg	1.76	125	
9916	58.33	V	--	--	Peak	2.64	135	Not in Restricted Band
9916	38.33	V	--	--	Avg	2.64	135	Not in Restricted Band
12395	58.52	V	74	-15.48	Peak	2.63	150	
12395	38.52	V	54	-15.48	Avg	2.63	150	
14874	61.01	V	74	-12.99	Peak	2.36	135	
14874	41.01	V	54	-12.99	Avg	2.36	135	
17353	62.79	V	--	--	Peak	2.43	150	Not in Restricted Band
17353	42.79	V	--	--	Avg	2.43	150	Not in Restricted Band
19832	52.063	V	74	-21.937	Peak	1.19	125	
19832	32.063	V	54	-21.937	Avg	1.19	125	
22311	51.43	V	--	--	Peak	1.22	135	Not in Restricted Band
22311	31.43	V	--	--	Avg	1.22	135	Not in Restricted Band
24790		V	74	-74	Peak			No Emissions
24790		V	54	-54	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - Y-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	49.61	H	74	-24.39	Peak	2.78	150	
4958	29.61	H	54	-24.39	Avg	2.78	150	
7437	51.52	H	74	-22.48	Peak	2.79	150	
7437	31.52	H	54	-22.48	Avg	2.79	150	
9916	55.44	H	--	--	Peak	2.79	150	Not in Restricted Band
9916	35.44	H	--	--	Avg	2.79	150	Not in Restricted Band
12395	55.66	H	74	-18.34	Peak	2.26	175	
12395	35.66	H	54	-18.34	Avg	2.26	175	
14874	58.21	H	74	-15.79	Peak	1.39	125	
14874	38.21	H	54	-15.79	Avg	1.39	125	
17353	60.31	H	--	--	Peak	1.39	125	Not in Restricted Band
17353	40.31	H	--	--	Avg	1.39	125	Not in Restricted Band
19832	52.14	H	74	-21.86	Peak	1.83	315	
19832	32.14	H	54	-21.86	Avg	1.83	315	
22311	50.11	H	--	--	Peak	2.02	135	Not in Restricted Band
22311	30.11	H	--	--	Avg	2.02	135	Not in Restricted Band
24790		H	74	-74	Peak			No Emissions
24790		H	54	-54	Avg			Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	50.43	V	74	-23.57	Peak	2.85	135	
4958	30.43	V	54	-23.57	Avg	2.85	135	
7437	52.65	V	74	-21.35	Peak	2.28	125	
7437	32.65	V	54	-21.35	Avg	2.28	125	
9916	58.52	V	--	--	Peak	2.29	135	Not in Restricted Band
9916	38.52	V	--	--	Avg	2.29	135	Not in Restricted Band
12395	57.88	V	74	-16.12	Peak	2.51	150	
12395	37.88	V	54	-16.12	Avg	2.51	150	
14874	60.44	V	74	-13.56	Peak	1.15	135	
14874	40.44	V	54	-13.56	Avg	1.15	135	
17353	59.75	V	--	--	Peak	2.23	150	Not in Restricted Band
17353	39.75	V	--	--	Avg	2.23	150	Not in Restricted Band
19832	52.14	V	74	-21.86	Peak	1.46	135	
19832	32.14	V	54	-21.86	Avg	1.46	135	
22311	52.64	V	74	-21.36	Peak	1.73	135	
22311	32.64	V	54	-21.36	Avg	1.73	135	
24790		V	--	--	Peak	1.37	150	No Emissions
24790		V	--	--	Avg	1.37	150	Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

High Channel - Z-Axis
Transmit Mode - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4958	48.02	H	74	-25.98	Peak	2.99	150	
4958	28.02	H	54	-25.98	Avg	2.99	150	
7437	52.13	H	74	-21.87	Peak	2.24	150	
7437	32.13	H	54	-21.87	Avg	2.24	150	
9916	58.06	H	--	--	Peak	2.99	150	Not in Restricted Band
9916	38.06	H	--	--	Avg	2.99	150	Not in Restricted Band
12395	56.82	H	74	-17.18	Peak	2.37	150	
12395	36.82	H	54	-17.18	Avg	2.37	150	
14874	57.83	H	74	-16.17	Peak	2.38	150	
14874	37.83	H	54	-16.17	Avg	2.38	150	
17353	59.91	H	--	--	Peak	2.21	150	Not in Restricted Band
17353	39.91	H	--	--	Avg	2.21	150	Not in Restricted Band
19832	51.39	H	74	-22.61	Peak	1.86	135	
19832	31.39	H	54	-22.61	Avg	1.86	135	
22311	49.85	H	74	-24.15	Peak	1.95	45	
22311	29.85	H	54	-24.15	Avg	1.95	45	
24790		H	--	--	Peak	1.95	315	No Emissions
24790		H	--	--	Avg	1.95	315	Detected

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/12/07
Labs: B and D
Tested By: Kyle Fujimoto

Digital Portion and Non-Harmonic Emissions from 1 GHz to 25000 MHz
Vertical and Horizontal Polarizations
X-Axis (Worst Case) - Antenna with Long Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from 1 GHz to 25000 MHz
								for the Digital Portion
								No Emissions Found
								from 1 Ghz to 25000 MHz
								for the Non-Harmonic Emissions
								from the Transmitter

FCC 15.247
BEI Industrial Encoders
2. GHZ Transceiver Module
Model: 924-41484

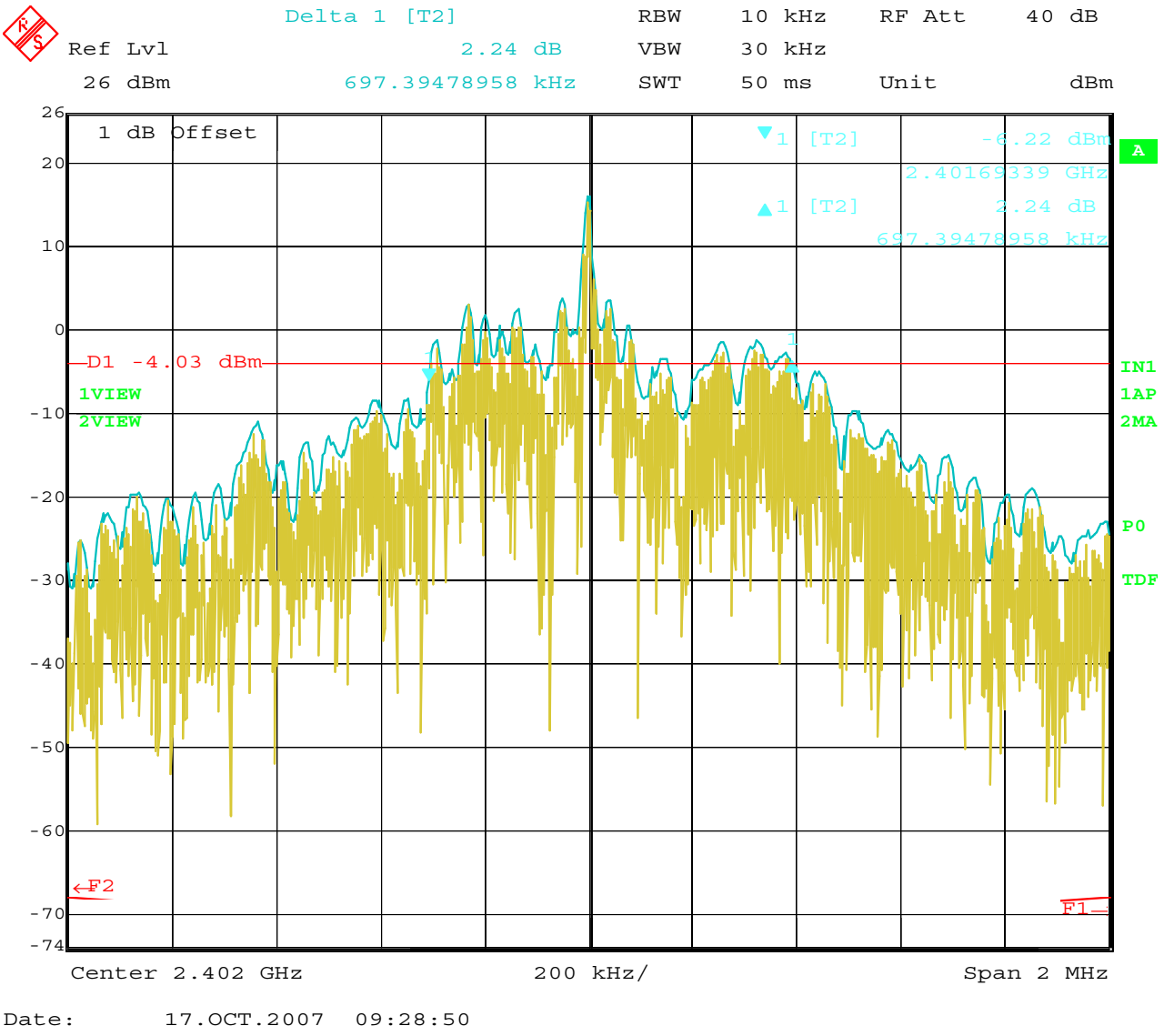
Date: 10/18/07
Lab: A
Tested By: Brandon Taylor

Digital Portion -- 10 kHz to 1 GHz -- X-Axis (Worst Case) -- Antenna with Short Cable (Worst Case)
No Non-Harmonic Emssions in the Restricted Band from 10 kHz to 1 GHz Detected

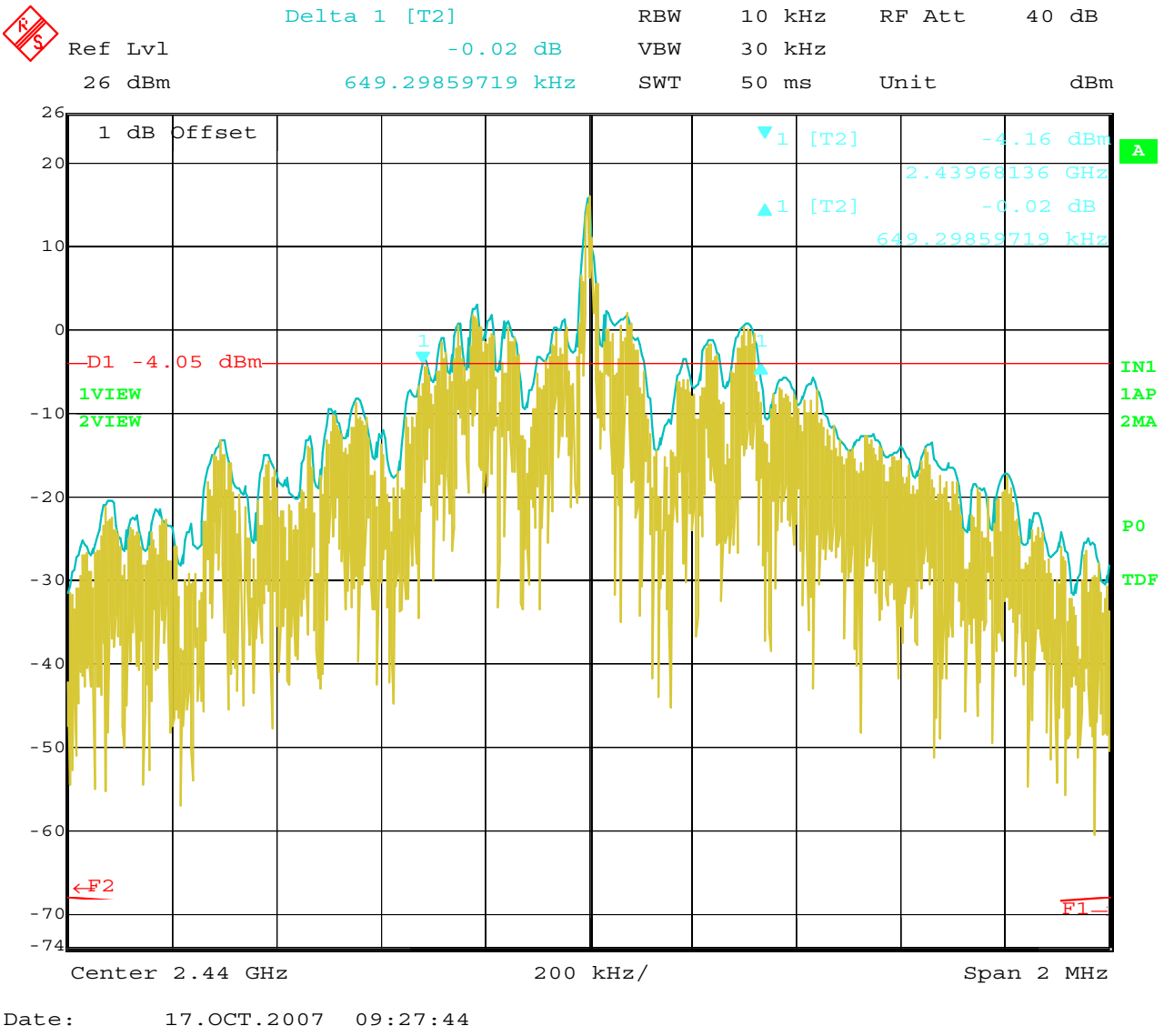
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
73.778	39.92	V	40	-0.08	Peak	1.01	180	
73.778	38.25	V	40	-1.75	QP	1.01	180	
110.668	25.7	H	43.5	-17.8	Peak	1.02	180	
113.137	26.84	V	43.5	-16.66	Peak	1.02	180	
118.051	33.1	H	43.5	-10.4	Peak	1.03	180	
118.067	26.21	V	43.5	-17.29	Peak	1.01	180	
122.994	36.22	V	43.5	-7.28	Peak	1.01	180	
127.882	25.03	H	43.5	-18.47	Peak	1.12	180	
147.584	22.87	H	43.5	-20.63	Peak	1.12	180	
172.122	28.62	V	43.5	-14.88	Peak	1.01	180	
172.135	31.72	H	43.5	-11.78	Peak	1.01	180	
172.185	21.03	H	43.5	-22.47	Peak	1.02	180	
245.85	31.74	H	46	-14.26	Peak	1.02	180	
245.858	35.43	V	46	-10.57	Peak	1.02	180	
245.964	23.13	H	46	-22.87	Peak	1.12	180	
295.093	26.76	H	46	-19.24	Peak	1.02	180	
309.937	22.97	V	46	-23.03	Peak	1.03	225	
319.678	24.73	V	46	-21.27	Peak	1.15	270	
344.243	28.92	V	46	-17.08	Peak	1.19	270	
393.374	44.52	H	46	-1.48	Peak	1.21	270	
418.032	25.47	V	46	-20.53	Peak	1.23	315	
442.574	26.87	V	46	-19.13	Peak	1.12	125	
442.604	41.07	H	46	-4.93	Peak	1.13	180	
457.543	24.64	V	46	-21.36	Peak	1.25	45	
465.094	27.64	V	46	-18.36	Peak	1.35	90	
491.758	26.5	H	46	-19.5	Peak	1.25	180	
491.794	34.2	H	46	-11.8	Peak	1.25	45	
491.831	30	V	46	-16	Peak	1.25	45	
512.095	38.6	V	46	-7.4	Peak	1.25	45	
515.052	33.3	V	46	-12.7	Peak	1.25	45	
515.531	28.31	V	46	-17.69	Peak	1.25	225	
516.312	33.24	V	46	-12.76	Peak	1.29	45	
528.08	32.62	V	46	-13.38	Peak	1.36	45	
532.036	33.54	V	46	-12.46	Peak	1.25	45	
534.052	44.7	V	46	-1.3	Peak	1.25	45	
541.004	42.32	V	46	-3.68	Peak	1.25	45	
541.016	38.92	H	46	-7.08	Peak	1.25	45	
590.152	44.11	H	46	-1.89	Peak	1.25	45	
590.152	39.27	H	46	-6.73	QP	1.35	50	
590.166	38.01	H	46	-7.99	Peak	1.25	45	

-20 dB BANDWIDTH

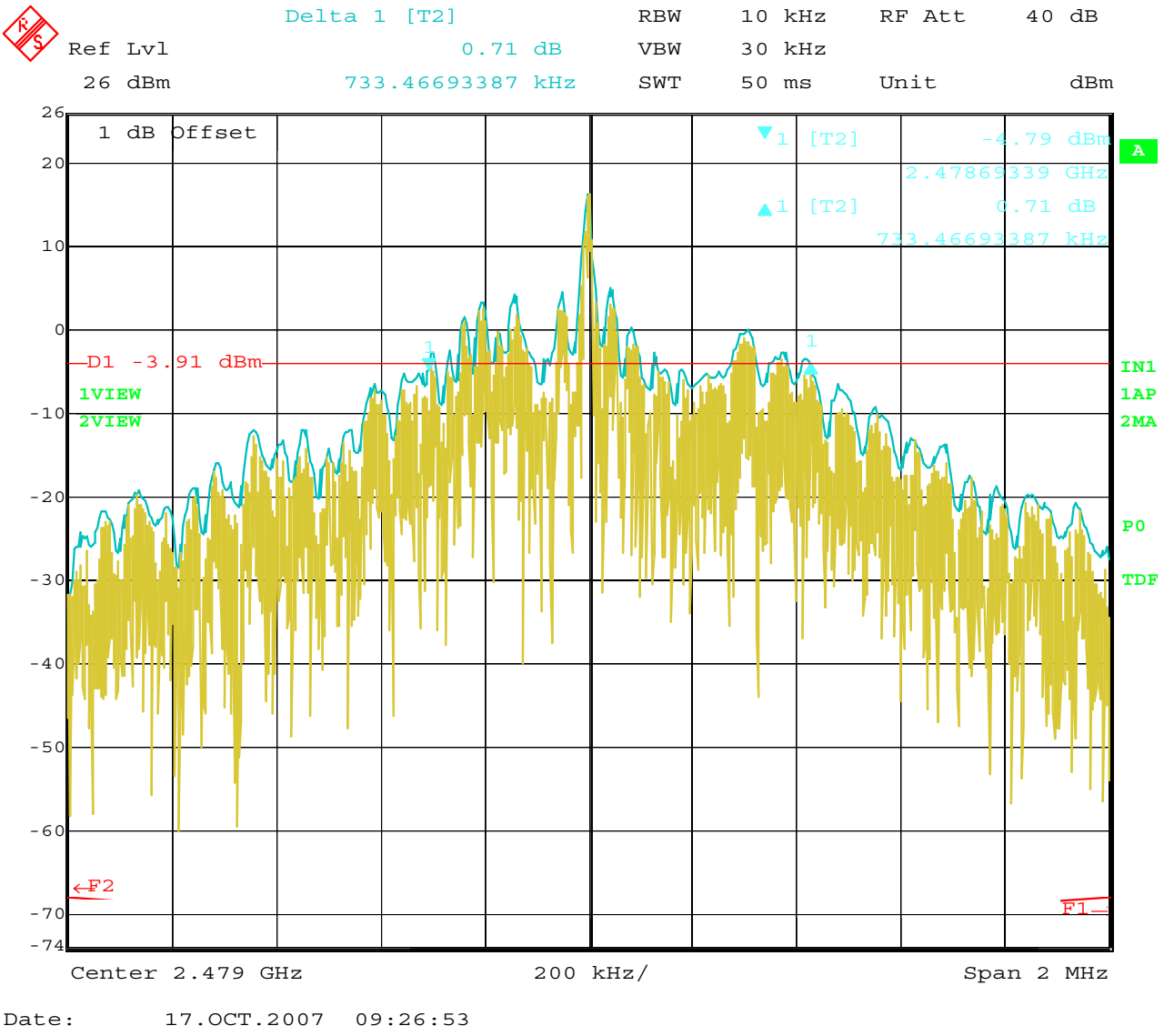
DATA SHEETS



20 dB Bandwidth Low Channel



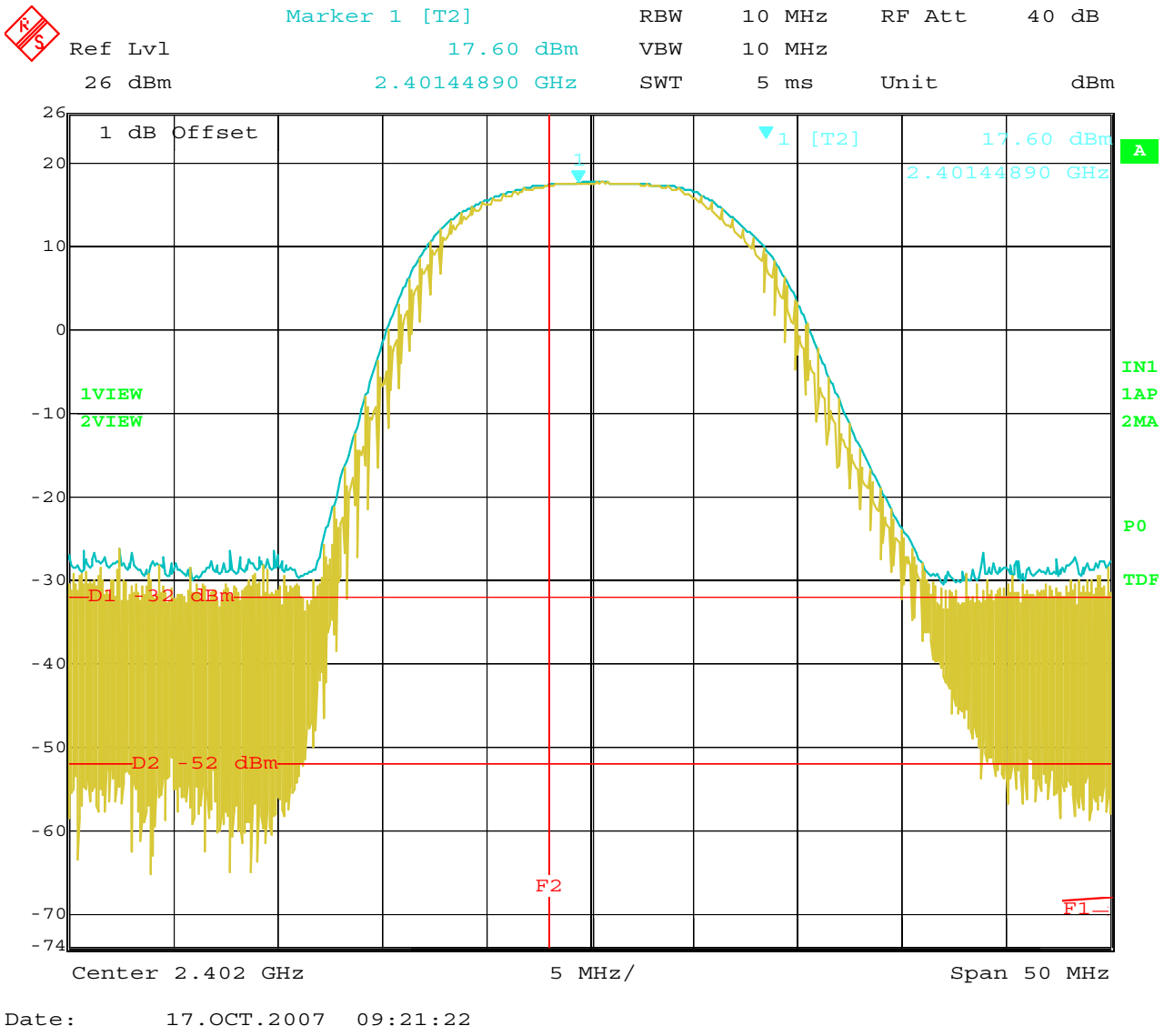
20 dB Bandwidth Middle Channel



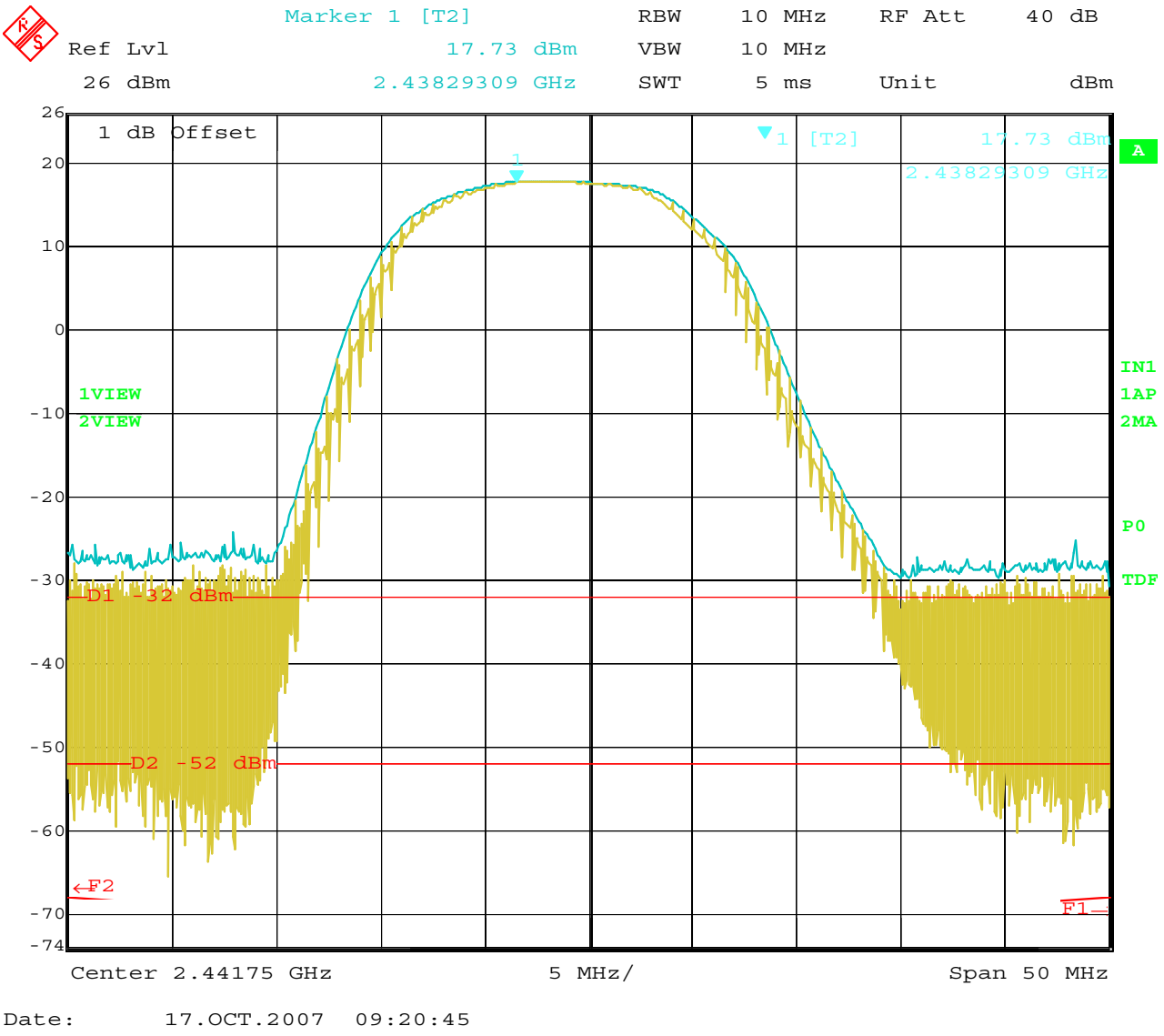
20 dB Bandwidth High Channel

PEAK POWER OUTPUT

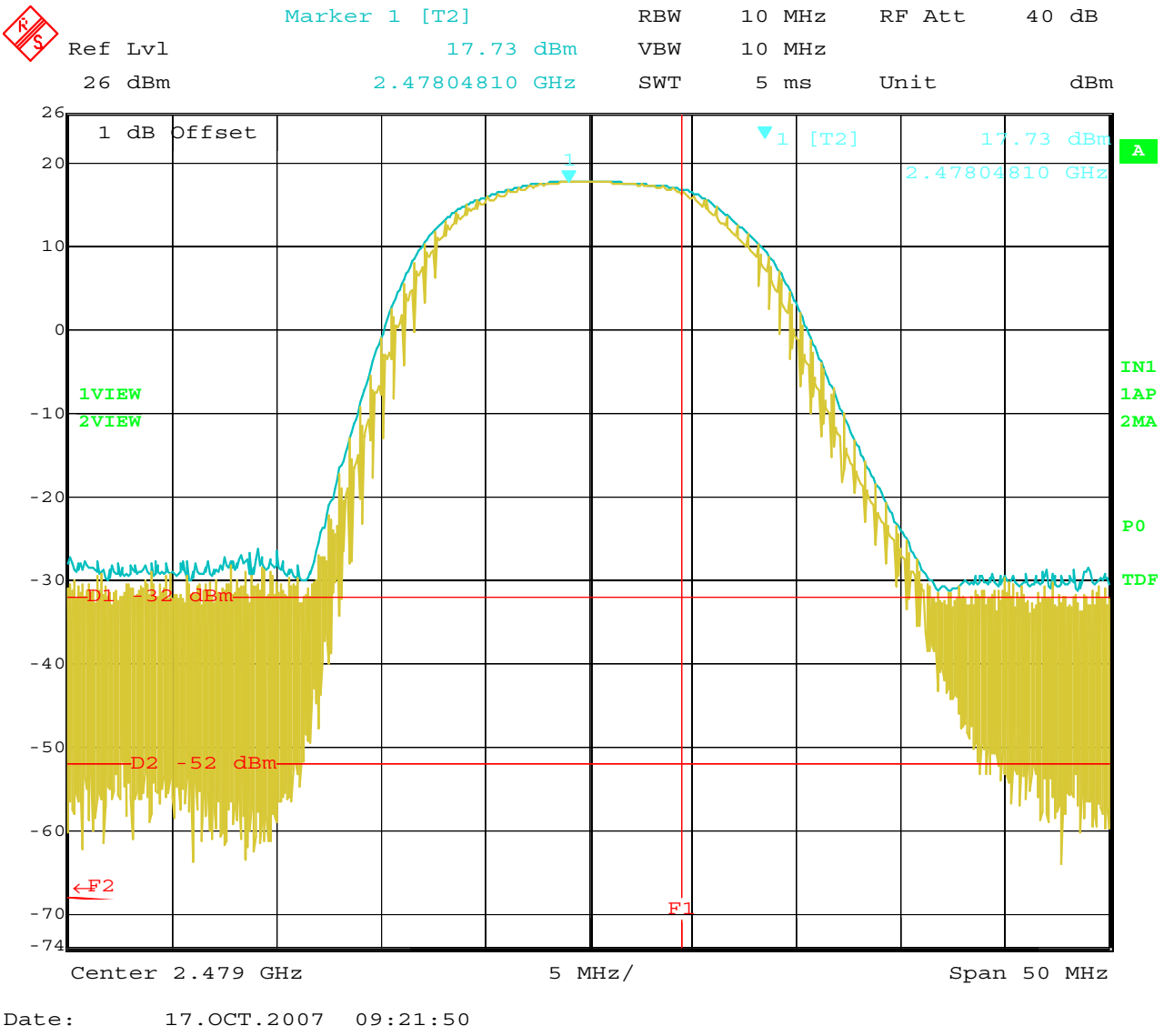
DATA SHEETS



Peak Power Output – Low Channel



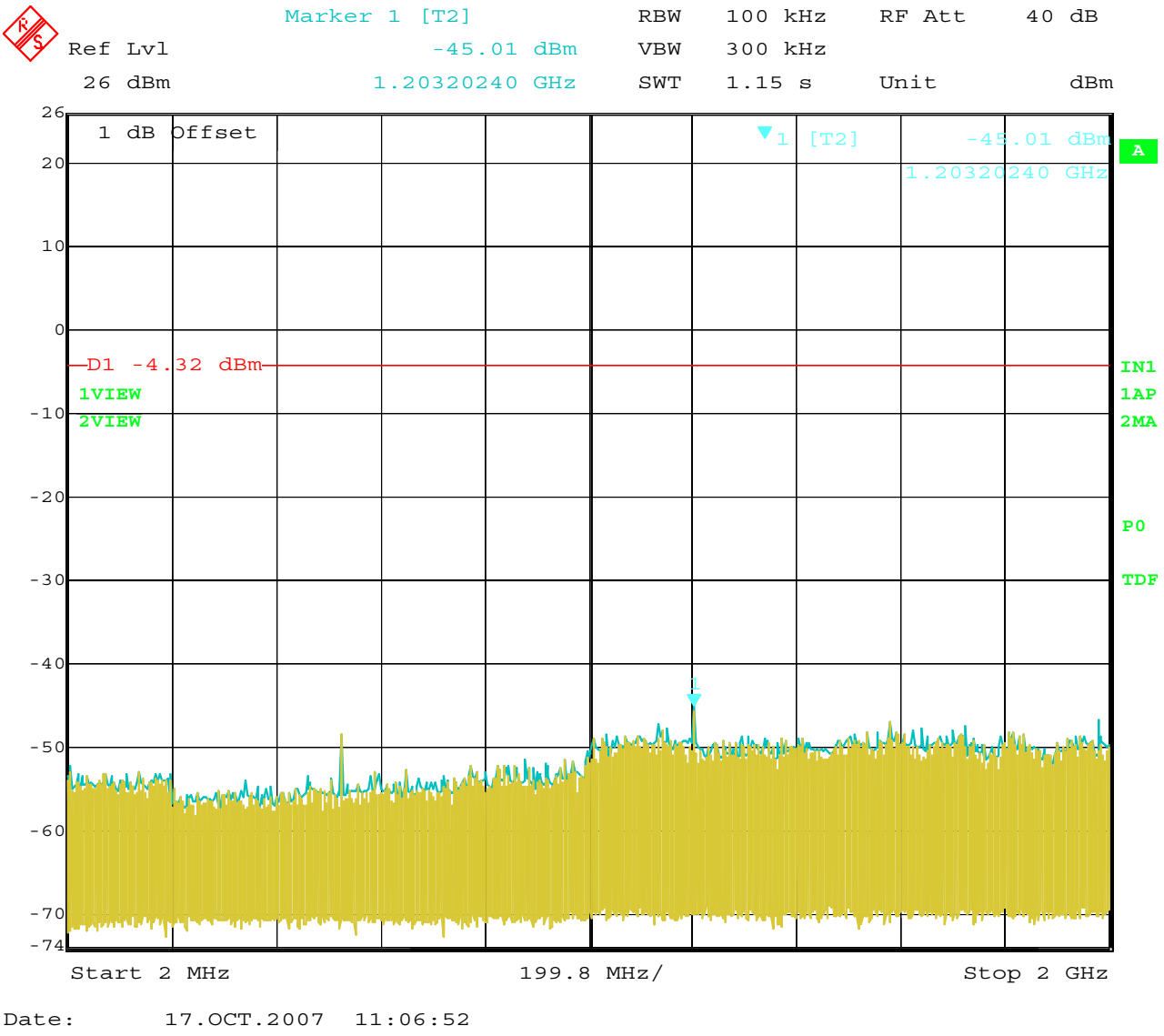
Peak Power Output – Middle Channel



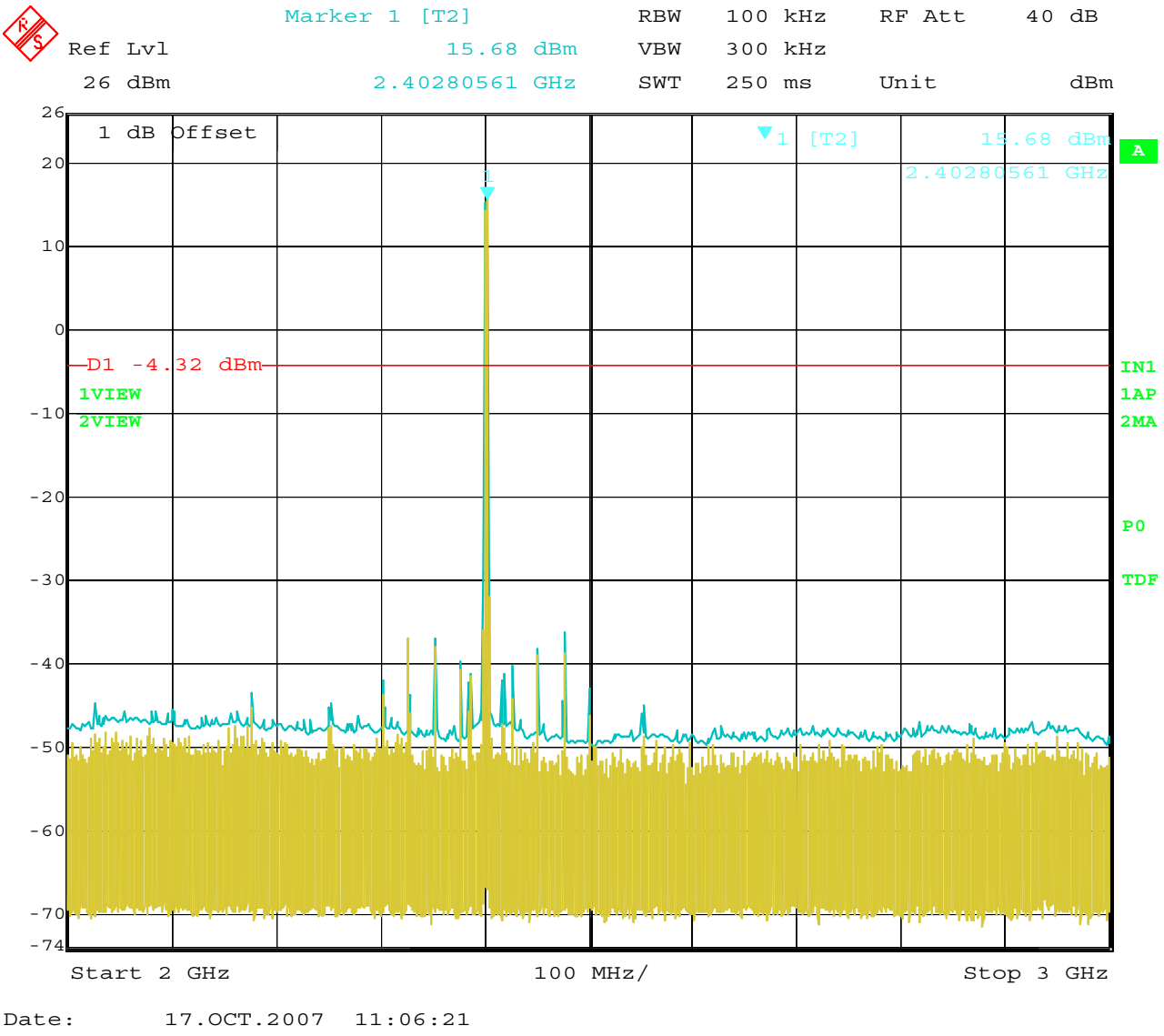
Peak Power Output – High Channel

RF CONDUCTED ANTENNA TEST

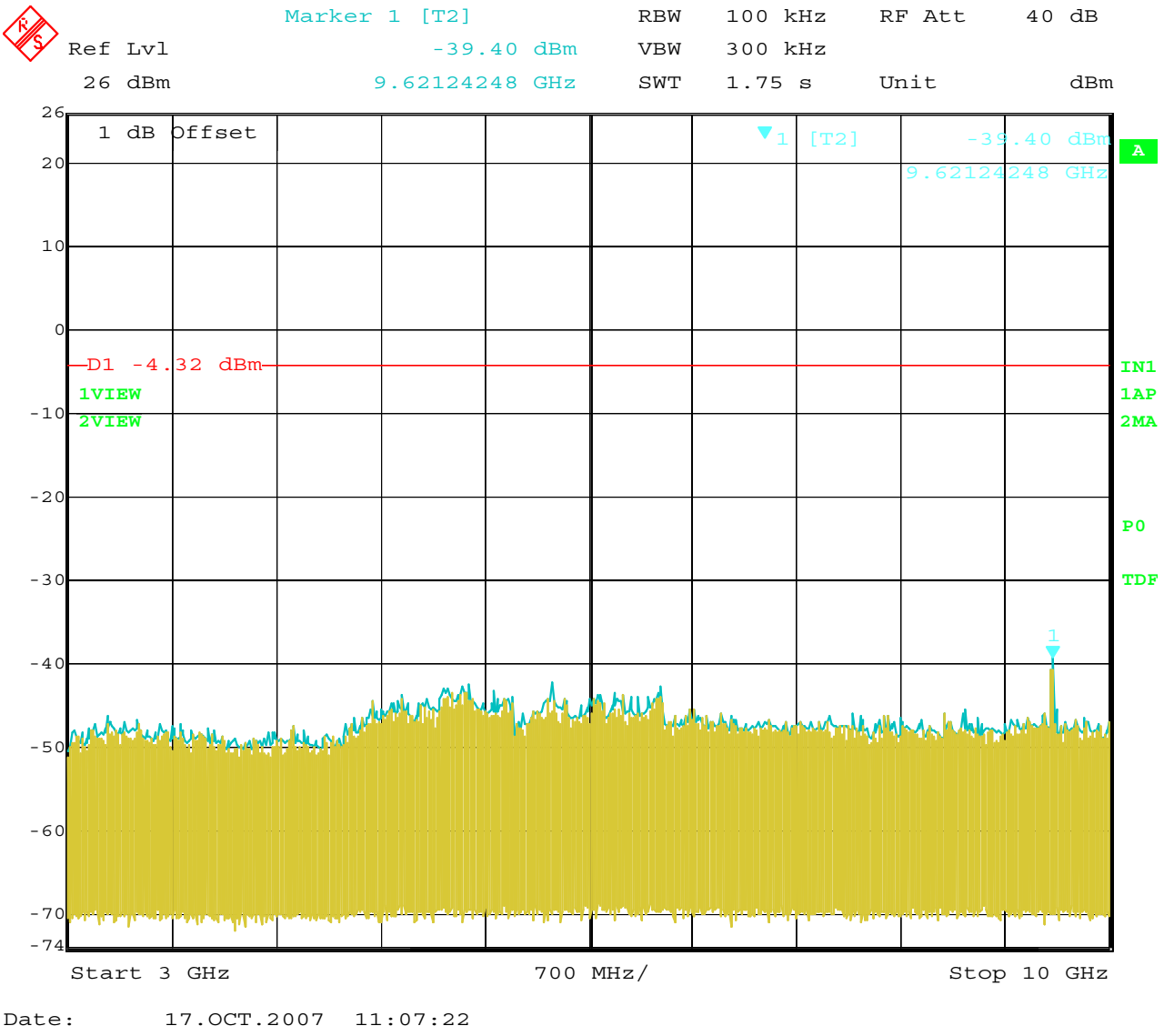
DATA SHEETS



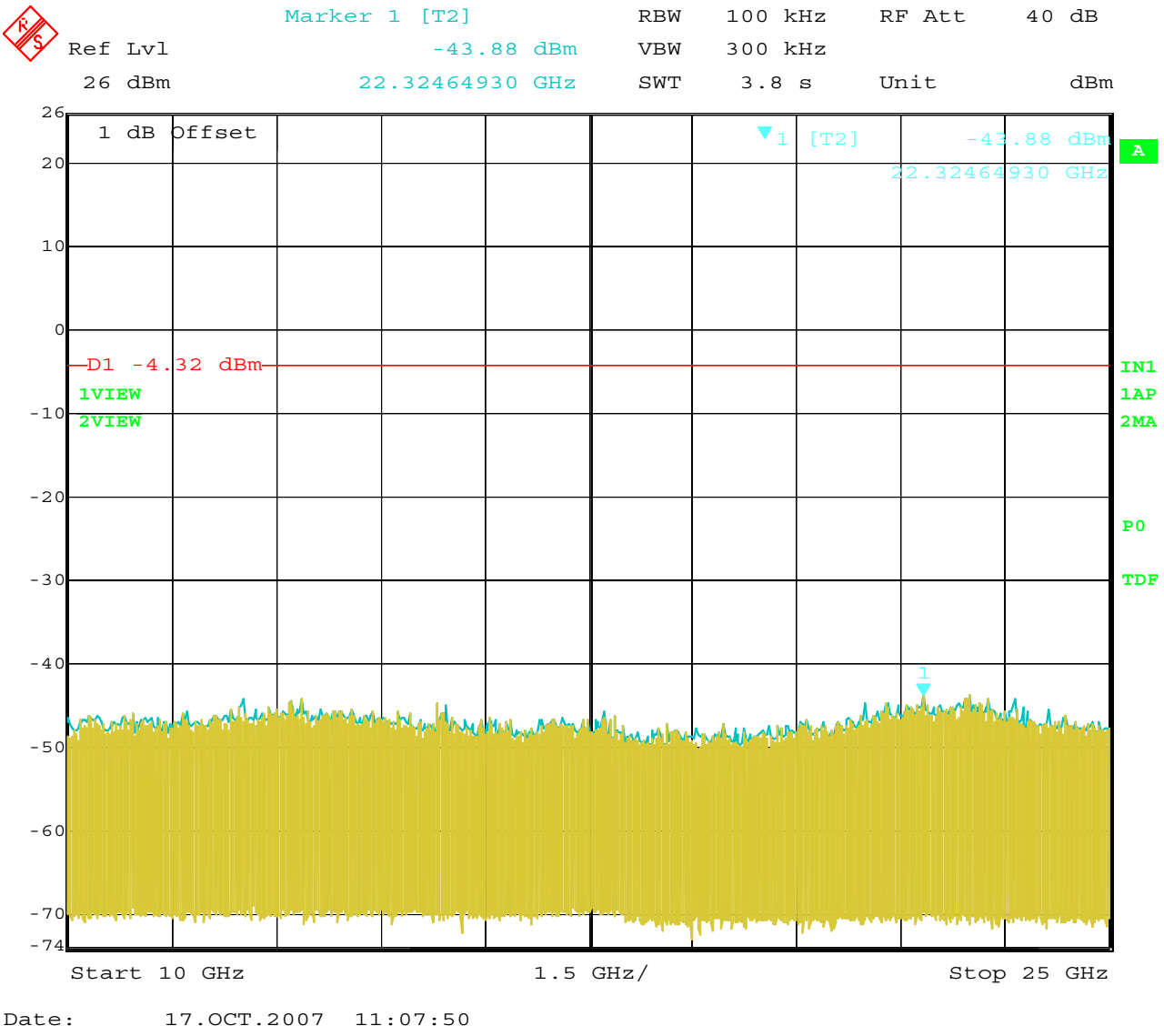
RF Antenna Conducted – Low Channel – 2 MHz to 2 GHz



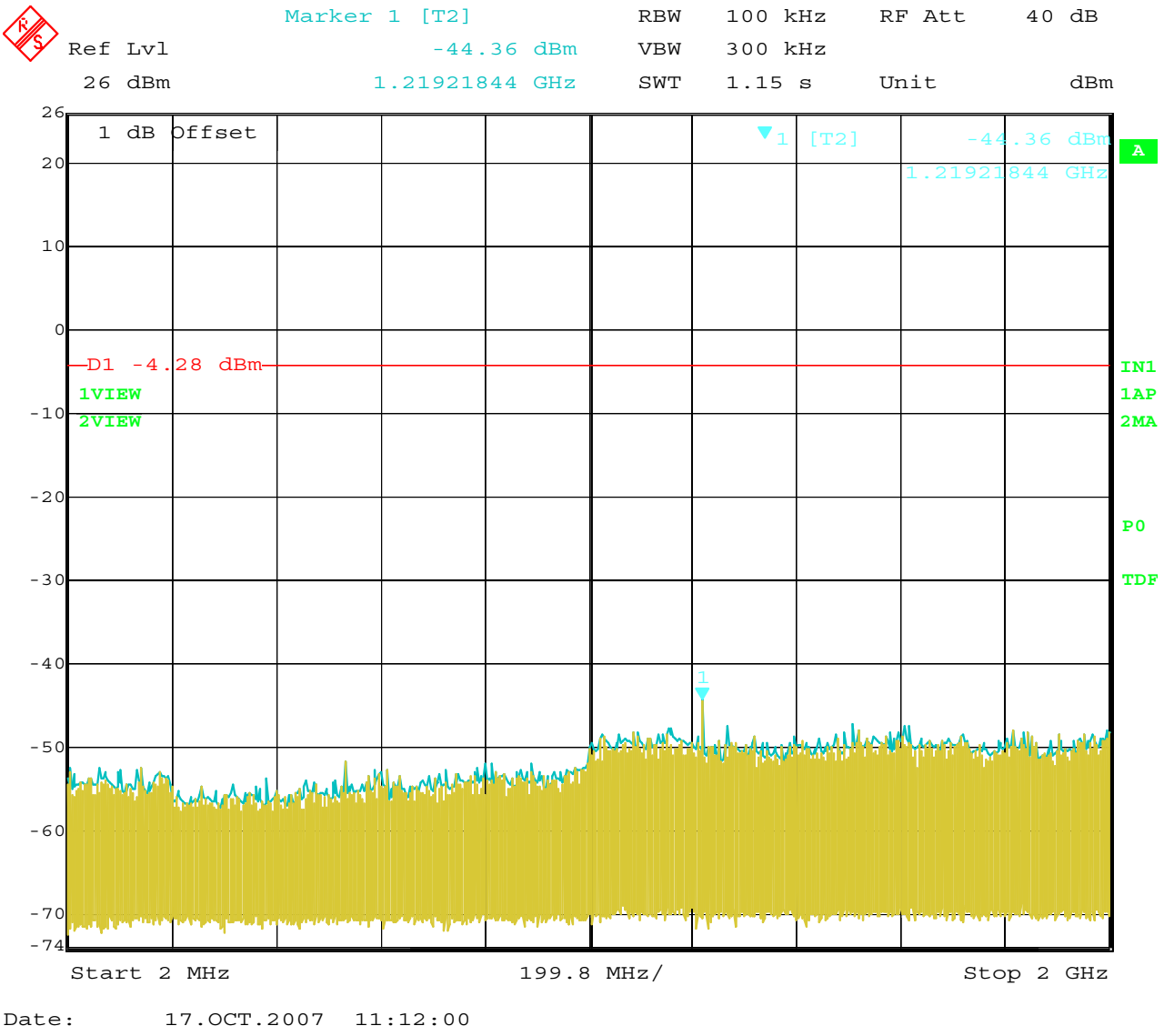
RF Antenna Conducted – Low Channel – 2 GHz to 3 GHz



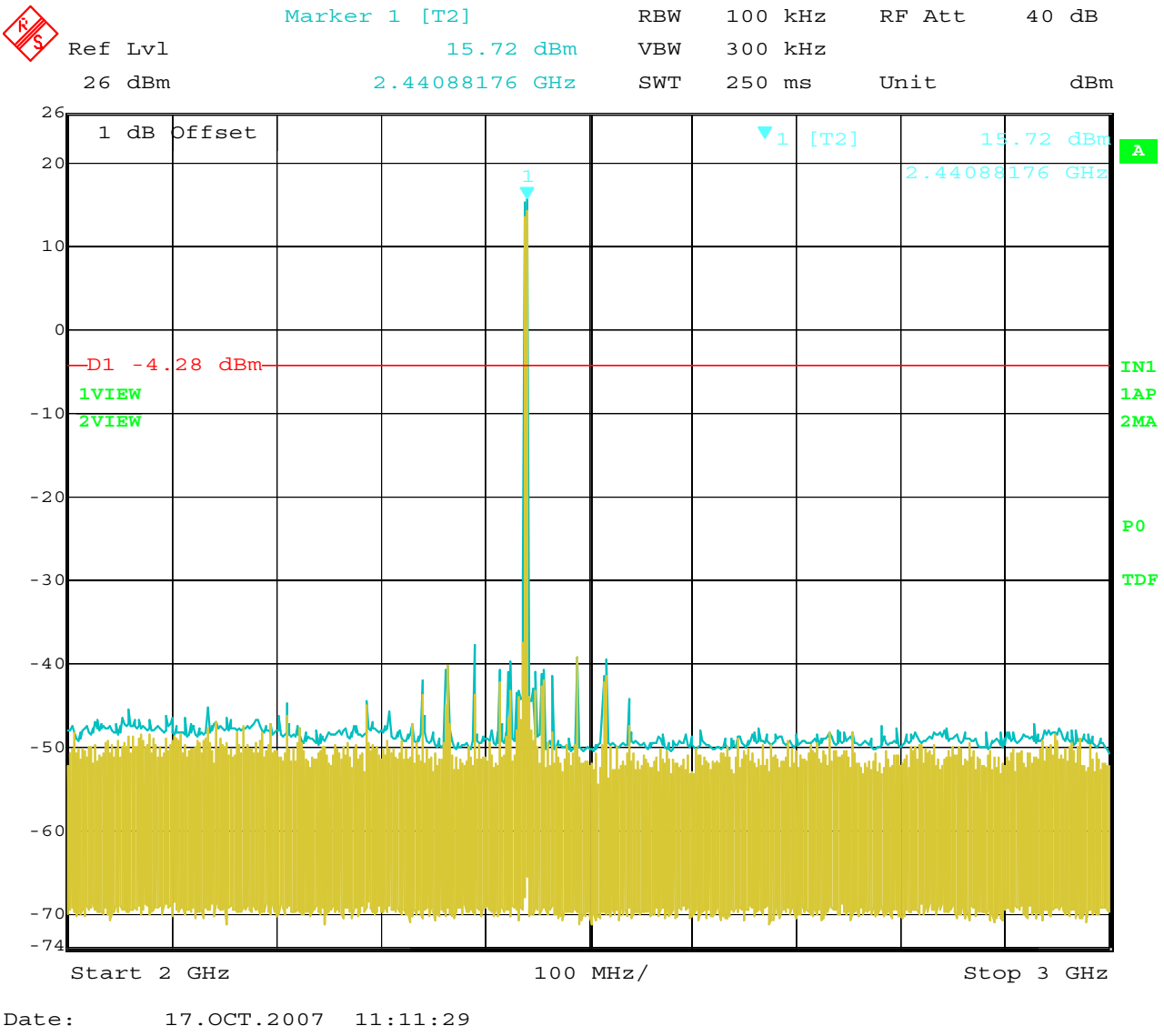
RF Antenna Conducted – Low Channel – 3 GHz to 10 GHz



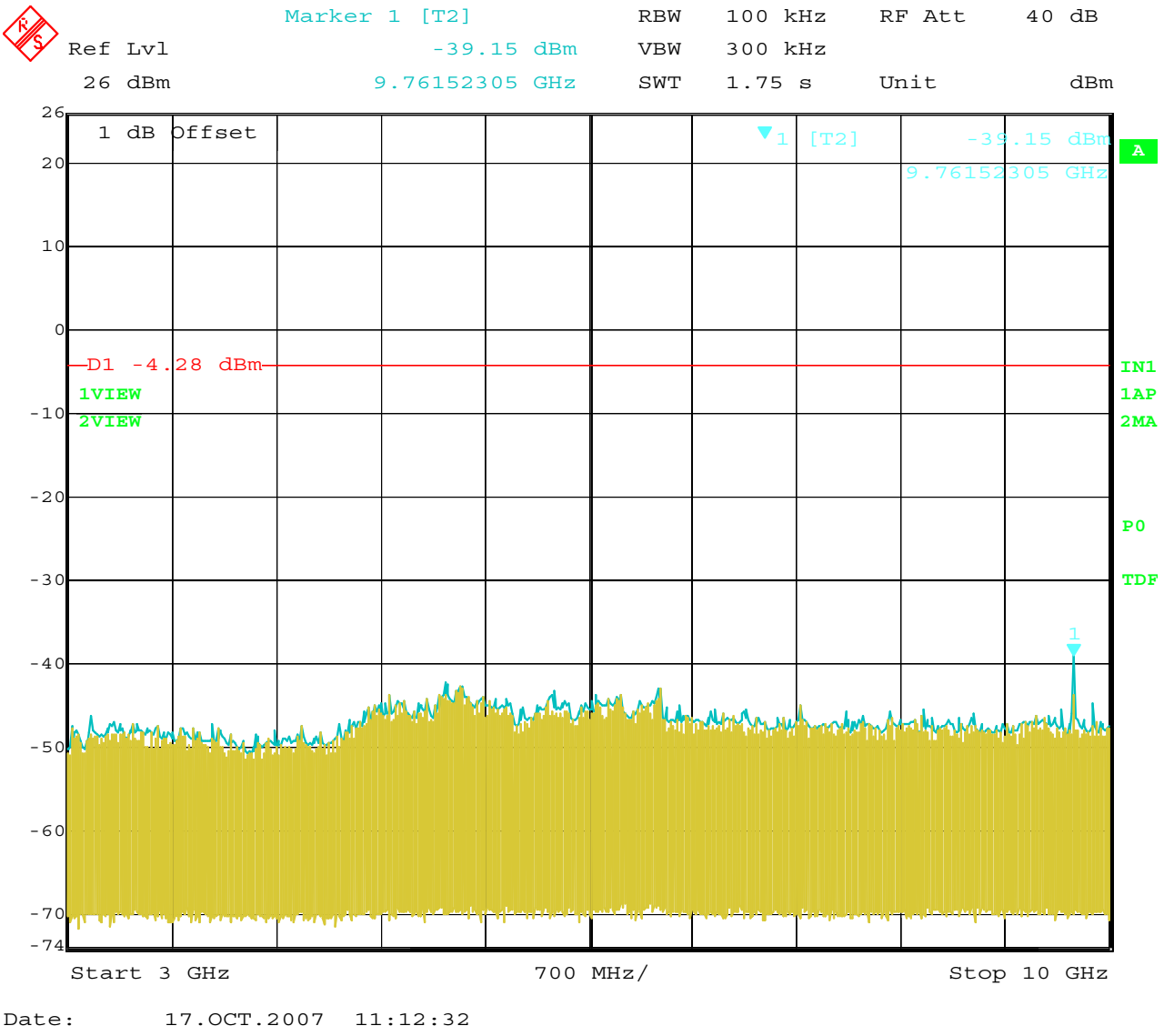
RF Antenna Conducted – Low Channel – 10 GHz to 25 GHz



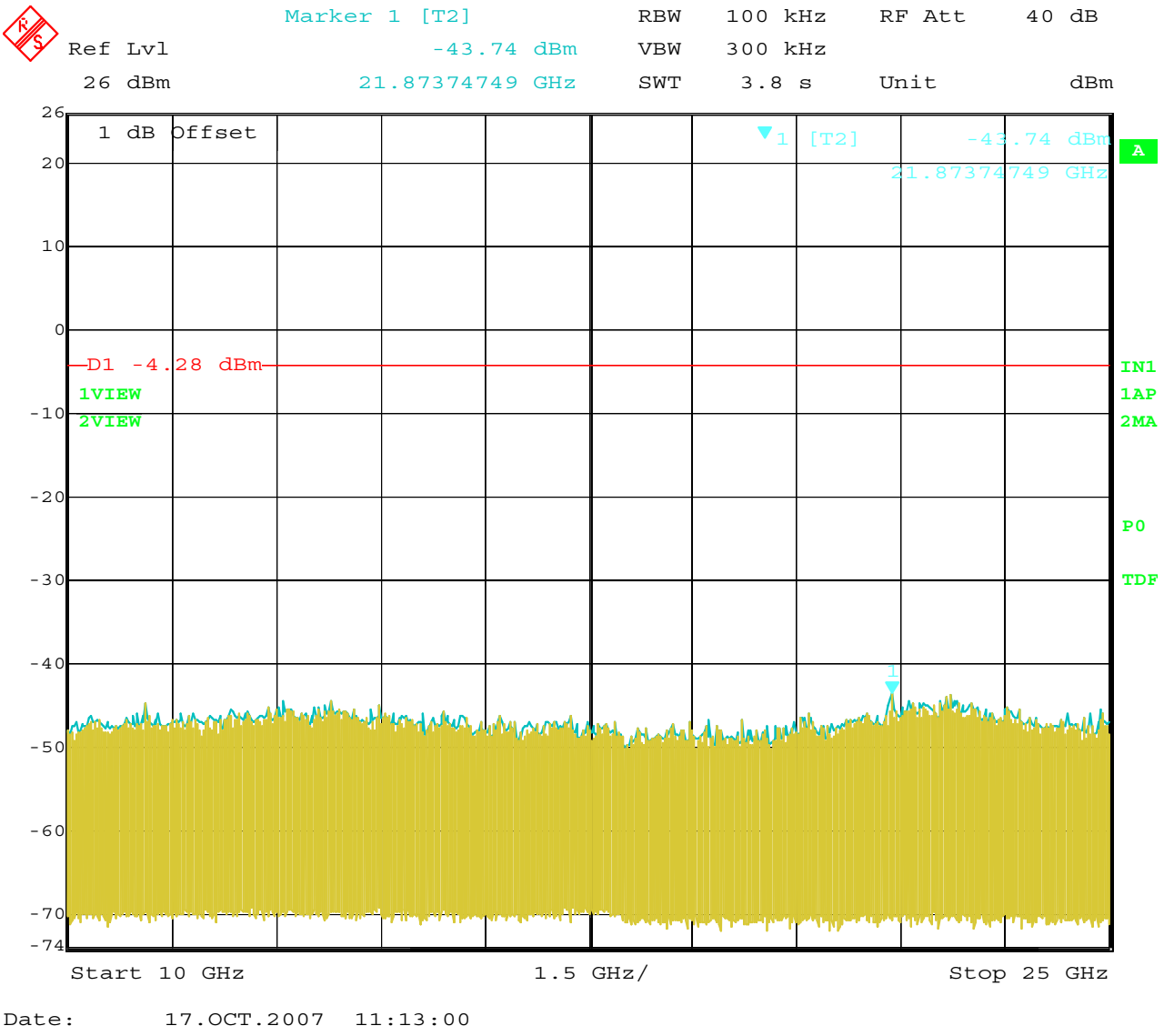
RF Antenna Conducted – Middle Channel – 2 MHz to 2 GHz



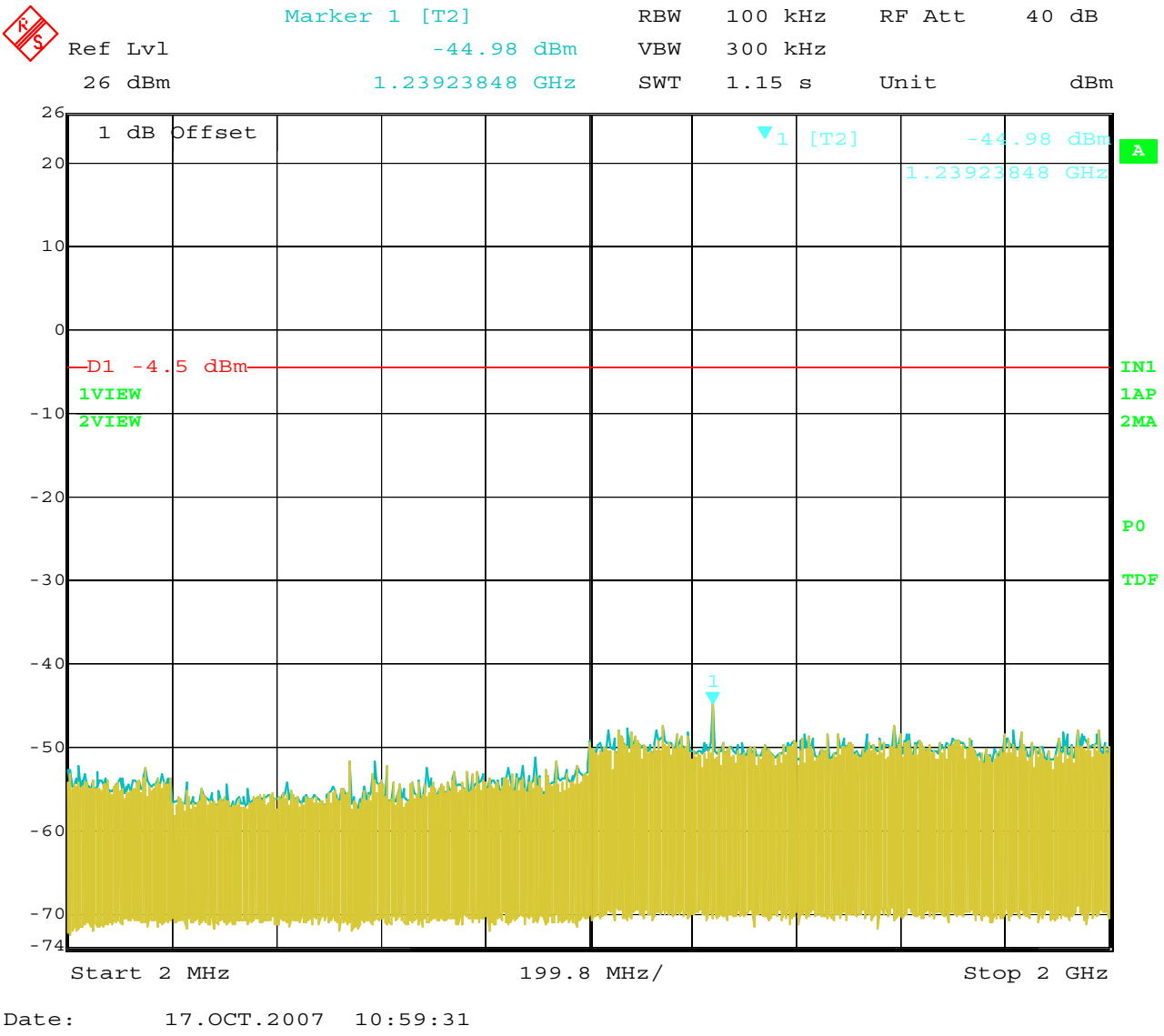
RF Antenna Conducted – Middle Channel – 2 GHz to 3 GHz



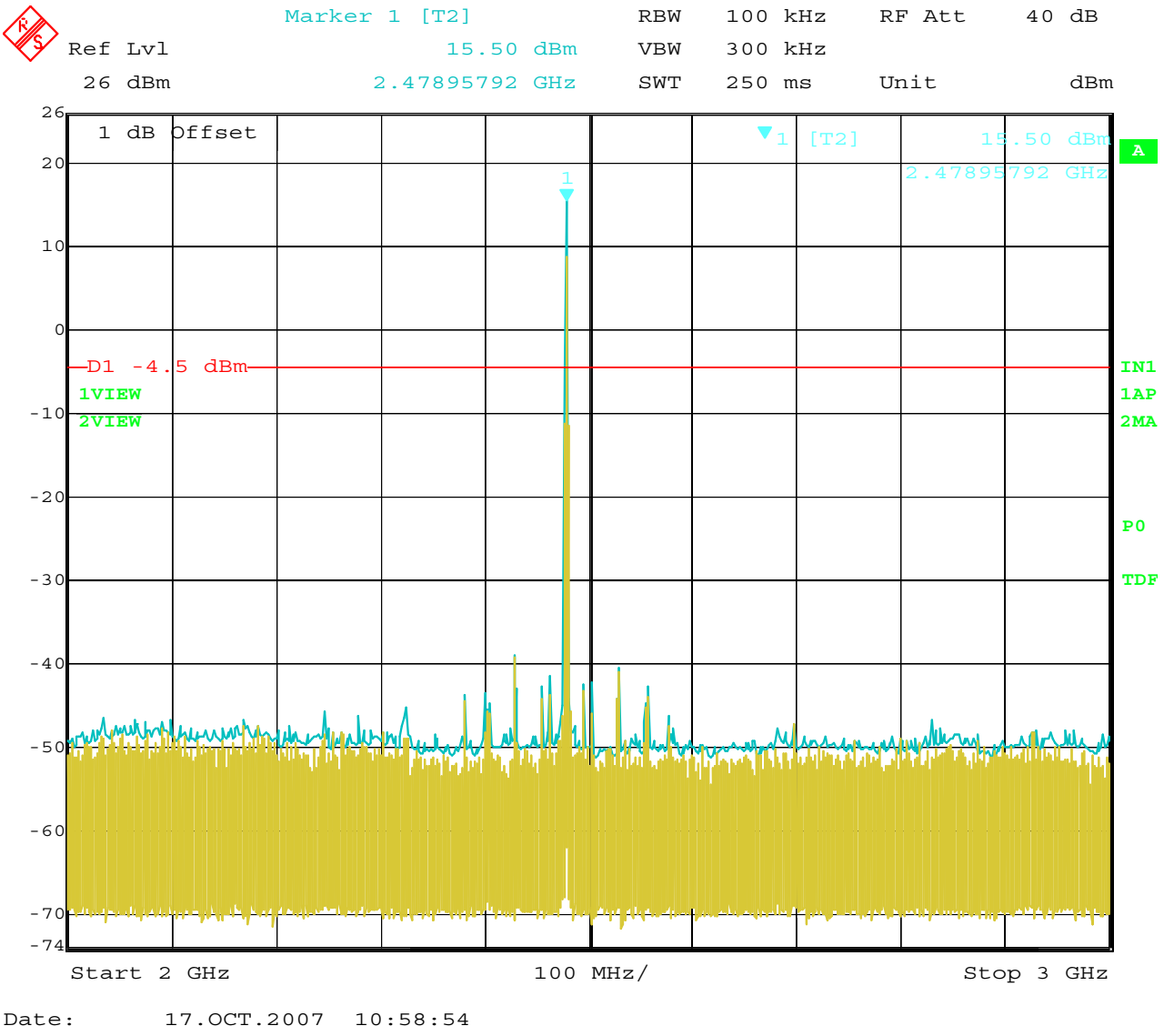
RF Antenna Conducted – Middle Channel – 3 GHz to 10 GHz



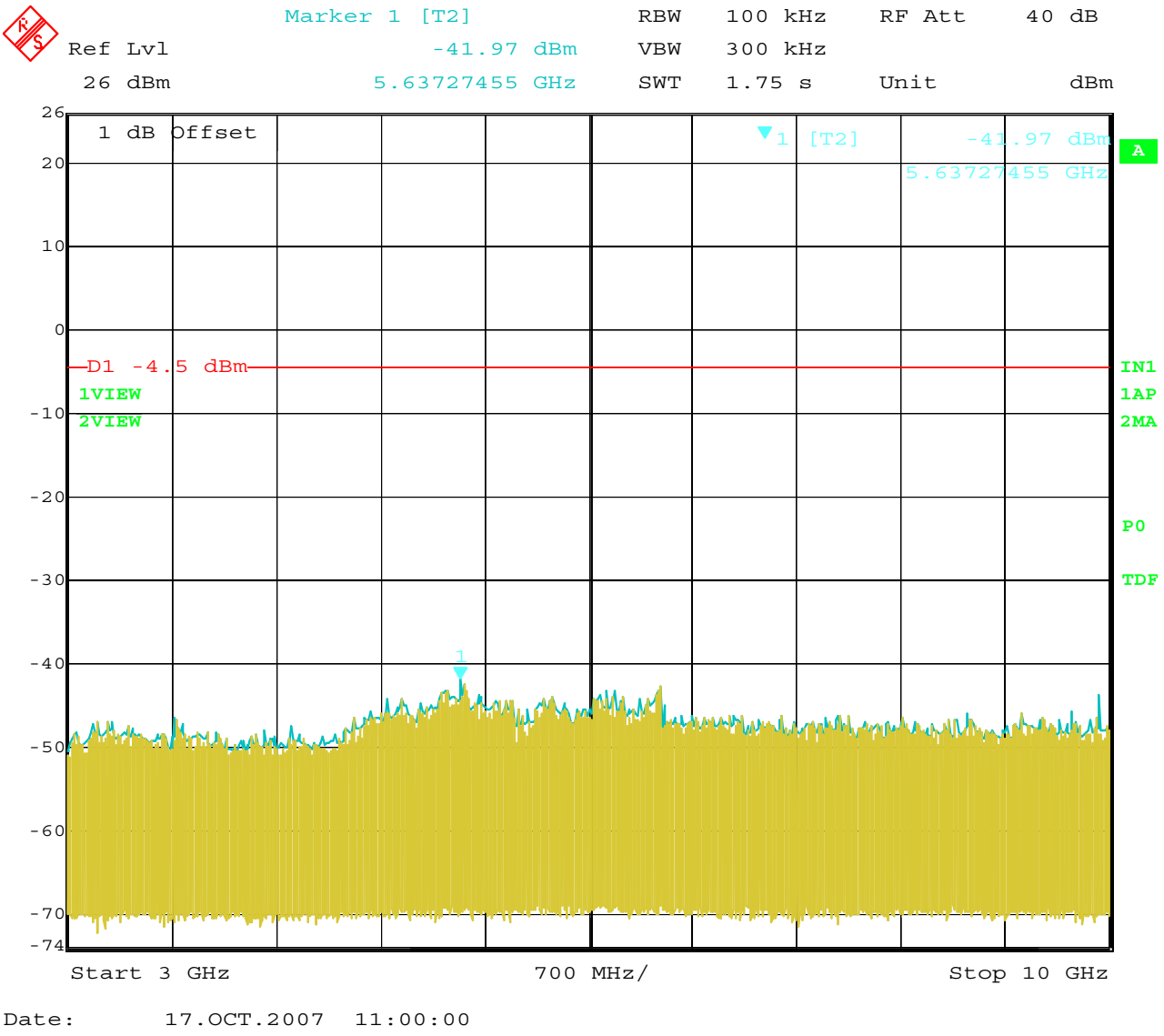
RF Antenna Conducted – Middle Channel – 10 GHz to 25 GHz



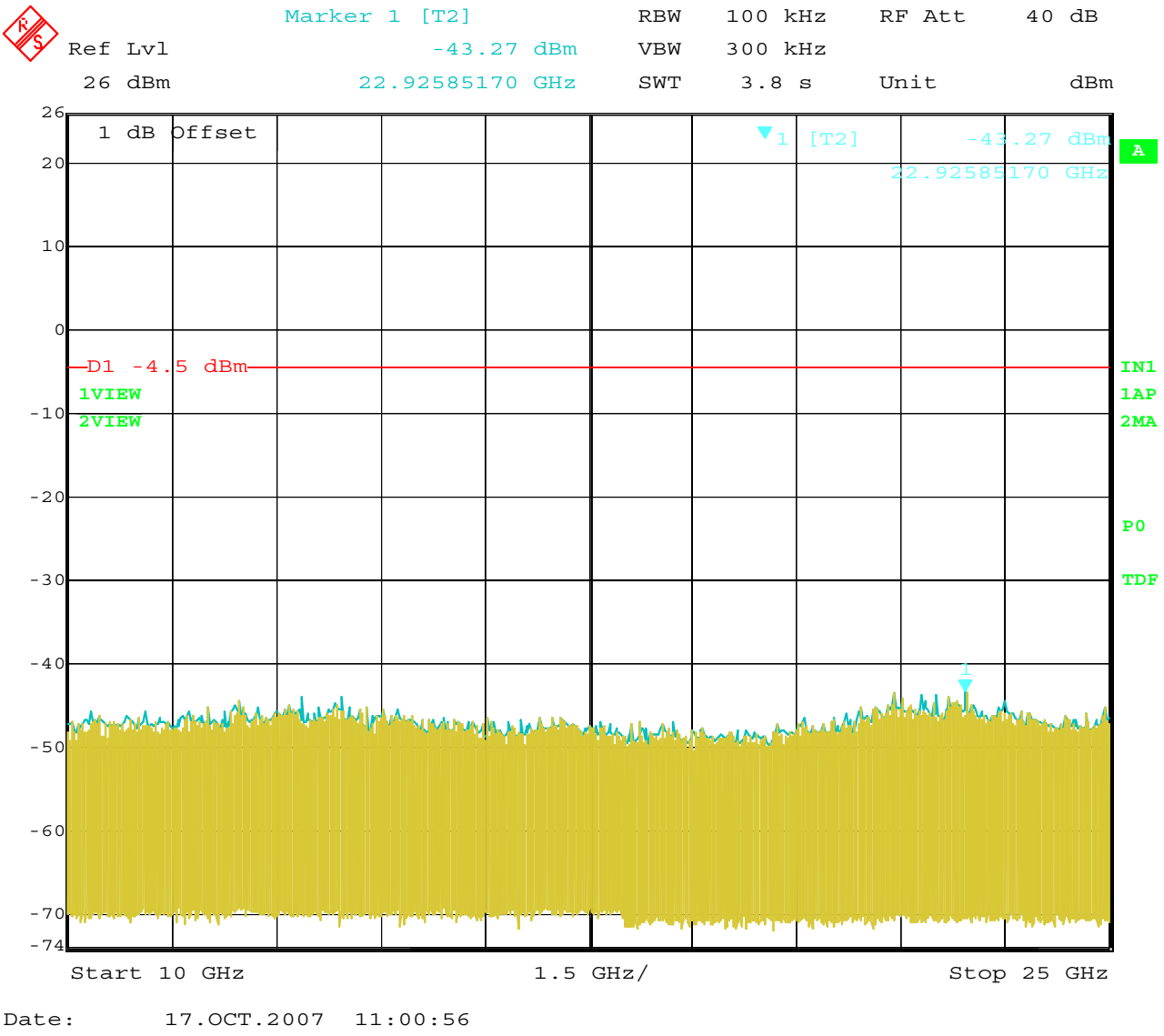
RF Antenna Conducted – High Channel – 2 MHz to 2 GHz



RF Antenna Conducted – High Channel – 2 GHz to 3 GHz



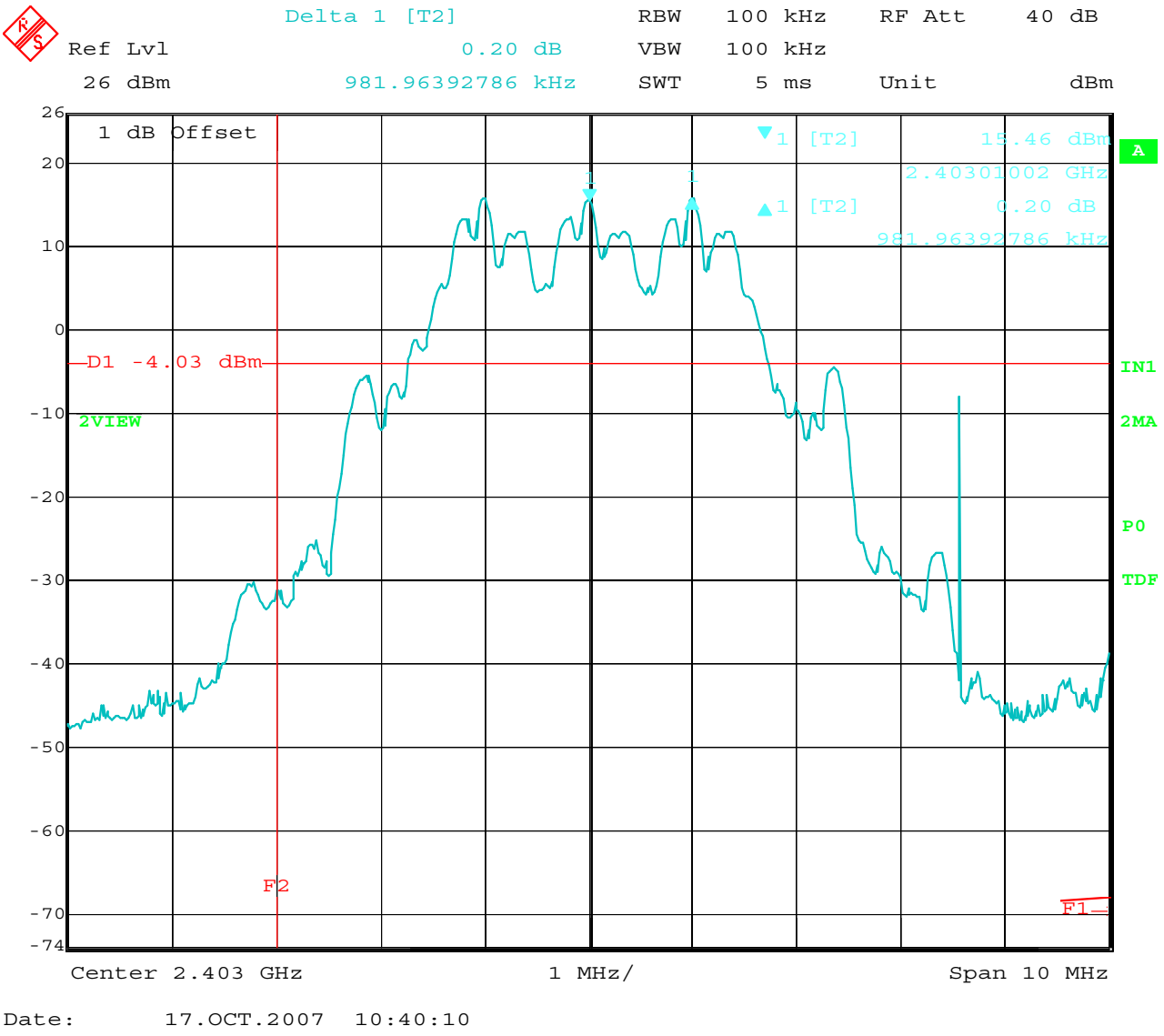
RF Antenna Conducted – High Channel – 3 GHz to 10 GHz



RF Antenna Conducted – High Channel – 10 GHz to 25 GHz

CHANNEL HOPPING SEPARATION

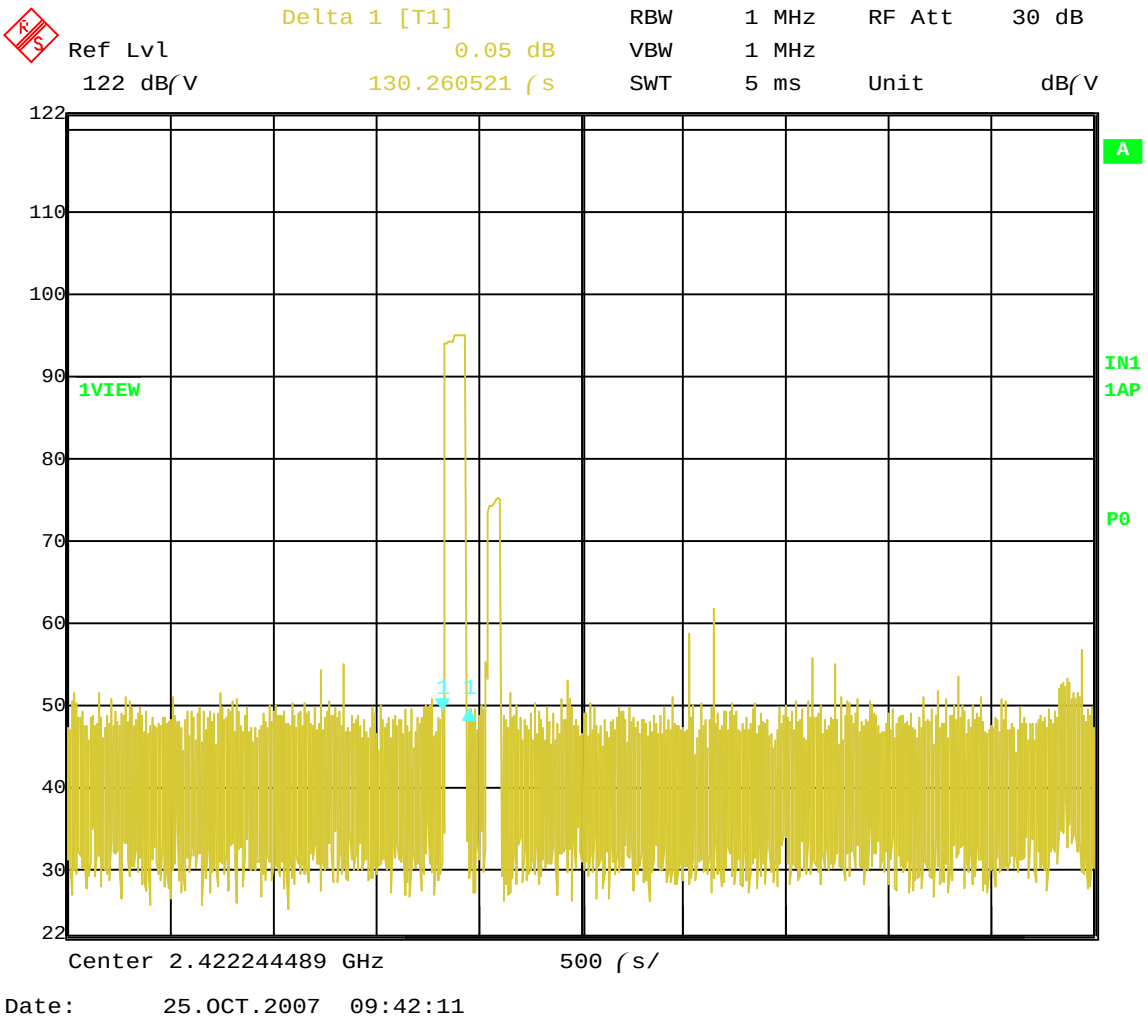
DATA SHEET



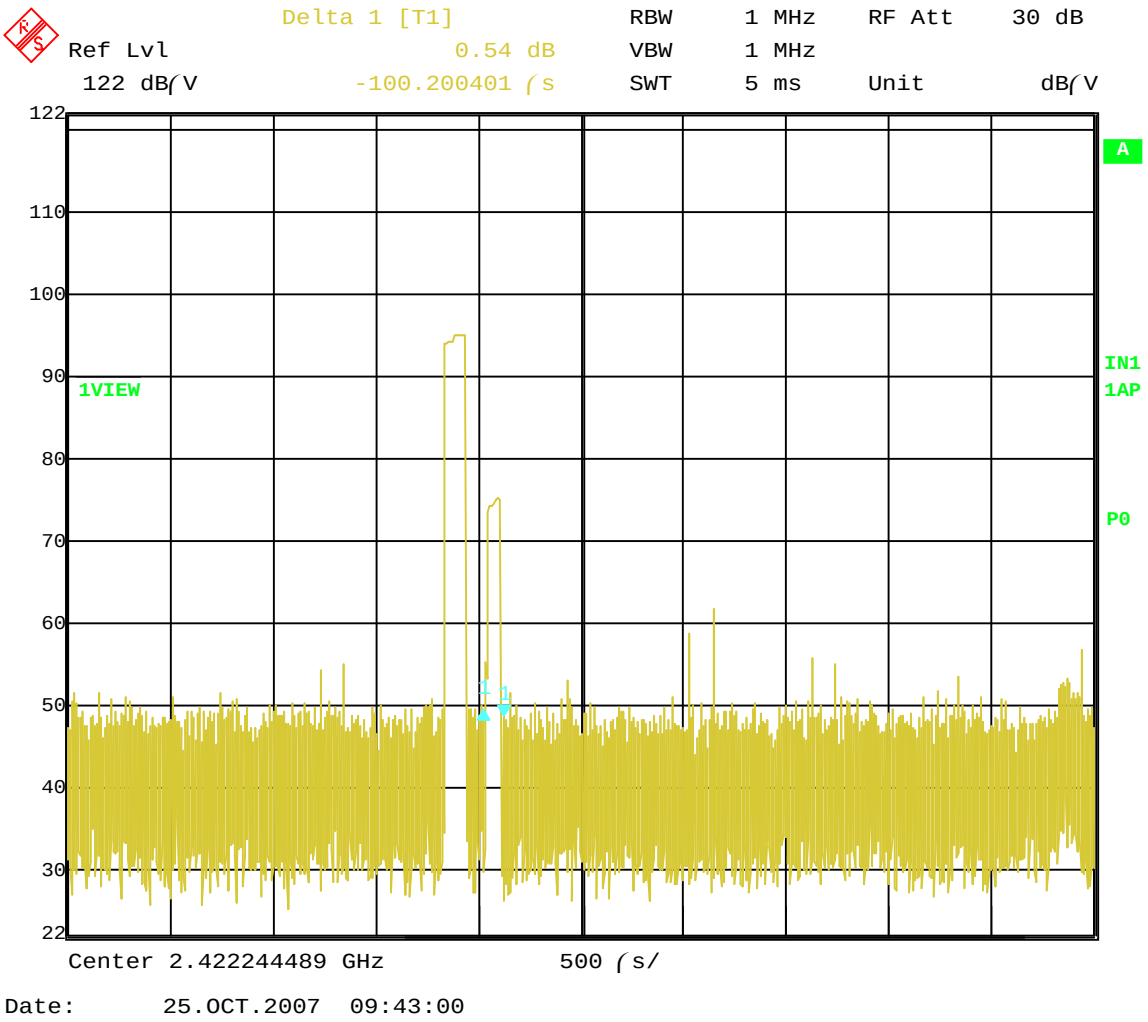
Carrier Frequency Separation Test

AVERAGE TIME OF OCCUPANCY

DATA SHEETS

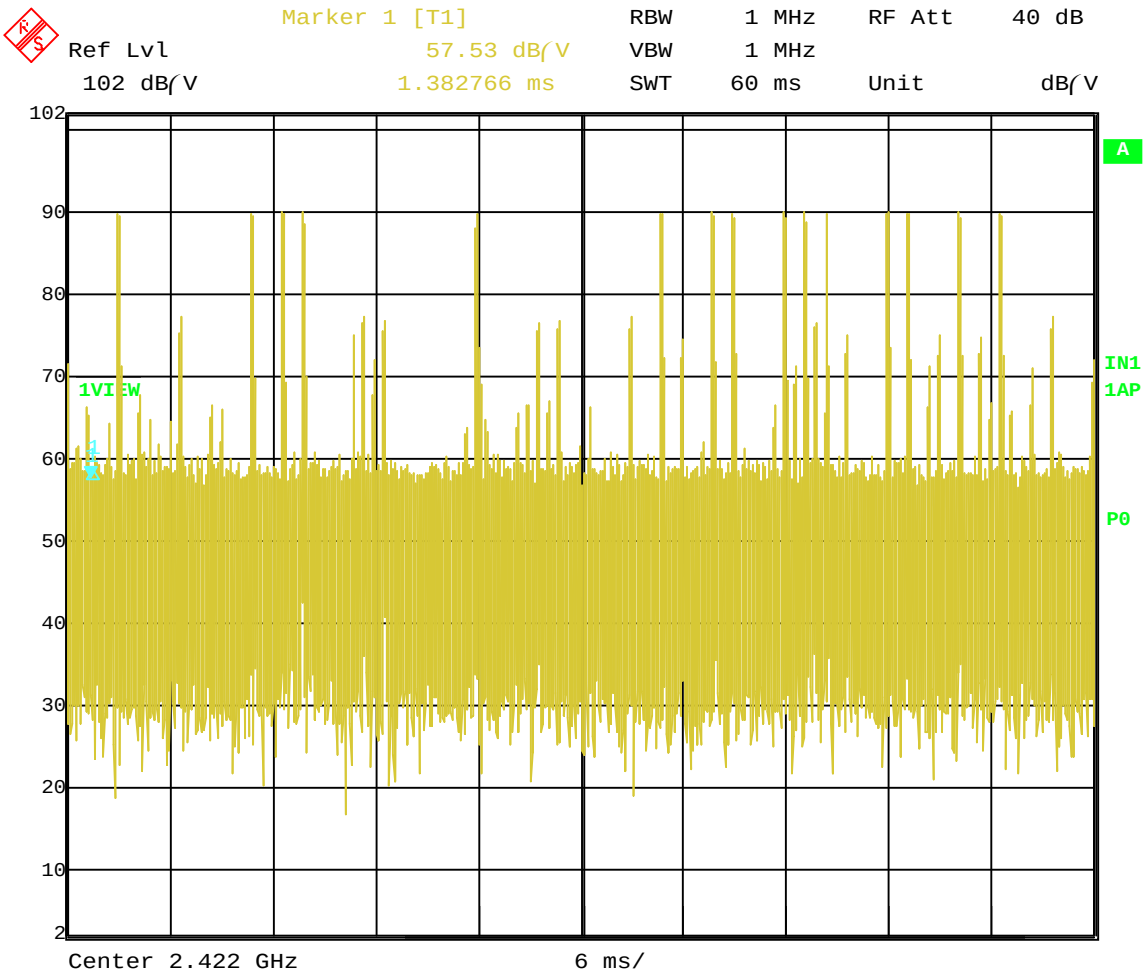


Time of First Part of Pulse = 130.260521 uS



Time of Second Part of Pulse = 100.200401 uS

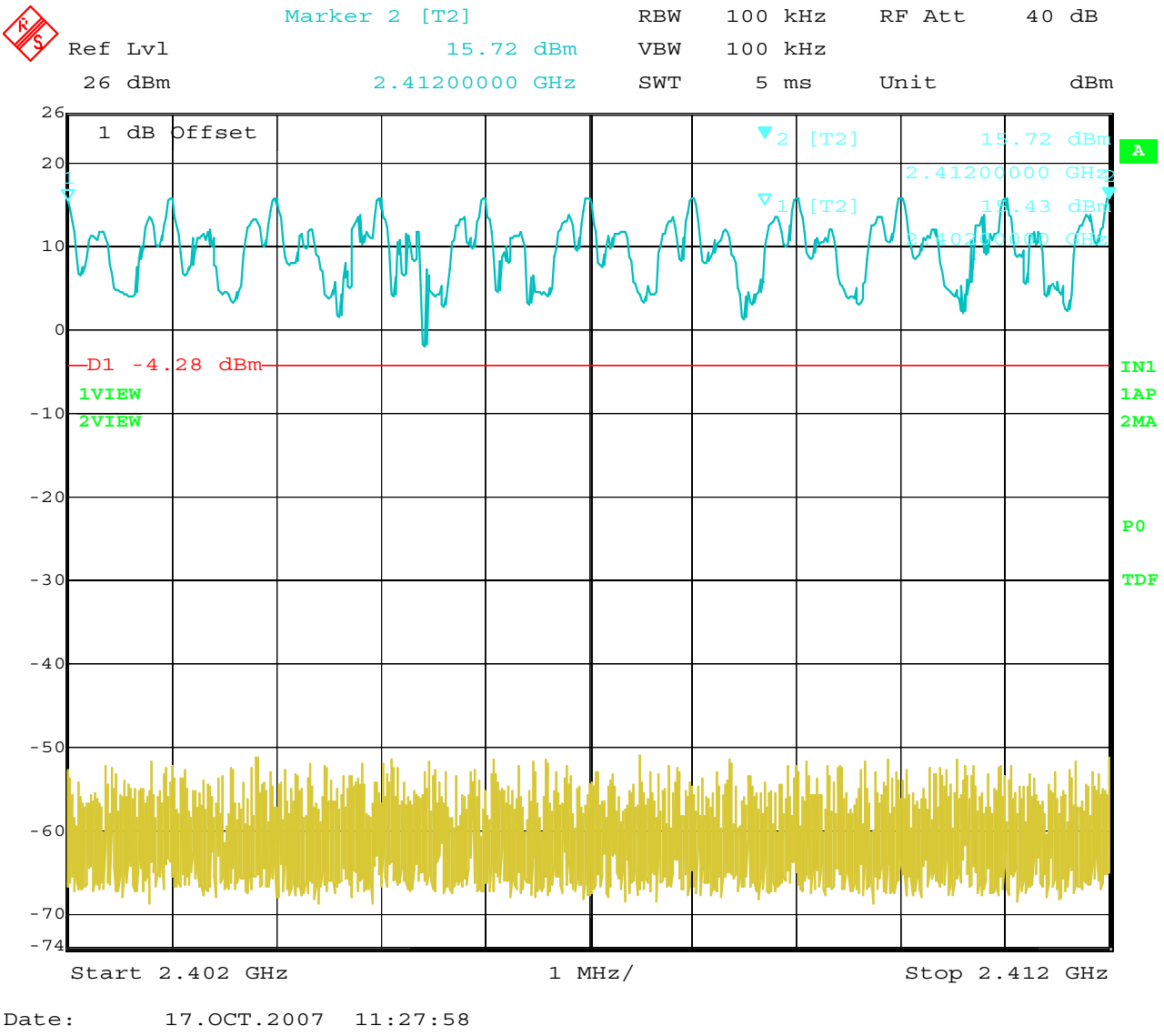
Total Time of Pulse = 230.460922 uS



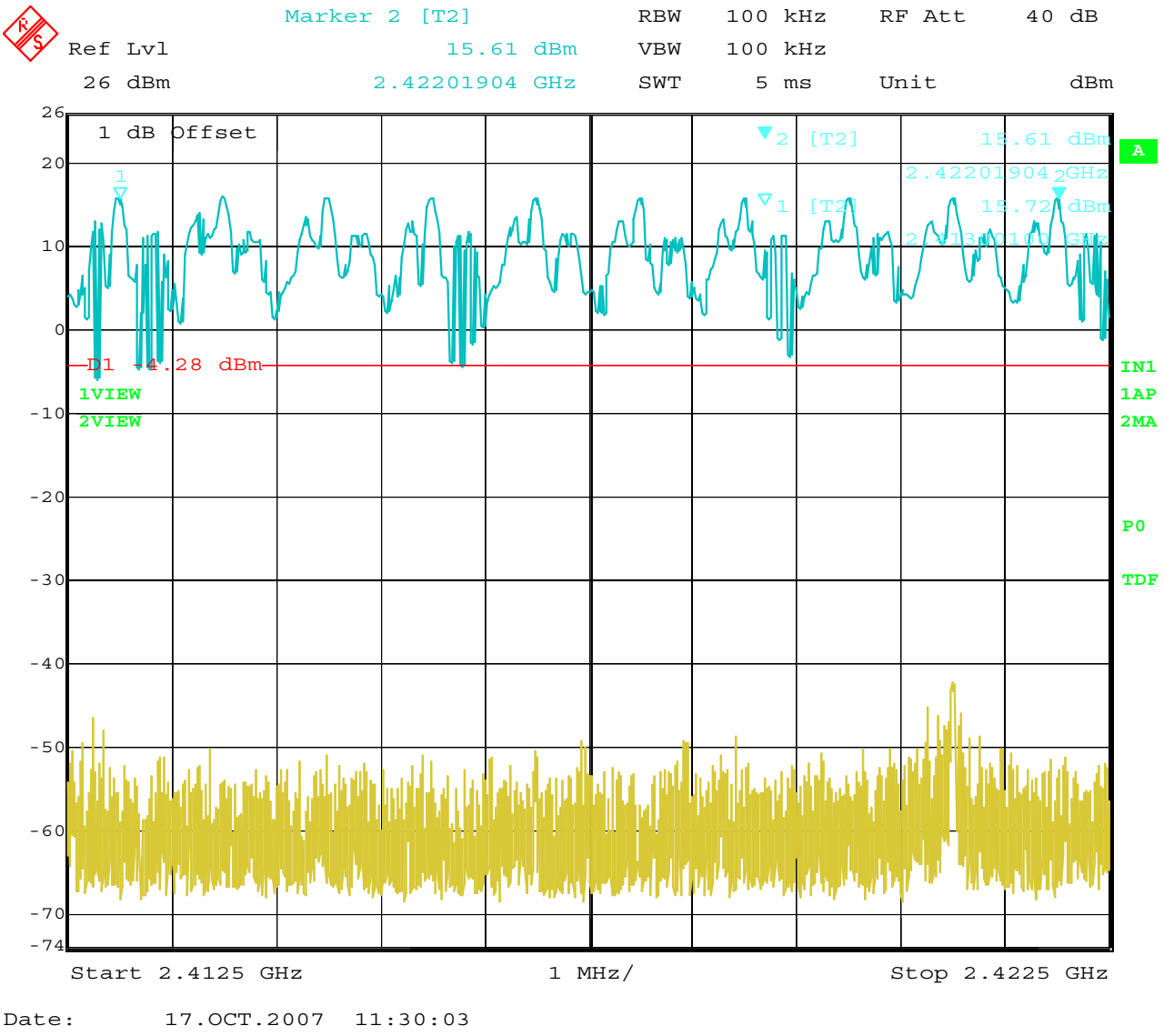
Number of Pulses in 60 mS = 15
Number of Pulses in (400 mS * 16 Channels) = 15*106.67 = 1601 Pulses
Total Time = 1601 * 230.460922 uS = 368.9679361 mS

NUMBER OF HOPPING FREQUENCIES

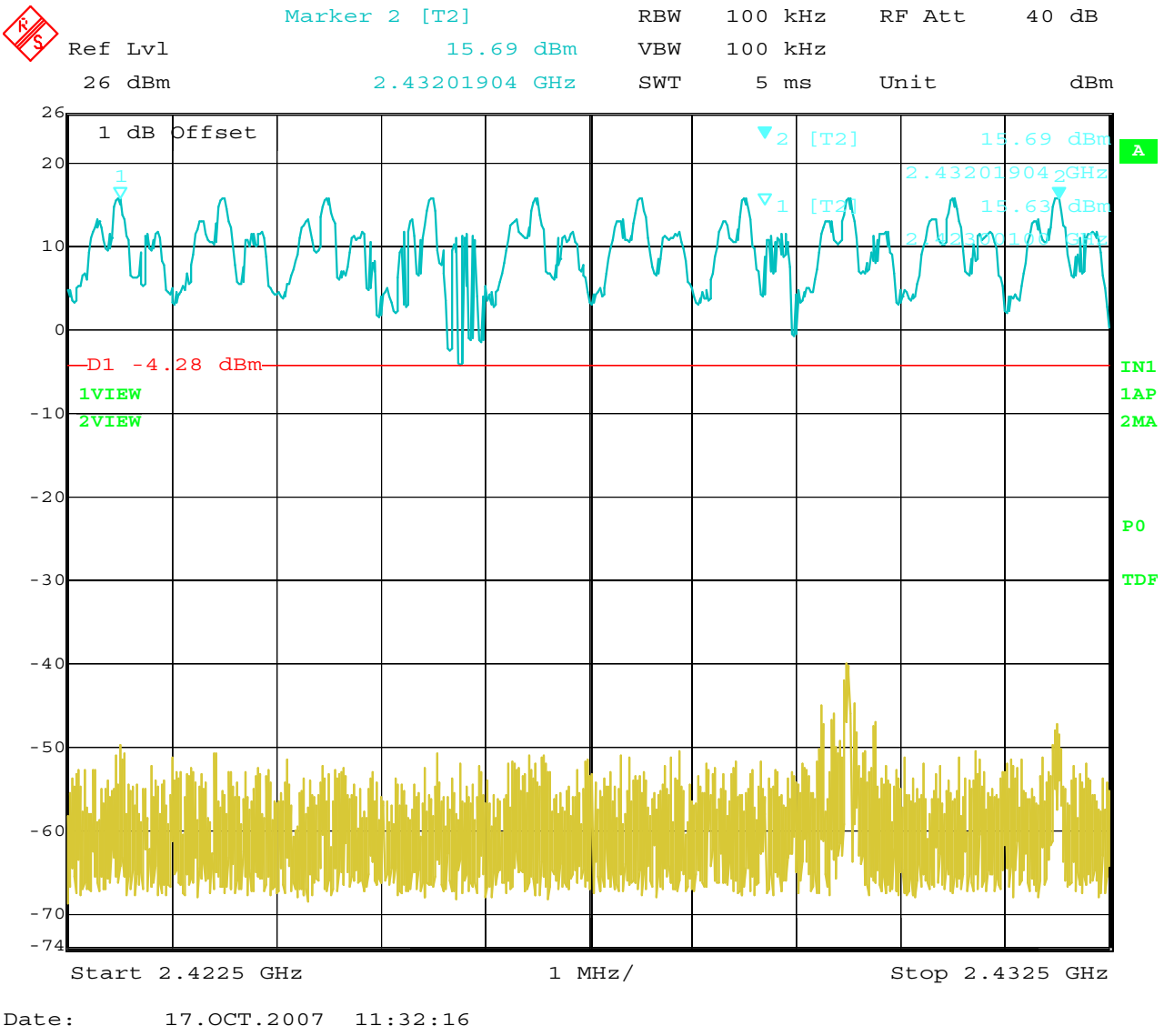
DATA SHEET



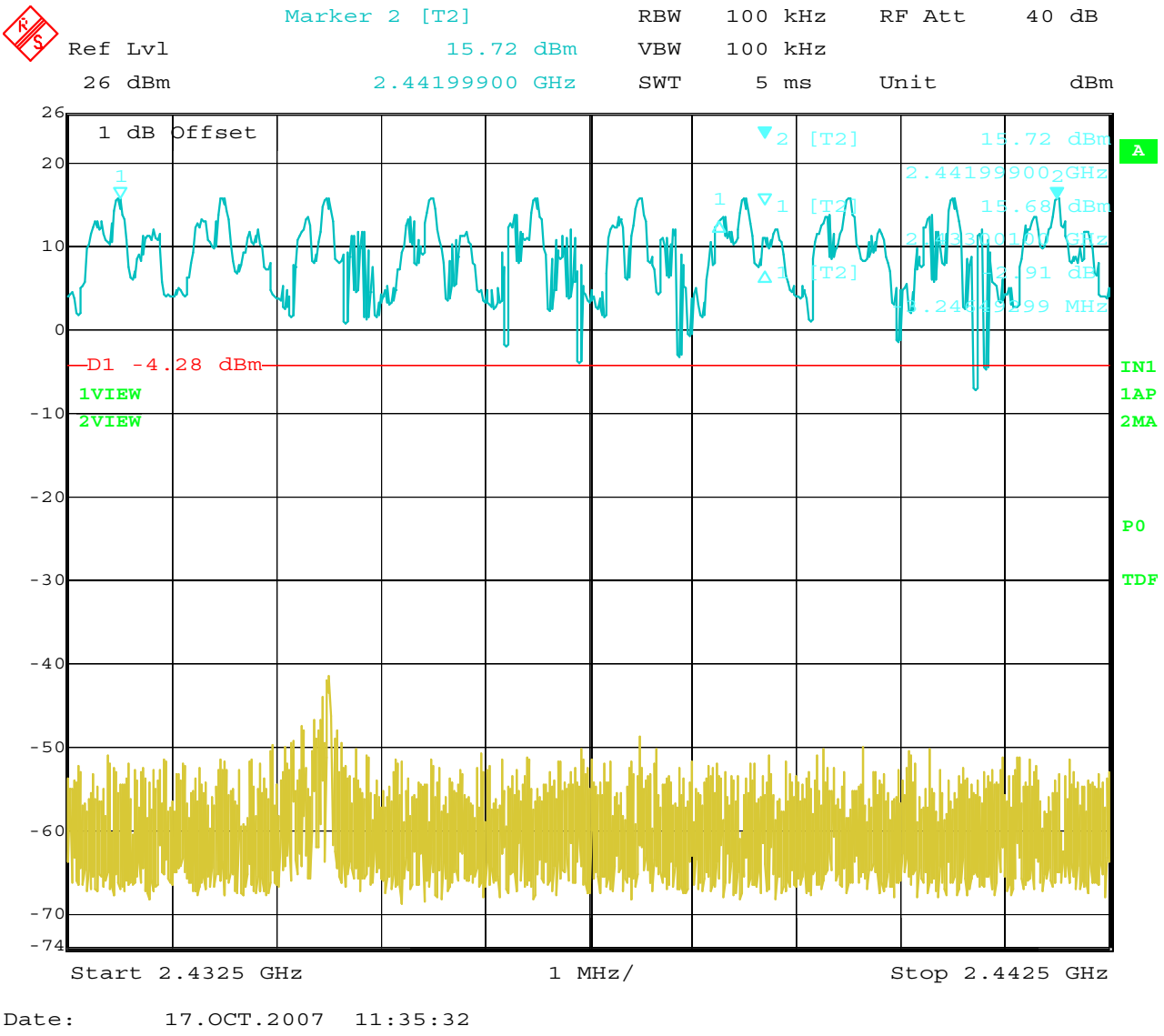
Number of Channels – Part 1 -- 11



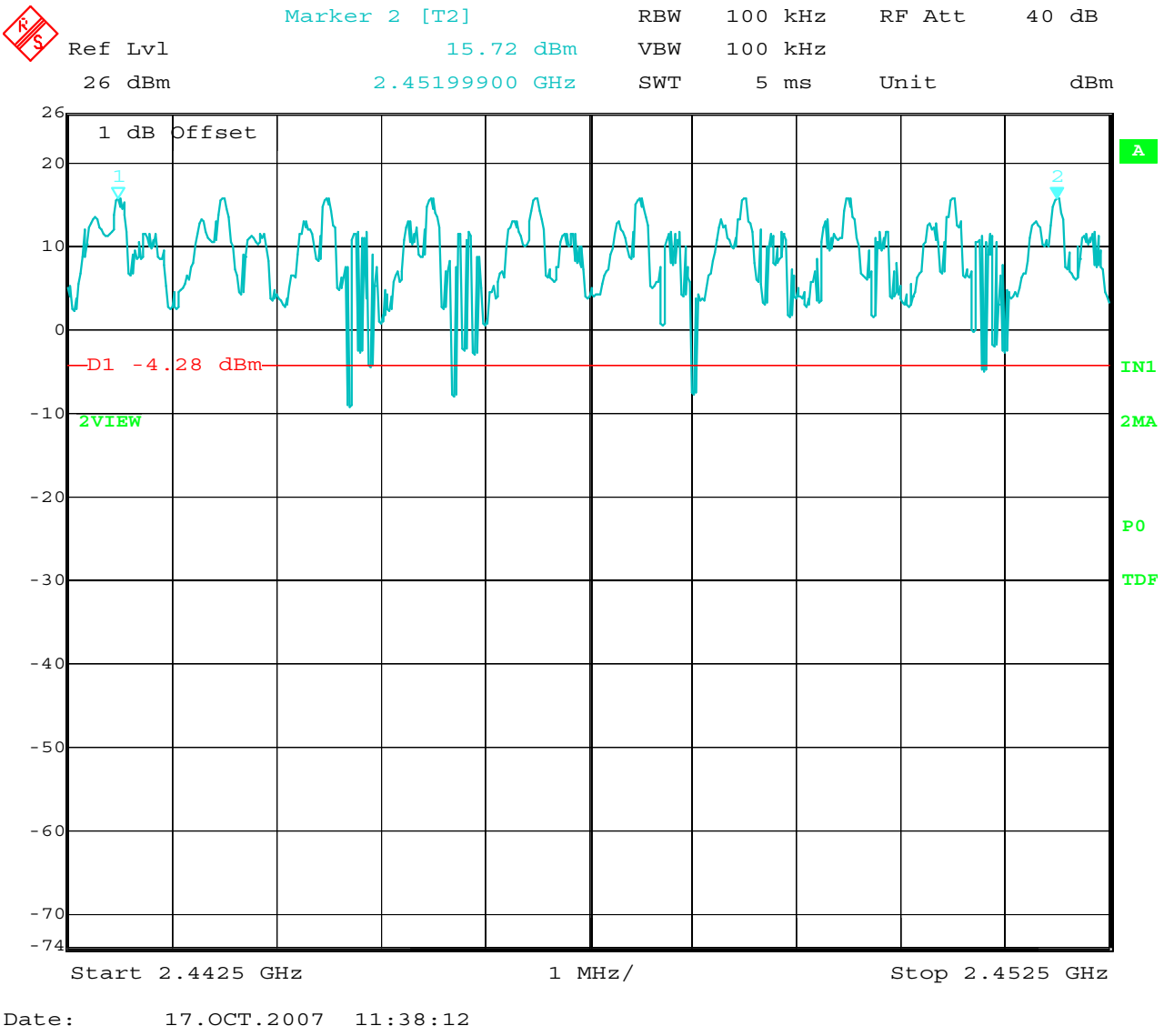
Number of Channels – Part 2 – 10



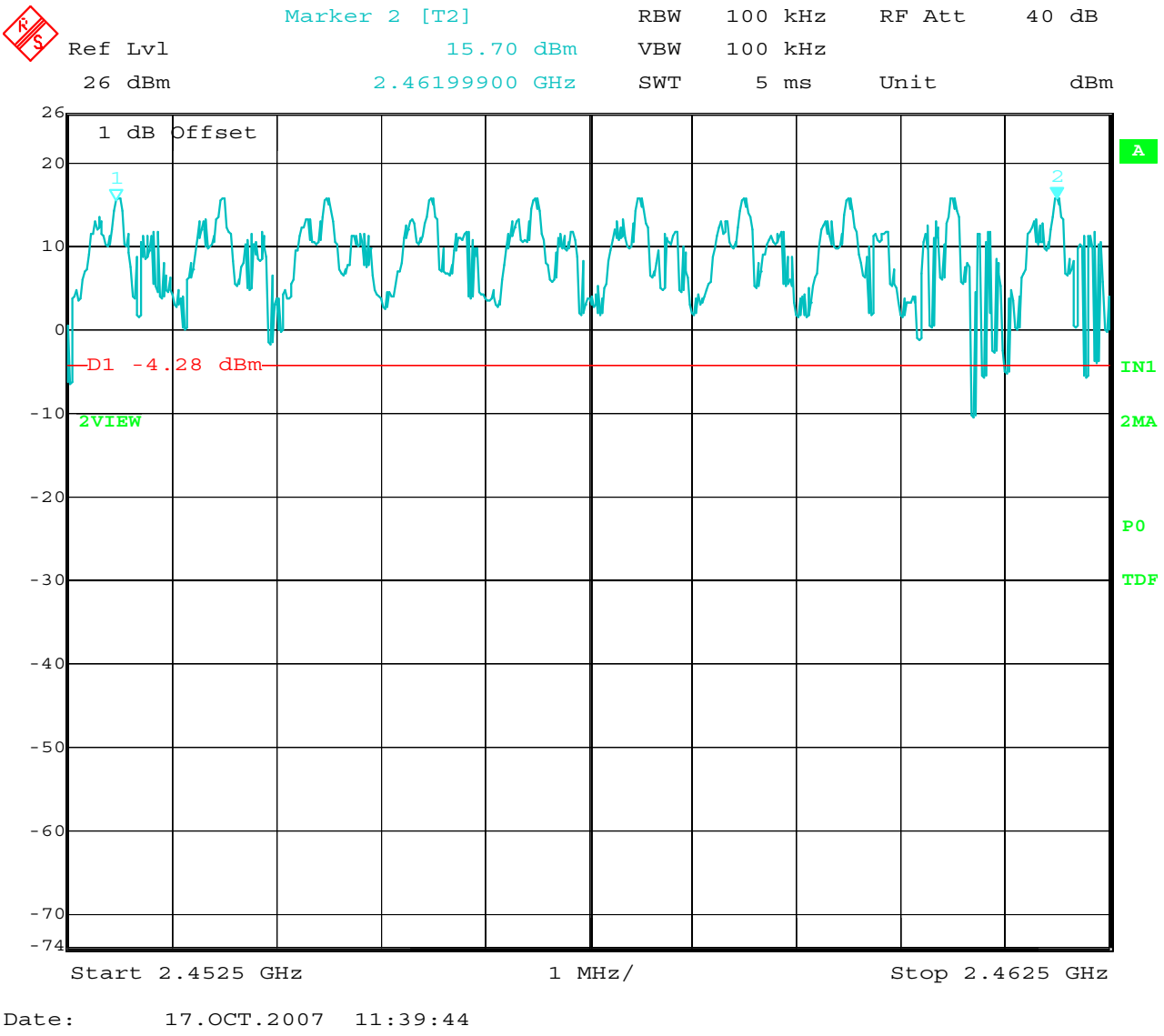
Number of Channels – Part 3 – 10



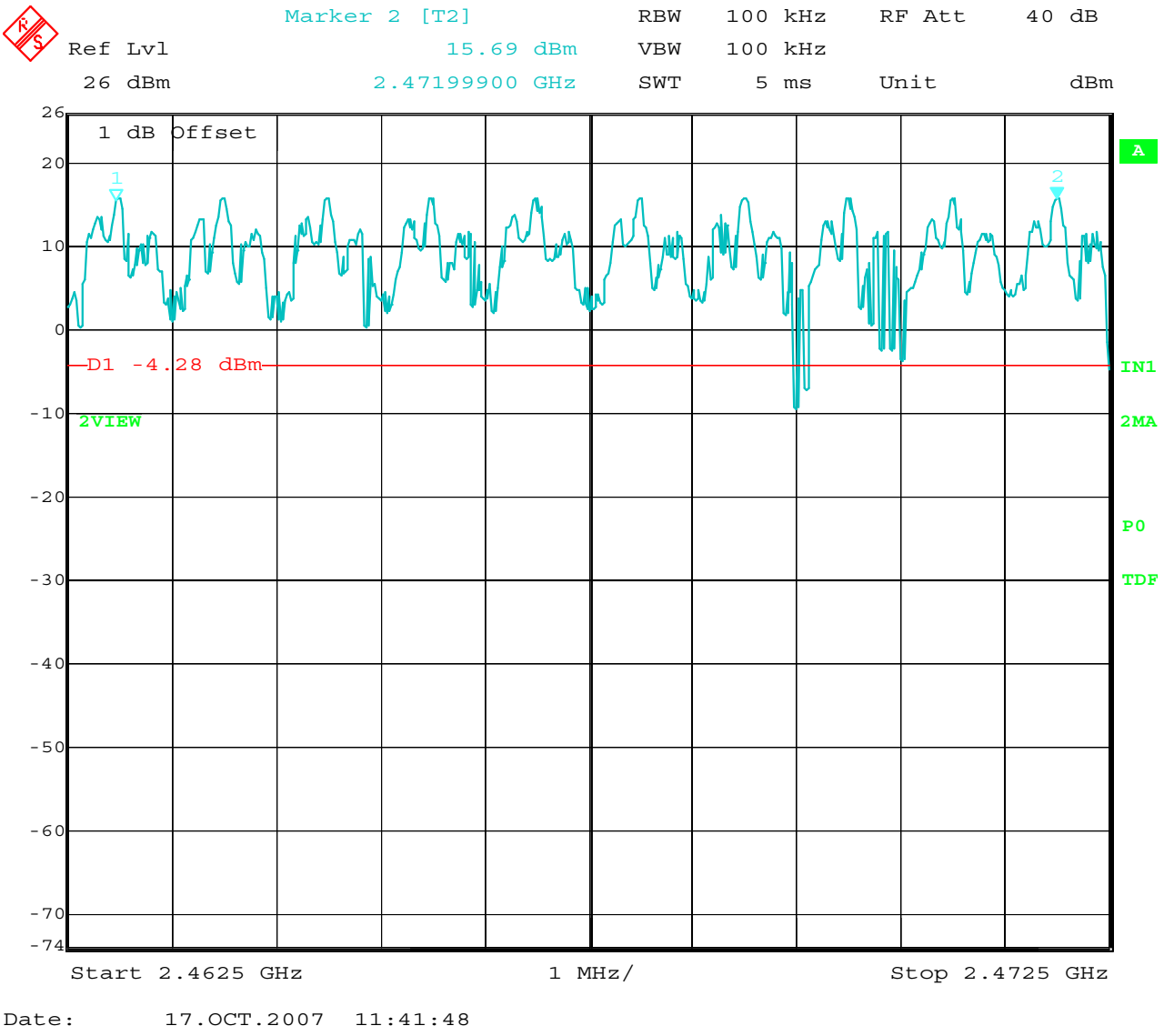
Number of Channels – Part 4 – 10



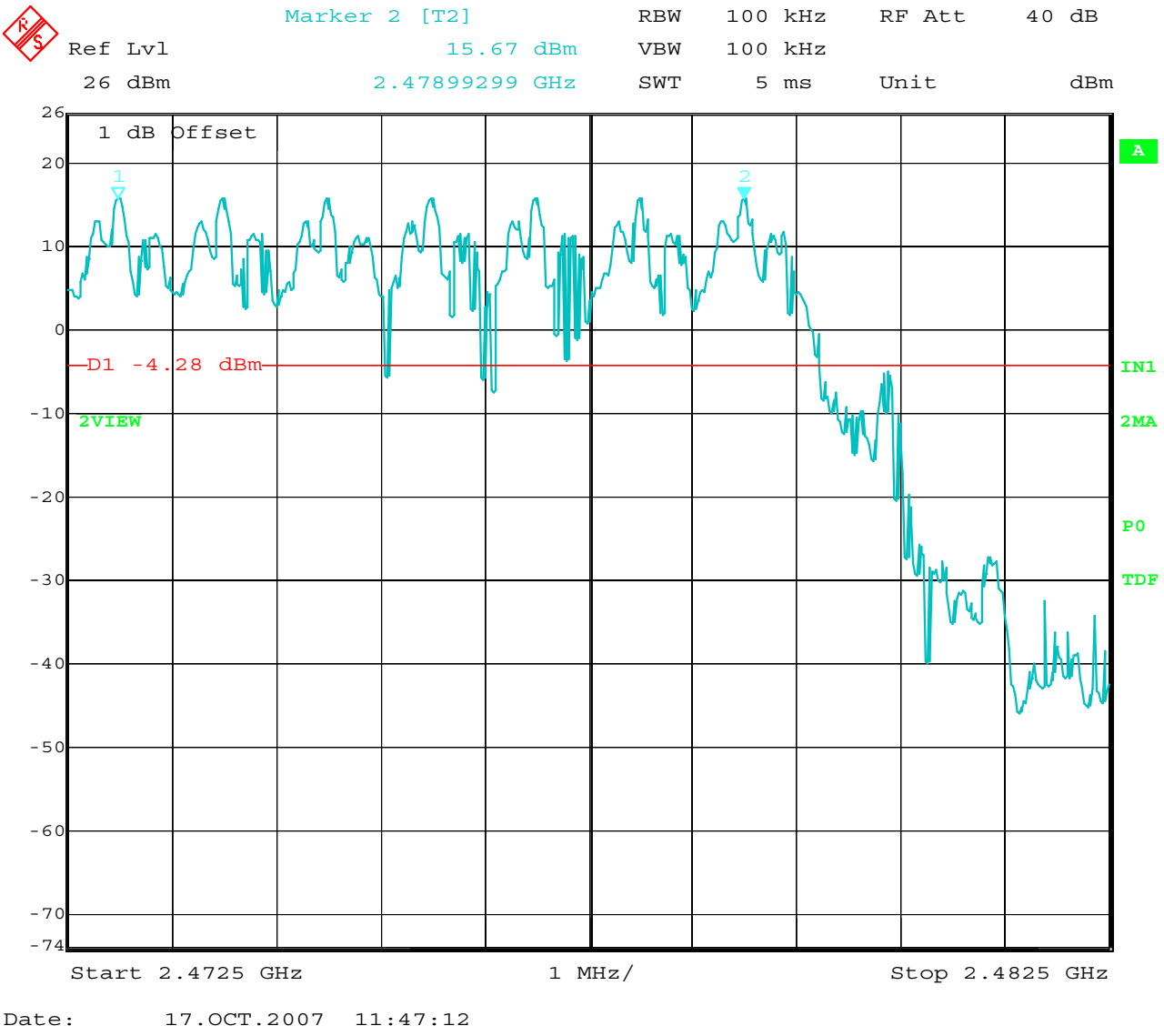
Number of Channels – Part 5 – 10



Number of Channels – Part 6 – 10



Number of Channels – Part 7 – 10



Number of Channels – Part 8 – 7

Total Number of Channels = 11+10+10+10+10+10+10+7 = 78

BAND EDGES

DATA SHEETS

FCC 15.247
BEI Industrial Encoders
2.4 GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Channel 1 - Y-Axis (Worst Case)
Channel 40 - Y-Axis (Worst Case)
Channel 79 - Y-Axis (Worst Case)
Transmit Mode - Antenna with Short Cable

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	116.68	V	--	--	Peak	1.12	225	Fundamental of Channel 1
2402	96.68	V	--	--	Avg	1.12	225	@ 3 meters
2352.8	62.52	V	74	-11.48	Peak	1.12	225	**No** Marker Delta Method
2352.8	42.52	V	54	-11.48	Avg	1.12	225	Method Used
2440	115.81	V	--	--	Peak	1.13	125	Fundamental of Channel 6
2440	95.81	V	--	--	Avg	1.13	125	@ 3 meters
2479	115.88	V	--	--	Peak	1.16	225	Fundamental of Channel 11
2479	95.88	V	--	--	Avg	1.16	225	@ 3 meters
2495.3	61.02	V	74	-12.98	Peak	1.16	225	**No** Marker Delta Method
2495.3	41.02	V	54	-12.98	Avg	1.16	225	Method Used

FCC 15.247
BEI Industrial Encoders
2.4 GHz RF Transceiver Module
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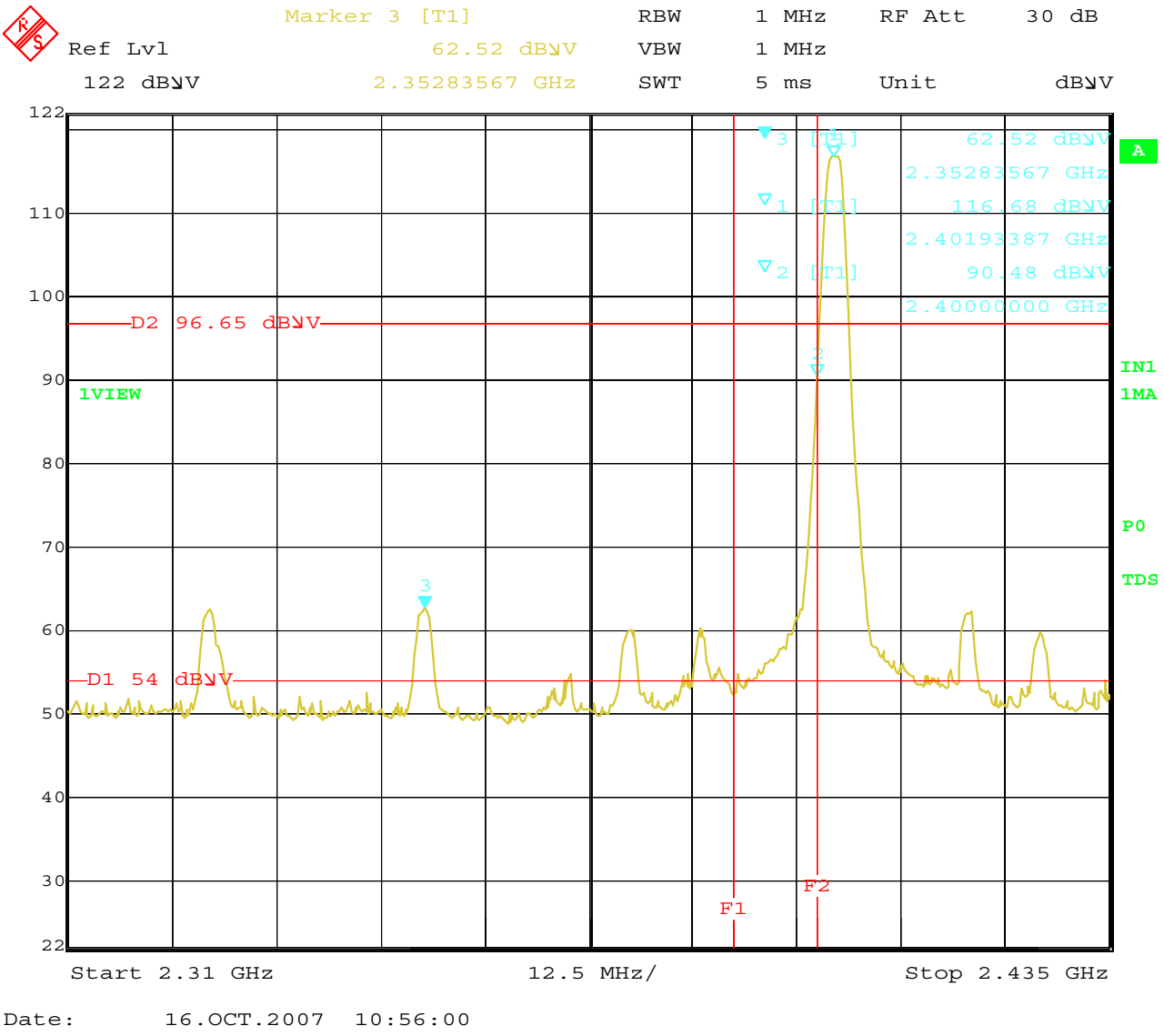
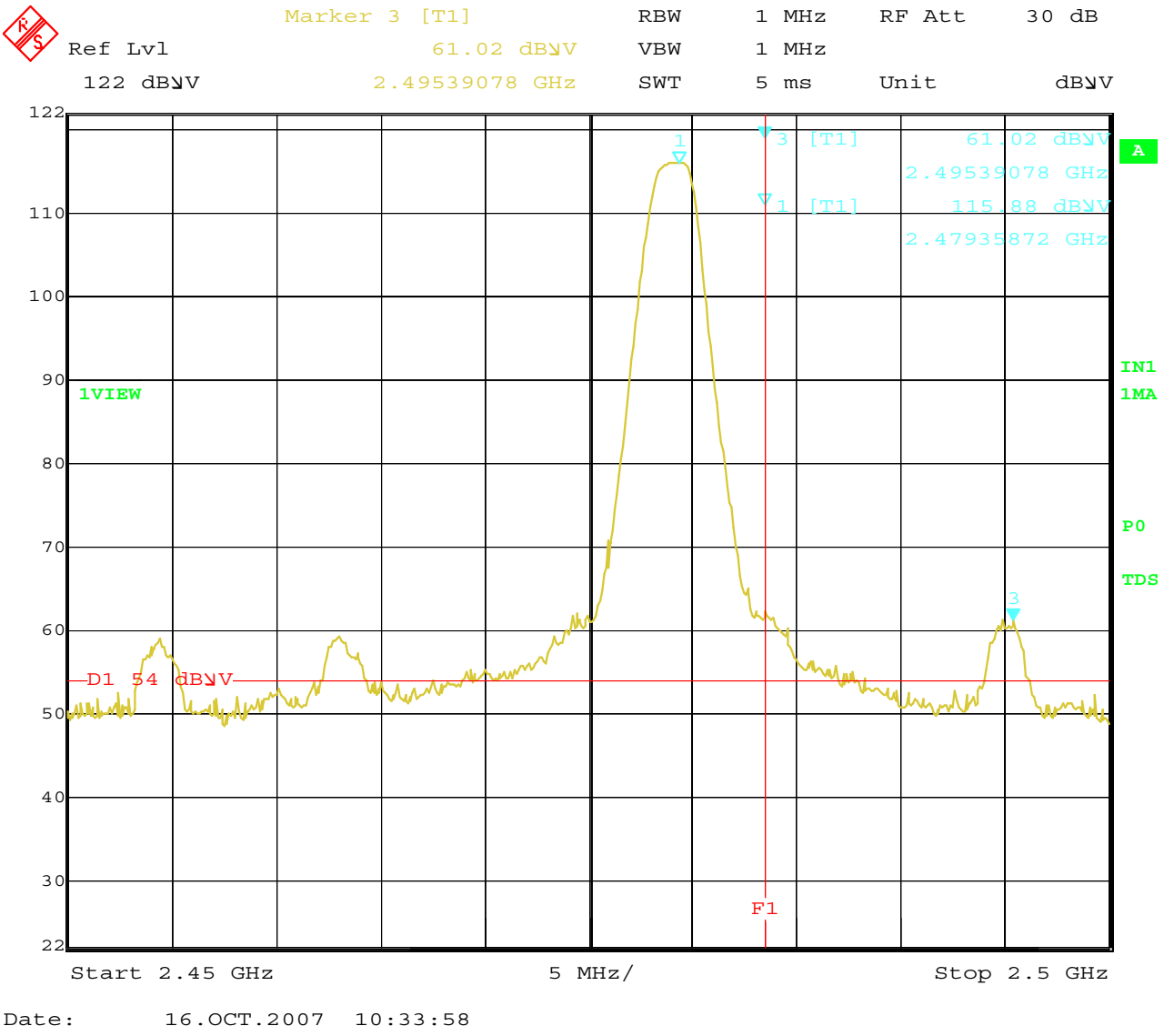
Channel 1 - Y-Axis (Worst Case)
Channel 40 - Y-Axis (Worst Case)
Channel 79 - Y-Axis (Worst Case)
Transmit Mode - Antenna with Short Cable

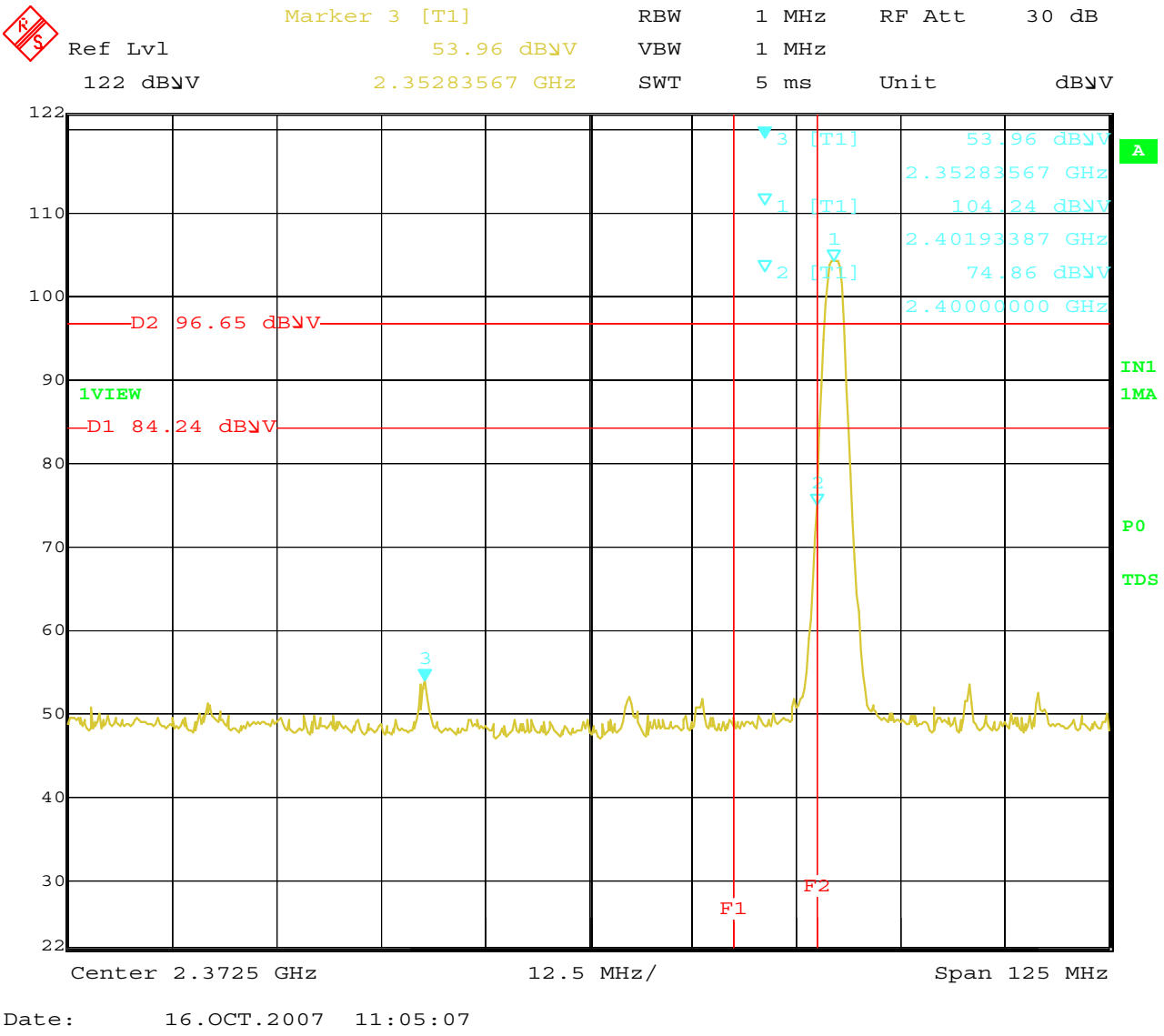
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	104.24	H	--	--	Peak	1	135	Fundamental of Channel 1
2402	84.24	H	--	--	Avg	1	135	@ 3 meters
2352.8	53.96	H	74	-20.04	Peak	1	180	**No** Marker Delta Method
2352.8	33.96	H	54	-20.04	Avg	1	180	Method Used
2440	102.14	H	--	--	Peak	1.12	135	Fundamental of Channel 6
2440	82.14	H	--	--	Avg	1.12	135	@ 3 meters
2479	103.31	H	--	--	Peak	1.07	125	Fundamental of Channel 11
2479	83.31	H	--	--	Avg	1.07	125	@ 3 meters
2495.3	52.55	H	74	-21.45	Peak	1.07	225	**No** Marker Delta Method
2495.3	32.55	H	54	-21.45	Peak	1.07	225	Method Used



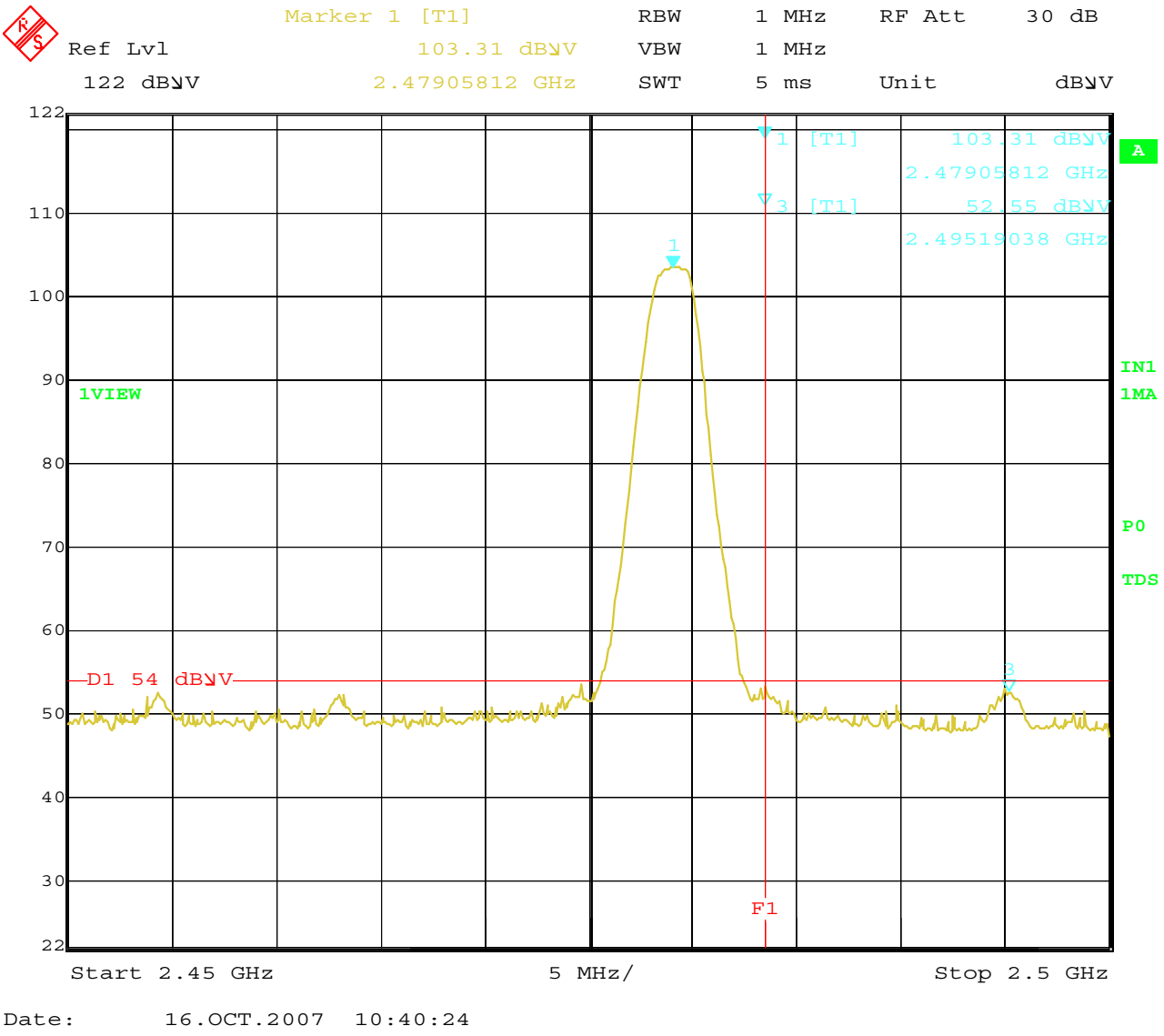
Band Edge Low Channel – Vertical Polarization – Antenna with Short Cable



Band Edge High Channel – Vertical Polarization – Antenna with Short Cable



Band Edge Low Channel – Horizontal Polarization – Antenna with Short Cable



Band Edge High Channel – Horizontal Polarization – Antenna with Short Cable

FCC 15.247
BEI Industrial Encoders
2.4GHz Transceiver Module
Model: 924-41484

Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Channel 1 - Y-Axis (Worst Case)
Channel 40 - Y-Axis (Worst Case)
Channel 79 - Y-Axis (Worst Case)
Transmit Mode - Antenna with Long Cable

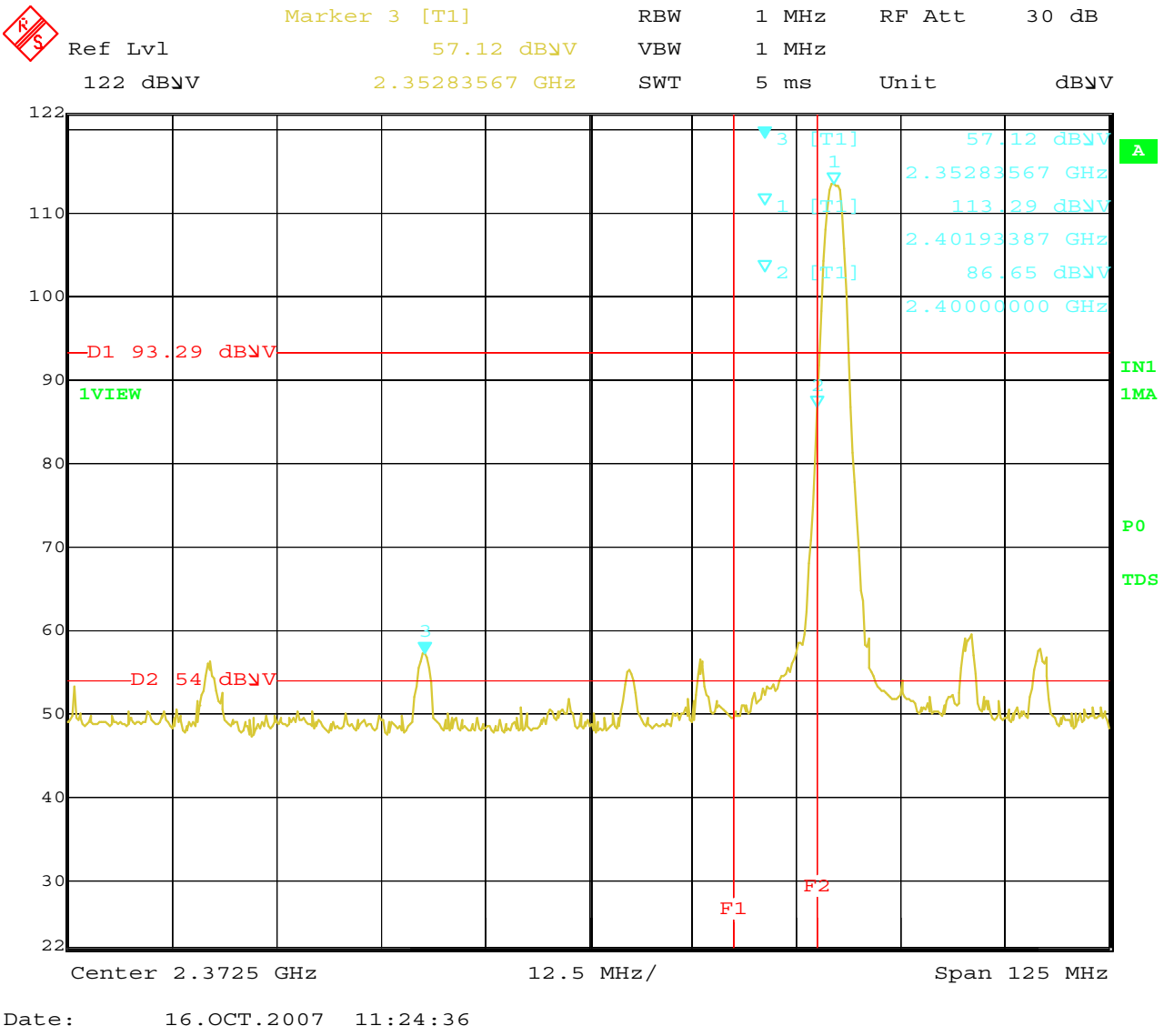
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	113.29	V	--	--	Peak	1.25	150	Fundamental of Channel 1
2402	93.29	V	--	--	Avg	1.25	150	@ 3 meters
2352.8	57.12	V	74	-16.88	Peak	1.25	315	**No** Marker Delta Method
2352.8	37.12	V	54	-16.88	Avg	1.25	315	Method Used
2440	113.65	V	--	--	Peak	1	135	Fundamental of Channel 6
2440	93.65	V	--	--	Avg	1	135	@ 3 meters
2479	115.15	V	--	--	Peak	1.24	135	Fundamental of Channel 11
2479	95.15	V	--	--	Avg	1.24	135	@ 3 meters
2485.5	61.04	V	74	-12.96	Peak	1.24	135	**With** Marker Delta Method
2485.5	41.04	V	54	-12.96	Avg	1.24	135	Method Used

FCC 15.247
BEI Industrial Encoders
2.4GHz Transceiver Module
Model: 924-41484

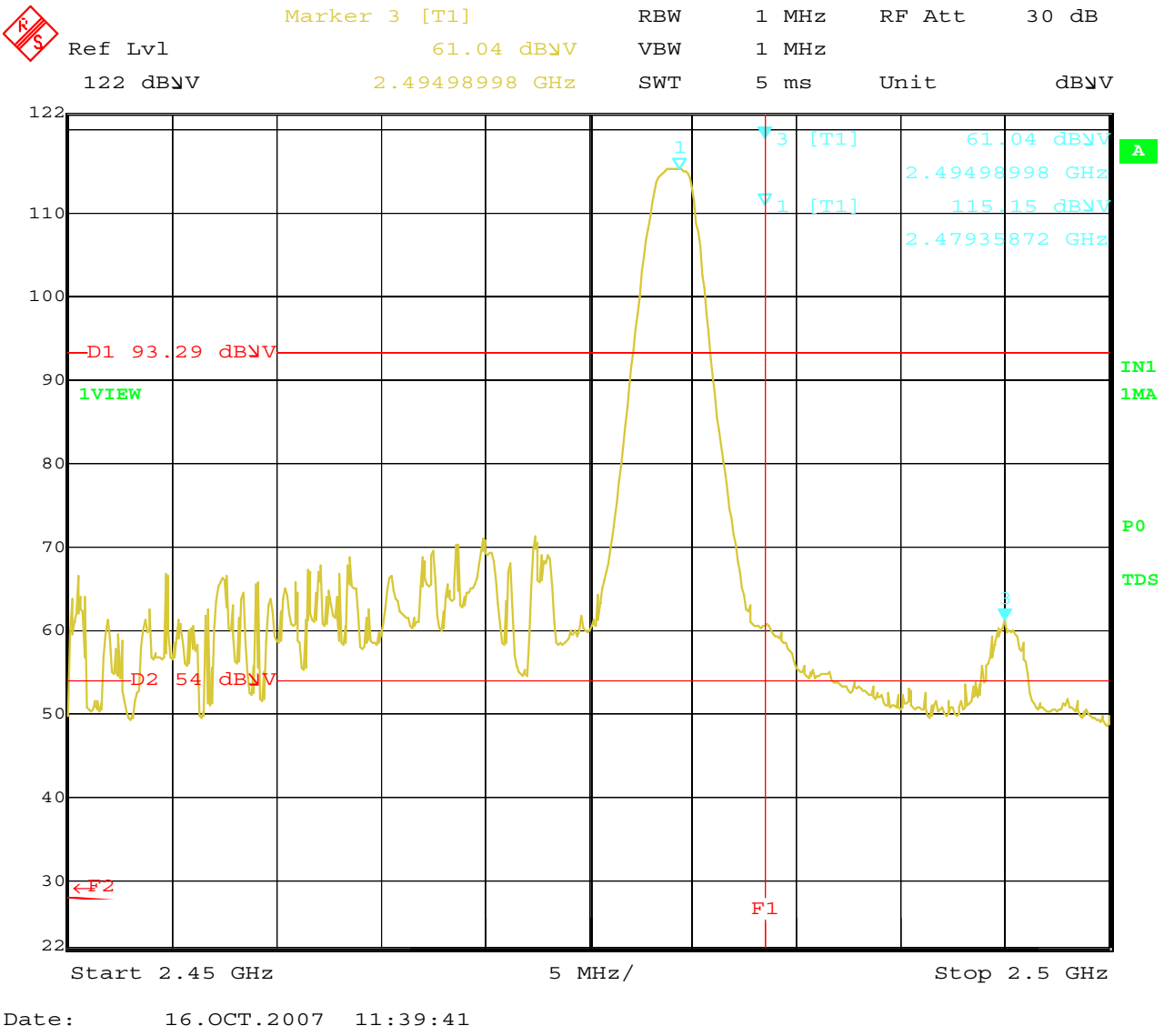
Date: 10/15/07
Lab: B
Tested By: Kyle Fujimoto

Channel 1 - Y-Axis (Worst Case)
Channel 40 - Y-Axis (Worst Case)
Channel 79 - Y-Axis (Worst Case)
Transmit Mode - Antenna with Long Cable

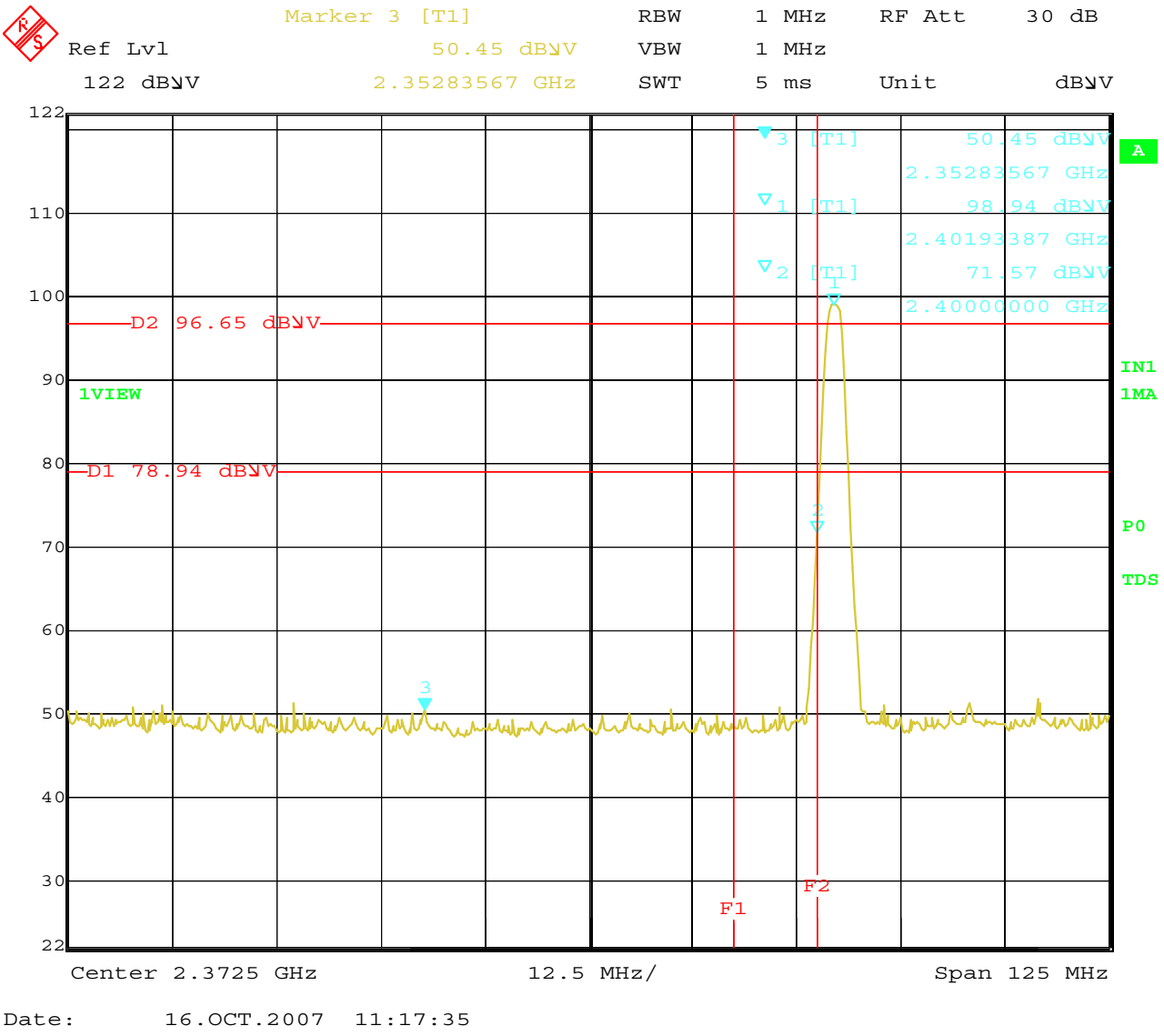
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	98.94	H	--	--	Peak	1.25	315	Fundamental of Channel 1
2402	78.94	H	--	--	Avg	1.25	315	@ 3 meters
2352.8	50.45	H	74	-23.55	Peak	1.25	315	
2352.8	30.45	H	54	-23.55	Avg	1.25	315	
2440	100.92	H	--	--	Peak	1.14	125	Fundamental of Channel 6
2440	80.92	H	--	--	Avg	1.14	125	@ 3 meters
2479	102.73	H	--	--	Peak	1.19	125	Fundamental of Channel 11
2479	82.73	H	--	--	Avg	1.19	125	@ 3 meters
2483.5	51.66	H	74	-22.34	Peak	1.19	125	**No** Marker Delta Method
2483.5	31.66	H	54	-22.34	Peak	1.19	125	Method Used



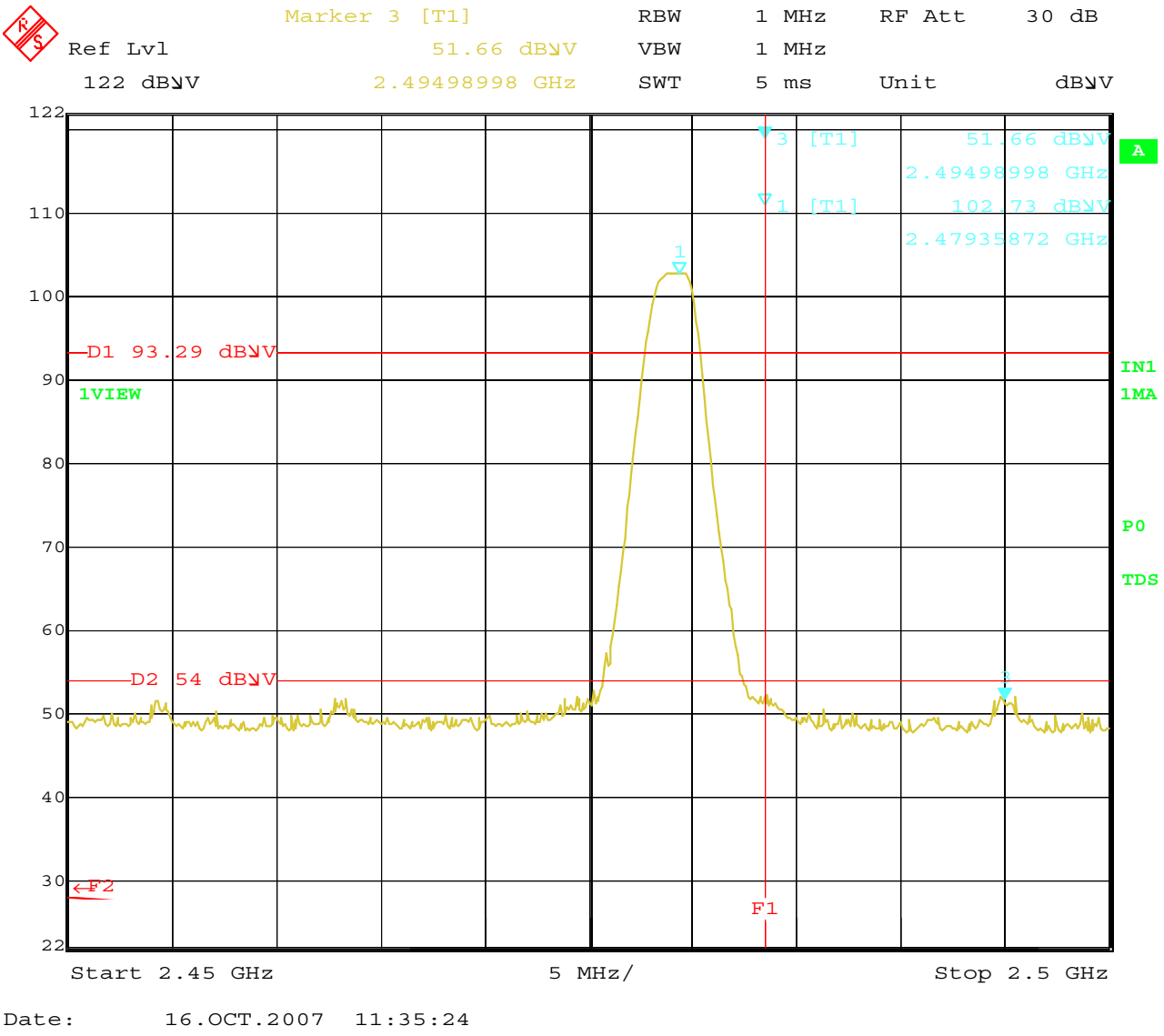
Band Edge Low Channel – Vertical Polarization – Antenna with Long Cable



Band Edge High Channel – Vertical Polarization – Antenna with Long Cable



Band Edge Low Channel – Horizontal Polarization – Antenna with Long Cable



Band Edge High Channel – Horizontal Polarization – Antenna with Long Cable