

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

RADIATED EMISSIONS (FCC SECTION 15.209 AND 15.247)

COMPANY	O'NEIL PRODUCT DEVELOPMENT	DATE	3/4/2004
EUT	BLUETOOTH MODULE	DUTY CYCLE	<10 %
MODEL	BT260146	PEAK TO AVG	20 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	A

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2402.0000	53.9	A	H	1.0	225	X	LOW	31.5	4.6	0.0	0.0	0.0	90.0			
2402.0000	56.2	A	H	2.0	225	Y	LOW	31.5	4.6	0.0	0.0	0.0	92.3			
2402.0000	57.5	A	H	3.5	180	Z	LOW	31.5	4.6	0.0	0.0	0.0	93.6			
2402.0000	59.1	A	V	1.0	180	X	LOW	31.5	4.6	0.0	0.0	0.0	95.2			
2402.0000	58.7	A	V	1.0	180	Y	LOW	31.5	4.6	0.0	0.0	0.0	94.8			
2402.0000	61.3	A	V	2.0	225	Z	LOW	31.5	4.6	0.0	0.0	0.0	97.4			
2441.0000	56.3	A	H	2.0	225	X	MID	31.5	4.6	0.0	0.0	0.0	92.4			
2441.0000	60.3	A	H	3.0	135	Y	MID	31.5	4.6	0.0	0.0	0.0	96.4			
2441.0000	57.5	A	H	2.0	135	Z	MID	31.5	4.6	0.0	0.0	0.0	93.6			
2441.0000	57.0	A	V	1.5	90	X	MID	31.5	4.6	0.0	0.0	0.0	93.1			
2441.0000	61.4	A	V	1.5	90	Y	MID	31.5	4.6	0.0	0.0	0.0	97.5			
2441.0000	63.4	A	V	3.0	270	Z	MID	31.5	4.6	0.0	0.0	0.0	99.5			
2480.0000	51.3	A	H	3.0	90	X	HIGH	31.6	4.7	0.0	0.0	0.0	87.6			
2480.0000	55.5	A	H	2.0	90	Y	HIGH	31.6	4.7	0.0	0.0	0.0	91.8			
2480.0000	59.8	A	H	2.0	135	Z	HIGH	31.6	4.7	0.0	0.0	0.0	96.1			
2480.0000	51.5	A	V	2.0	225	X	HIGH	31.6	4.7	0.0	0.0	0.0	87.8			
2480.0000	58.4	A	V	2.0	90	Y	HIGH	31.6	4.7	0.0	0.0	0.0	94.7			
2480.0000	58.2	A	V	2.5	225	Z	HIGH	31.6	4.7	0.0	0.0	0.0	94.5			

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

PAGE 1 of PAGE 3

RADIATED EMISSIONS (FCC SECTION 15.209 AND 15.247)

COMPANY	O'NEIL PRODUCT DEVELOPMENT	DATE	3/4/2004
EUT	BLUETOOTH MODULE	DUTY CYCLE	<10 %
MODEL	BT260146	PEAK TO AVG	20 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	A

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4804.0000	38.7	18.7 A	H	2.0	90	X	LOW	35.4	6.9	28.3	0.0	0.0	32.7	-21.3	54.0	The Duty Cycle is less
4804.0000	41.9	21.9 A	H	3.0	225	Y	LOW	35.4	6.9	28.3	0.0	0.0	35.9	-18.1	54.0	than 10%, however only
4804.0000	41.1	21.1 A	H	2.0	225	Z	LOW	35.4	6.9	28.3	0.0	0.0	35.1	-18.9	54.0	a maximum of 20 dB
4804.0000	39.0	19.0 A	V	2.0	225	X	LOW	35.4	6.9	28.3	0.0	0.0	33.0	-21.0	54.0	below the peak may be
4804.0000	38.8	18.8 A	V	2.0	225	Y	LOW	35.4	6.9	28.3	0.0	0.0	32.8	-21.2	54.0	used for the Average
4804.0000	39.5	19.5 A	V	2.0	225	Z	LOW	35.4	6.9	28.3	0.0	0.0	33.5	-20.5	54.0	reading.
4882.0000	34.6	14.6 A	H	1.5	0	X	MID	35.4	7.0	28.3	0.0	0.0	28.7	-25.3	54.0	The Average Readings
4882.0000	33.6	16.6 A	H	2.0	180	Y	MID	35.4	7.0	28.3	0.0	0.0	30.7	-23.3	54.0	will reflect this (being 20 dB
4882.0000	33.1	13.1 A	H	2.0	224	Z	MID	35.4	7.0	28.3	0.0	0.0	27.2	-26.8	54.0	below the peak)
4882.0000	33.2	13.2 A	V	2.0	90	X	MID	35.4	7.0	28.3	0.0	0.0	27.3	-26.7	54.0	
4882.0000	34.0	14.0 A	V	2.0	225	Y	MID	35.4	7.0	28.3	0.0	0.0	28.1	-25.9	54.0	
4882.0000	34.0	14.0 A	V	2.5	270	Z	MID	35.4	7.0	28.3	0.0	0.0	28.1	-25.9	54.0	
4960.0000	36.2	16.2 A	H	2.5	180	X	HIGH	35.5	7.1	28.3	0.0	0.0	30.5	-23.5	54.0	
4960.0000	34.8	14.9 A	H	2.0	0	Y	HIGH	35.5	7.1	28.3	0.0	0.0	29.2	-24.8	54.0	
4960.0000	34.3	14.3 A	H	2.0	0	Z	HIGH	35.5	7.1	28.3	0.0	0.0	28.6	-25.4	54.0	
4960.0000	35.5	15.5 A	V	2.0	150	X	HIGH	35.5	7.1	28.3	0.0	0.0	29.8	-24.2	54.0	
4960.0000	35.7	15.7 A	V	2.0	0	Y	HIGH	35.5	7.1	28.3	0.0	0.0	30.0	-24.0	54.0	
4960.0000	38.0	18.0 A	V	2.0	225	Z	HIGH	35.5	7.1	28.3	0.0	0.0	32.3	-21.7	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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RADIATED EMISSIONS (FCC SECTION 15.209 AND 15.247)

COMPANY	O'NEIL PRODUCT DEVELOPMENT	DATE	3/4/2004
EUT	BLUETOOTH MODULE	DUTY CYCLE	<10 %
MODEL	BT260146	PEAK TO AVG	20 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	A

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
7206.0000	37.8	17.8 A	H	1.0	90	X	LOW	39.6	7.7	29.7	0.0	0.0	35.4	-18.6	54.0	The Duty Cycle is less
7206.0000	38.1	18.1 A	H	1.0	225	Y	LOW	39.6	7.7	29.7	0.0	0.0	35.7	-18.3	54.0	than 10%, however only
7206.0000	38.3	18.3 A	H	2.0	90	Z	LOW	39.6	7.7	29.7	0.0	0.0	35.9	-18.1	54.0	a maximum of 20 dB
7206.0000	38.9	18.9 A	V	2.0	90	X	LOW	39.6	7.7	29.7	0.0	0.0	36.5	-17.5	54.0	below the peak may be
7206.0000	39.2	19.2 A	V	2.0	225	Y	LOW	39.6	7.7	29.7	0.0	0.0	36.8	-17.2	54.0	used for the Average
7206.0000	39.5	19.5 A	V	2.0	225	Z	LOW	39.6	7.7	29.7	0.0	0.0	37.1	-16.9	54.0	reading.
7323.0000	32.8	12.8 A	H	2.0	225	X	MED.	40.1	8.2	29.7	0.0	0.0	31.4	-22.6	54.0	The Average Readings
7323.0000	38.1	18.1 A	H	2.0	225	Y	MED.	40.1	8.2	29.7	0.0	0.0	36.7	-17.3	54.0	will reflect this (being 20 dB
7323.0000	34.3	14.3 A	H	2.0	225	Z	MED.	40.1	8.2	29.7	0.0	0.0	32.9	-21.1	54.0	below the peak)
7323.0000	38.5	18.5 A	V	2.0	0	X	MED.	40.1	8.2	29.7	0.0	0.0	37.1	-16.9	54.0	
7323.0000	38.9	18.9 A	V	1.0	225	Y	MED.	40.1	8.2	29.7	0.0	0.0	37.5	-16.5	54.0	No Harmonics
7323.0000	34.6	14.6 A	V	2.0	225	Z	MED.	40.1	8.2	29.7	0.0	0.0	33.2	-20.8	54.0	nor Emissions
7440.0000	39.1	19.1 A	H	1.5	180	X	HIGH	40.6	8.9	29.8	0.0	0.0	38.8	-15.2	54.0	Found beyond the 3rd
7440.0000	39.2	19.2 A	H	1.0	180	Y	HIGH	40.6	8.9	29.8	0.0	0.0	38.9	-15.1	54.0	Harmonic
7440.0000	39.3	19.3 A	H	1.0	0	Z	HIGH	40.6	8.9	29.8	0.0	0.0	39.0	-15.0	54.0	
7440.0000	38.7	18.7 A	V	1.0	90	X	HIGH	40.6	8.9	29.8	0.0	0.0	38.4	-15.6	54.0	
7440.0000	38.8	18.8 A	V	1.0	180	Y	HIGH	40.6	8.9	29.8	0.0	0.0	38.5	-15.5	54.0	
7440.0000	38.6	18.6 A	V	1.0	200	Z	HIGH	40.6	8.9	29.8	0.0	0.0	38.3	-15.7	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

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Test Location : Compatible Electronics
 Customer : O' Neil Product Development
 Manufacturer : O' Neil Product Development
 Eut name : Bluetooth Module
 Model : BT260146
 Serial # : N/A
 Specification : FCC Class B
 Distance correction factor ($20 * \log(\text{test}/\text{spec})$) : 0.00
 Test Mode : Spurious Emissions 10 kHz - 25000 MHz
 Vertical and Horizontal Polarization
 Temperature 67 Degrees F., Relative Humidity 74%
 Tested By: Kyle Fujimoto

Page : 1/2
 Date : 3/01/2004
 Time : 9:12:39
 Lab : A
 Test Distance : 3.0 Meters

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1V	39.180	46.80	1.09	10.23	33.60	24.52	40.00	-15.48
2V	52.640	46.50	1.23	10.82	33.60	24.95	40.00	-15.05
3V	65.020	44.90	1.35	8.45	33.55	21.16	40.00	-18.84
4V	77.793	45.50	1.48	6.37	33.50	19.85	40.00	-20.15
5V	104.040	43.30	1.64	11.22	33.60	22.55	43.50	-20.95
6V	156.230	37.90	2.13	11.28	33.43	17.88	43.50	-25.62
7V	207.970	34.80	2.53	16.65	33.37	20.62	43.50	-22.88
8V	260.040	35.60	2.74	16.66	33.24	21.76	46.00	-24.24
9V	286.083	37.30	2.85	20.26	33.30	27.10	46.00	-18.90
10V	312.263	35.90	2.98	13.11	33.30	18.69	46.00	-27.31
11V	389.963	34.50	3.44	14.27	33.14	19.07	46.00	-26.93
12V	416.203	35.10	3.57	14.93	33.07	20.53	46.00	-25.47
13V	442.153	35.00	3.67	15.75	33.01	21.40	46.00	-24.60
14V	468.003	32.60	3.77	16.51	32.96	19.92	46.00	-26.08
15V	494.253	34.80	3.88	17.24	32.91	23.01	46.00	-22.99
16V	520.160	42.30	3.98	17.73	32.94	31.07	46.00	-14.93
17V	546.210	31.40	4.09	18.13	32.99	20.62	46.00	-25.38
18V	572.013	40.20	4.15	18.51	32.91	29.94	46.00	-16.06
19V	598.191	44.20	4.20	18.88	32.81	34.46	46.00	-11.54
20V	624.031	33.20	4.40	19.08	32.70	23.97	46.00	-22.03
21V	650.191	31.60	4.60	19.26	32.60	22.86	46.00	-23.14
22V	676.255	42.60	4.60	19.44	32.65	33.99	46.00	-12.01
23V	702.241	33.30	4.61	19.65	32.69	24.88	46.00	-21.12
24V	728.201	34.80	4.71	20.25	32.53	27.24	46.00	-18.76
25H	39.191	34.10	1.09	10.23	33.60	11.82	40.00	-28.18
26H	52.651	39.30	1.23	10.82	33.60	17.75	40.00	-22.25
27H	65.031	38.50	1.35	8.45	33.55	14.76	40.00	-25.24
28H	77.804	46.00	1.48	6.37	33.50	20.35	40.00	-19.65
29H	104.051	45.50	1.64	11.22	33.60	24.75	43.50	-18.75
30H	156.241	37.50	2.13	11.28	33.43	17.48	43.50	-26.02
31H	207.981	33.10	2.53	16.65	33.37	18.92	43.50	-24.58
32H	260.051	36.60	2.74	16.66	33.24	22.76	46.00	-23.24
33H	286.122	43.30	2.85	20.26	33.30	33.11	46.00	-12.89
34H	312.302	35.00	2.98	13.11	33.30	17.79	46.00	-28.21
35H	390.002	33.50	3.44	14.27	33.14	18.07	46.00	-27.93

Test Location : Compatible Electronics
Customer : O' Neil Product Development
Manufacturer : O' Neil Product Development
Eut name : Bluetooth Module
Model : BT260146
Serial # : N/A
Specification : FCC Class B
Distance correction factor ($20 * \log(\text{test}/\text{spec})$) : 0.00
Test Mode : Spurious Emissions 10 kHz - 25000 MHz
Vertical and Horizontal Polarization
Temperature 67 Degrees F., Relative Humidity 74%
Tested By: Kyle Fujimoto

Page : 2/2
Date : 3/01/2004
Time : 9:12:39
Lab : A
Test Distance : 3.0 Meters

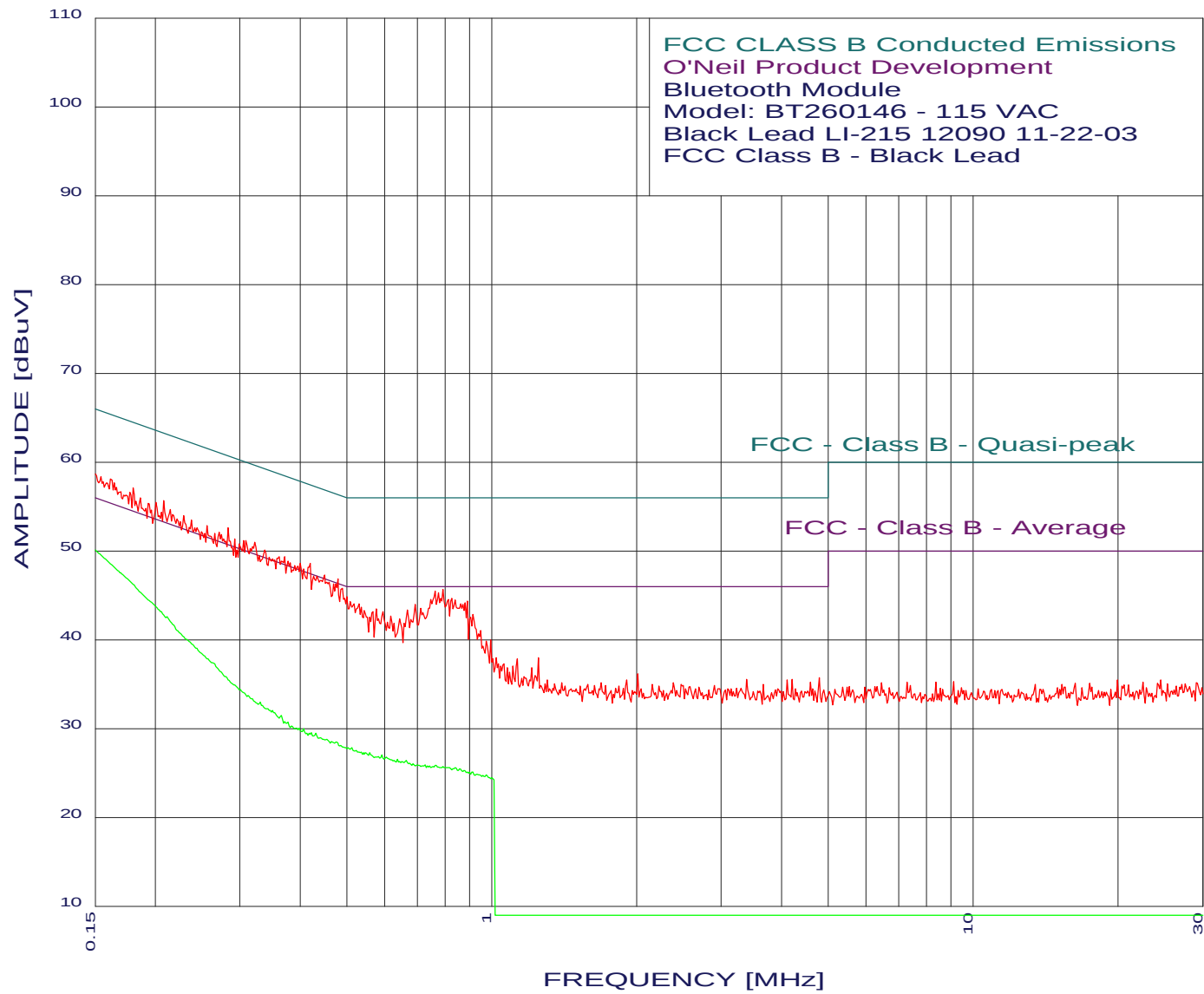
Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
36H	416.242	33.20	3.57	14.94	33.07	18.64	46.00	-27.36
37H	442.192	32.70	3.67	15.75	33.01	19.10	46.00	-26.90
38H	468.042	33.10	3.77	16.51	32.96	20.42	46.00	-25.58
39H	494.292	35.00	3.88	17.25	32.91	23.21	46.00	-22.79
40H	520.090	33.50	3.98	17.72	32.94	22.27	46.00	-23.73
41H	546.140	35.20	4.09	18.13	32.99	24.42	46.00	-21.58
42H	571.932	42.50	4.14	18.51	32.91	32.24	46.00	-13.76
43H	598.190	44.30	4.20	18.88	32.81	34.56	46.00	-11.44
44H	624.040	41.70	4.40	19.08	32.70	32.47	46.00	-13.53
45H	650.190	32.10	4.60	19.26	32.60	23.36	46.00	-22.64
46H	676.240	42.00	4.60	19.44	32.65	33.39	46.00	-12.61
47H	702.240	34.30	4.61	19.65	32.69	25.88	46.00	-20.12
48H	728.200	33.90	4.71	20.25	32.53	26.34	46.00	-19.66

CONDUCTED EMISSIONS

DATA SHEETS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average

3/01/2004 10:59:36



COMPATIBLE
ELECTRONICS



**COMPATIBLE
ELECTRONICS**

3/01/2004 10:59:36

O'Neil Product Development
Bluetooth Module
Model: BT260146 - 115 VAC
FCC Class B - Black Lead
TEST ENGINEER : Kyle Fujimoto

42 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.162	58.07	55.38	2.69*
2	0.150	58.67	56.00	2.67*
3	0.180	57.07	54.50	2.57*
4	0.208	55.67	53.27	2.40*
5	0.177	56.57	54.63	1.94*
6	0.201	55.47	53.58	1.89*
7	0.283	52.57	50.72	1.85*
8	0.186	55.97	54.19	1.77*
9	0.215	54.67	53.00	1.66*
10	0.229	53.97	52.48	1.49*
11	0.194	55.37	53.88	1.48*
12	0.256	52.87	51.55	1.31*
13	0.322	50.96	49.66	1.30*
14	0.238	53.47	52.17	1.30*
15	0.309	51.17	50.01	1.15*
16	0.419	48.56	47.46	1.10*
17	0.305	51.17	50.10	1.07*
18	0.272	52.07	51.07	1.00*
19	0.293	51.37	50.45	0.91*
20	0.338	50.06	49.26	0.80*
21	0.266	51.97	51.24	0.72*
22	0.362	49.36	48.69	0.67*
23	0.377	48.86	48.34	0.53*
24	0.479	46.86	46.36	0.50*
25	0.449	47.26	46.89	0.37*
26	0.406	47.96	47.72	0.24*
27	0.792	45.66	46.00	-0.34*
28	0.489	45.76	46.18	-0.42*
29	0.763	45.46	46.00	-0.54*
30	0.775	45.26	46.00	-0.74*
31	0.826	44.66	46.00	-1.34*
32	0.890	44.36	46.00	-1.64*
33	0.694	43.96	46.00	-2.04*
34	0.713	43.56	46.00	-2.44*
35	0.577	43.46	46.00	-2.54*
36	0.669	43.36	46.00	-2.64*
37	0.567	43.16	46.00	-2.84*
38	0.595	43.16	46.00	-2.84*
39	0.914	42.86	46.00	-3.14*
40	0.618	42.66	46.00	-3.34*
41	0.904	42.56	46.00	-3.44*
42	0.644	42.36	46.00	-3.64*

* Please See the Average Readings on the Next Page and on the Plot



**COMPATIBLE
ELECTRONICS**

3/01/2004 10:59:36

O'Neil Product Development
Bluetooth Module
Model: BT260146 - 115 VAC
FCC Class B - Black Lead
TEST ENGINEER : Kyle Fujimoto

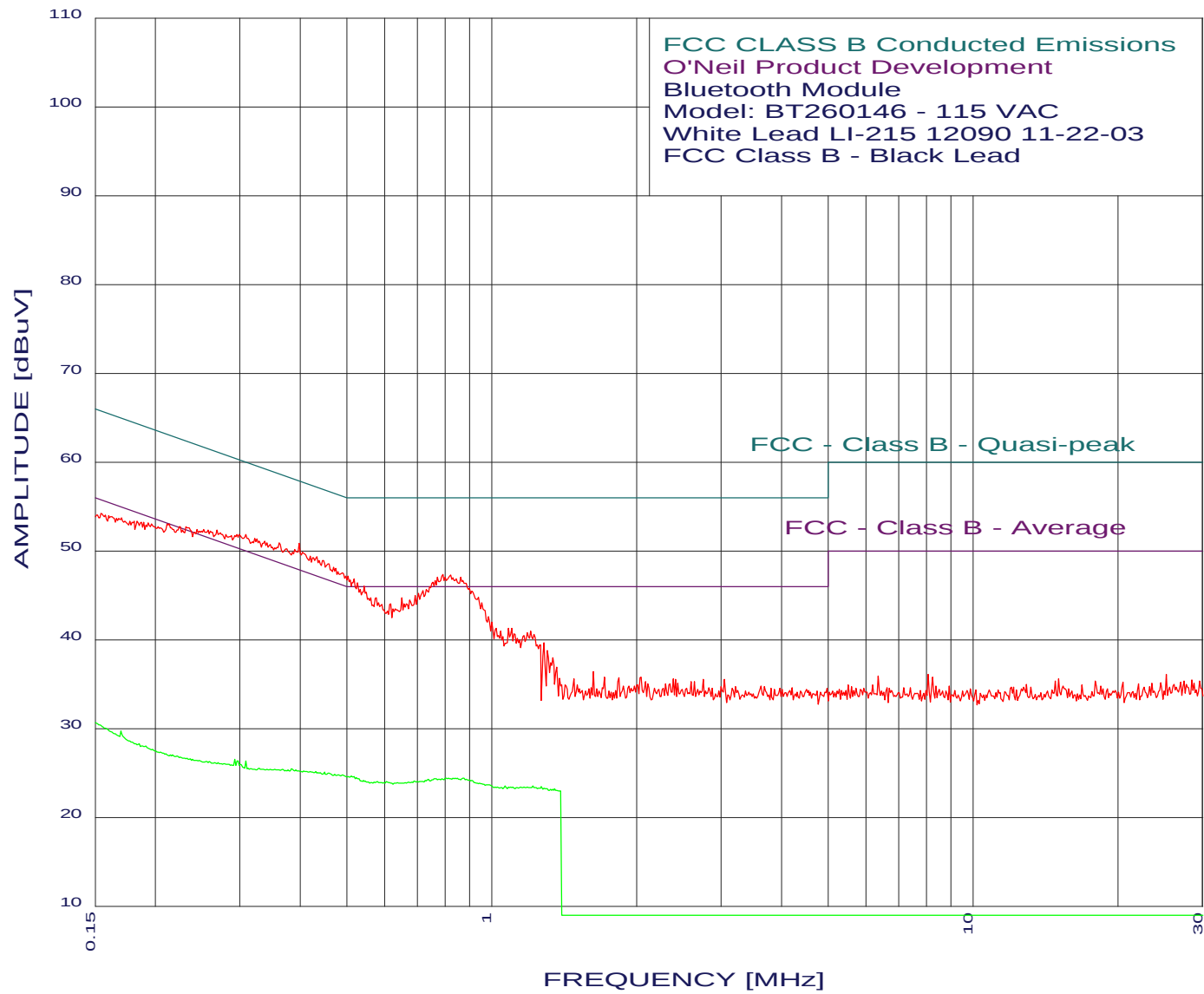
40 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 0.10 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.150	50.11	56.00	-5.89
2	0.212	42.61	53.14	-10.53
3	0.331	32.94	49.44	-16.49
4	0.350	32.02	48.95	-16.93
5	0.365	31.47	48.61	-17.13
6	0.377	30.69	48.34	-17.64
7	0.371	30.75	48.47	-17.72
8	0.406	29.98	47.72	-17.74
9	0.431	29.47	47.24	-17.77
10	0.398	30.05	47.90	-17.85
11	0.421	29.51	47.42	-17.91
12	0.383	30.29	48.21	-17.91
13	0.474	28.48	46.45	-17.97
14	0.417	29.47	47.50	-18.03
15	0.464	28.52	46.62	-18.10
16	0.502	27.87	46.00	-18.13
17	0.513	27.83	46.00	-18.17
18	0.558	27.31	46.00	-18.69
19	0.541	27.26	46.00	-18.74
20	0.547	27.26	46.00	-18.74
21	0.592	27.02	46.00	-18.98
22	0.605	26.77	46.00	-19.23
23	0.637	26.56	46.00	-19.44
24	0.665	26.40	46.00	-19.60
25	0.651	26.30	46.00	-19.70
26	0.686	26.02	46.00	-19.98
27	0.701	25.91	46.00	-20.09
28	0.728	25.91	46.00	-20.09
29	0.763	25.85	46.00	-20.15
30	0.735	25.80	46.00	-20.20
31	0.743	25.80	46.00	-20.20
32	0.792	25.74	46.00	-20.26
33	0.839	25.57	46.00	-20.43
34	0.858	25.45	46.00	-20.55
35	0.876	25.27	46.00	-20.73
36	0.899	25.08	46.00	-20.92
37	0.909	25.08	46.00	-20.92
38	0.929	24.83	46.00	-21.17
39	0.974	24.77	46.00	-21.23
40	0.958	24.70	46.00	-21.30

EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average

3/01/2004 11:24:22



COMPATIBLE
ELECTRONICS



**COMPATIBLE
ELECTRONICS**

3/01/2004 11:24:22

O'Neil Product Development
Bluetooth Module
Model: BT260146 - 115 VAC
FCC Class B - Black Lead
TEST ENGINEER : Kyle Fujimoto

42 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.398	50.83	47.90	2.93*
2	0.792	47.35	46.00	1.35*
3	0.544	46.04	46.00	0.04*
4	0.651	44.74	46.00	-1.26*
5	0.577	44.74	46.00	-1.26*
6	0.618	44.04	46.00	-1.96*
7	0.150	53.85	56.00	-2.15*
8	1.000	41.97	46.00	-4.03*
9	1.100	41.27	46.00	-4.73*
10	1.021	41.27	46.00	-4.73*
11	1.204	40.97	46.00	-5.03*
12	1.283	39.68	46.00	-6.32*
13	1.304	38.78	46.00	-7.22*
14	1.338	37.98	46.00	-8.02*
15	1.367	36.88	46.00	-9.12*
16	1.629	36.39	46.00	-9.61*
17	2.044	35.81	46.00	-10.19*
18	1.717	35.80	46.00	-10.20*
19	1.840	35.70	46.00	-10.30*
20	1.382	35.68	46.00	-10.32*
21	2.384	35.60	46.00	-10.40*
22	1.480	35.59	46.00	-10.41*
23	2.410	35.50	46.00	-10.50*
24	2.751	35.50	46.00	-10.50*
25	3.043	35.50	46.00	-10.50*
26	2.089	35.31	46.00	-10.69*
27	2.596	35.30	46.00	-10.70*
28	2.637	35.30	46.00	-10.70*
29	2.436	35.10	46.00	-10.90*
30	2.111	35.01	46.00	-10.99*
31	2.298	35.00	46.00	-11.00*
32	2.002	34.91	46.00	-11.09*
33	1.504	34.89	46.00	-11.11*
34	1.419	34.88	46.00	-11.12*
35	1.879	34.81	46.00	-11.19*
36	3.624	34.80	46.00	-11.20*
37	3.209	34.70	46.00	-11.30*
38	4.204	34.60	46.00	-11.40*
39	3.158	34.50	46.00	-11.50*
40	3.800	34.50	46.00	-11.50*
41	4.980	34.50	46.00	-11.50*
42	1.594	34.49	46.00	-11.51*

* Please See the Average Readings on the Next Page and on the Plot



**COMPATIBLE
ELECTRONICS**

3/01/2004 11:24:22

O'Neil Product Development
Bluetooth Module
Model: BT260146 - 115 VAC
FCC Class B - Black Lead
TEST ENGINEER : Kyle Fujimoto

41 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 0.10 dB, Curve : Average

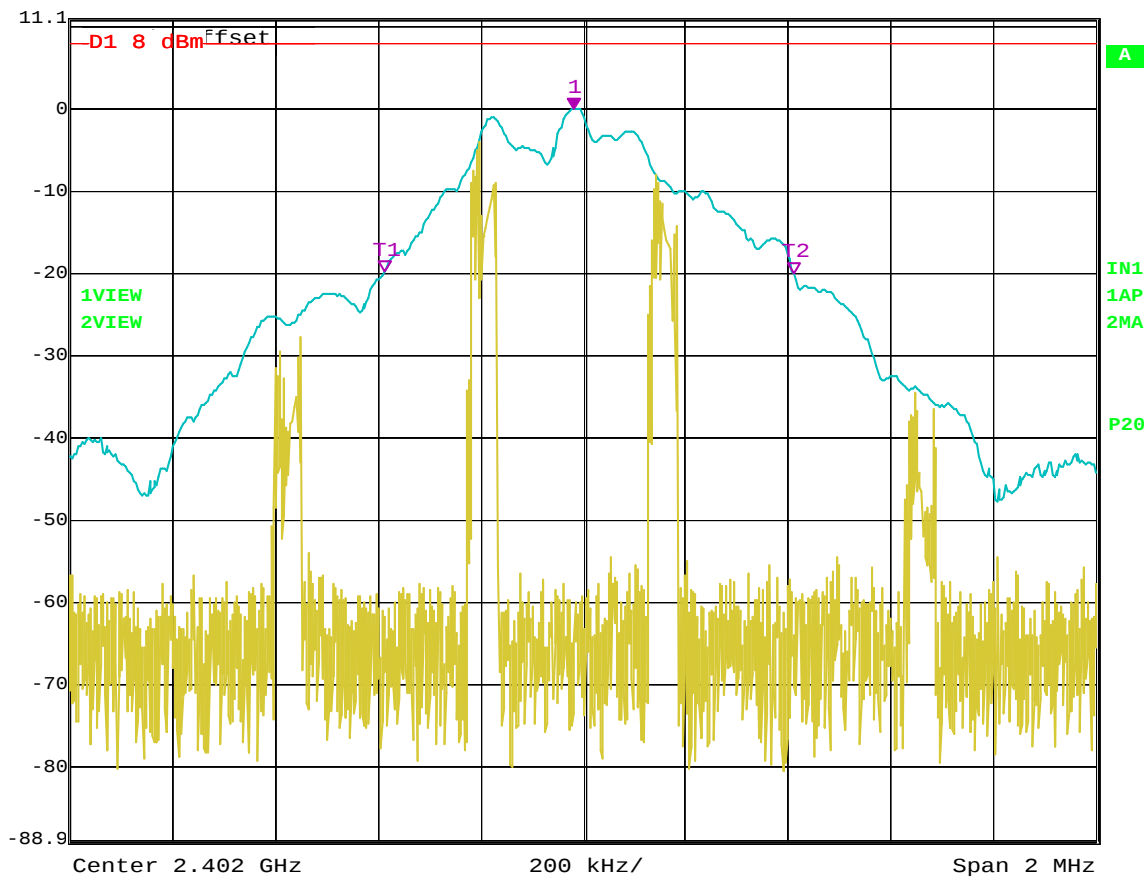
Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.510	24.64	46.00	-21.36
2	0.489	24.76	46.18	-21.42
3	0.524	24.44	46.00	-21.56
4	0.876	24.41	46.00	-21.59
5	0.849	24.41	46.00	-21.59
6	0.814	24.40	46.00	-21.60
7	0.471	24.83	46.49	-21.66
8	0.788	24.33	46.00	-21.67
9	0.767	24.33	46.00	-21.67
10	0.739	24.26	46.00	-21.74
11	0.459	24.95	46.71	-21.76
12	0.449	25.08	46.89	-21.81
13	0.541	24.18	46.00	-21.82
14	0.690	24.11	46.00	-21.89
15	0.605	24.05	46.00	-21.95
16	0.580	24.05	46.00	-21.95
17	0.431	25.14	47.24	-22.10
18	1.217	23.52	46.00	-22.48
19	1.066	23.51	46.00	-22.49
20	0.406	25.20	47.72	-22.53
21	1.269	23.44	46.00	-22.56
22	1.106	23.43	46.00	-22.57
23	1.283	23.29	46.00	-22.71
24	0.391	25.32	48.03	-22.72
25	0.383	25.49	48.21	-22.72
26	1.352	23.22	46.00	-22.78
27	0.377	25.31	48.34	-23.02
28	0.367	25.43	48.56	-23.13
29	0.354	25.43	48.87	-23.43
30	0.309	26.32	50.01	-23.69
31	0.293	26.53	50.45	-23.92
32	0.329	25.54	49.48	-23.94
33	0.297	26.37	50.32	-23.95
34	0.300	25.99	50.23	-24.24
35	0.279	26.05	50.85	-24.80
36	0.270	26.16	51.11	-24.95
37	0.259	26.26	51.47	-25.21
38	0.170	29.74	54.98	-25.24
39	0.150	30.68	56.00	-25.32
40	0.247	26.42	51.86	-25.44
41	0.239	26.53	52.12	-25.60

-20 dB BANDWIDTH

DATA SHEETS



Ref Lvl 11.1 dBm
Marker 1 [T2 ndB] 20.00 dB
BW 797.59519038 kHz
RBW 50 kHz
VBW 50 kHz
RF Att 40 dB
SWT 5 ms
Unit dBm

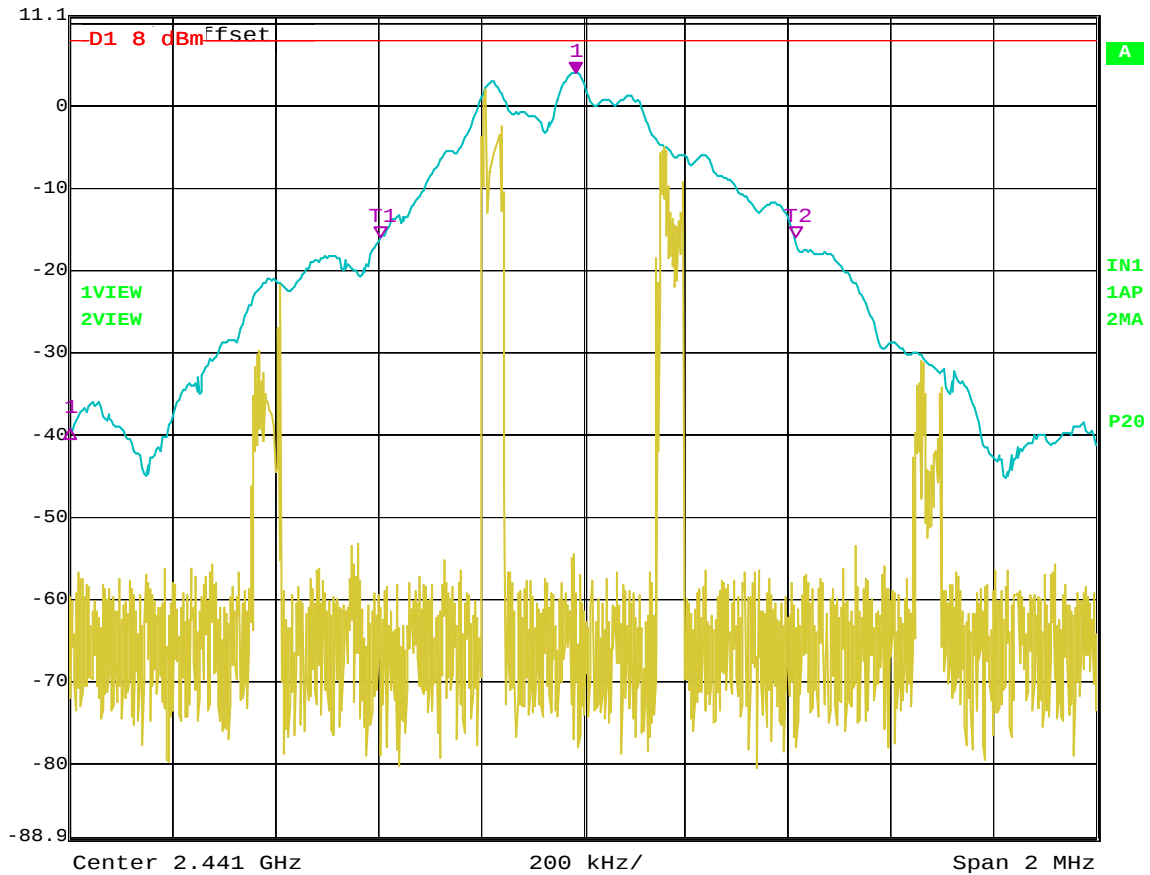


Date: 3.MAR.2004 00:45:44

-20 dB Bandwidth - Low Channel



Ref Lvl	Marker 1 [T2 ndB]	RBW	50 kHz	RF Att	40 dB
11.1 dBm	ndB 20.00 dB	VBW	50 kHz		
	BW 809.61923848 kHz	SWT	5 ms	Unit	dBm

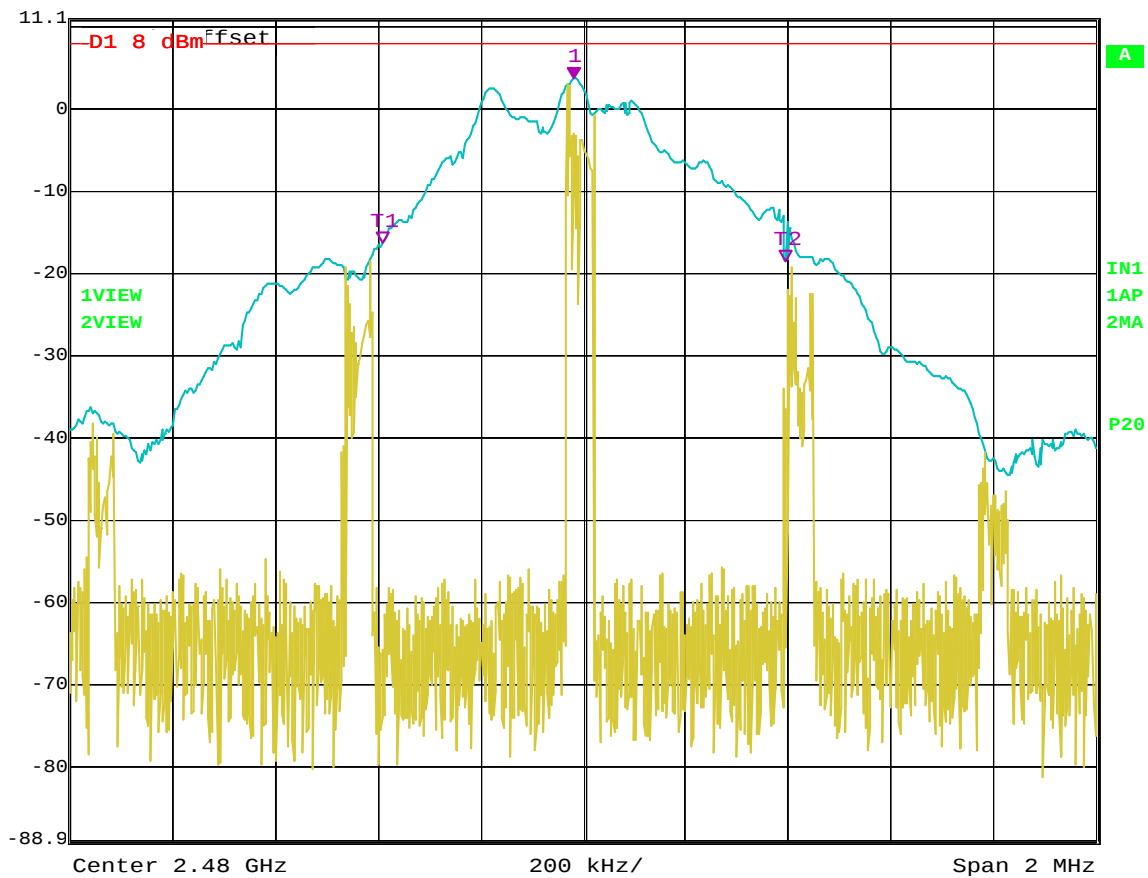


Date: 3.MAR.2004 00:48:46

-20 dB Bandwidth – Middle Channel



Ref Lvl 11.1 dBm
Marker 1 [T2 ndB] 20.00 dB
BW 785.57114228 kHz
RBW 50 kHz
VBW 50 kHz
RF Att 40 dB
SWT 5 ms
Unit dBm



Date: 3.MAR.2004 00:50:17

-20 dB Bandwidth – High Channel

PEAK POWER OUTPUT

DATA SHEETS

PEAK OUTPUT POWER

O' NEIL PRODUCT DEVELOPMENT

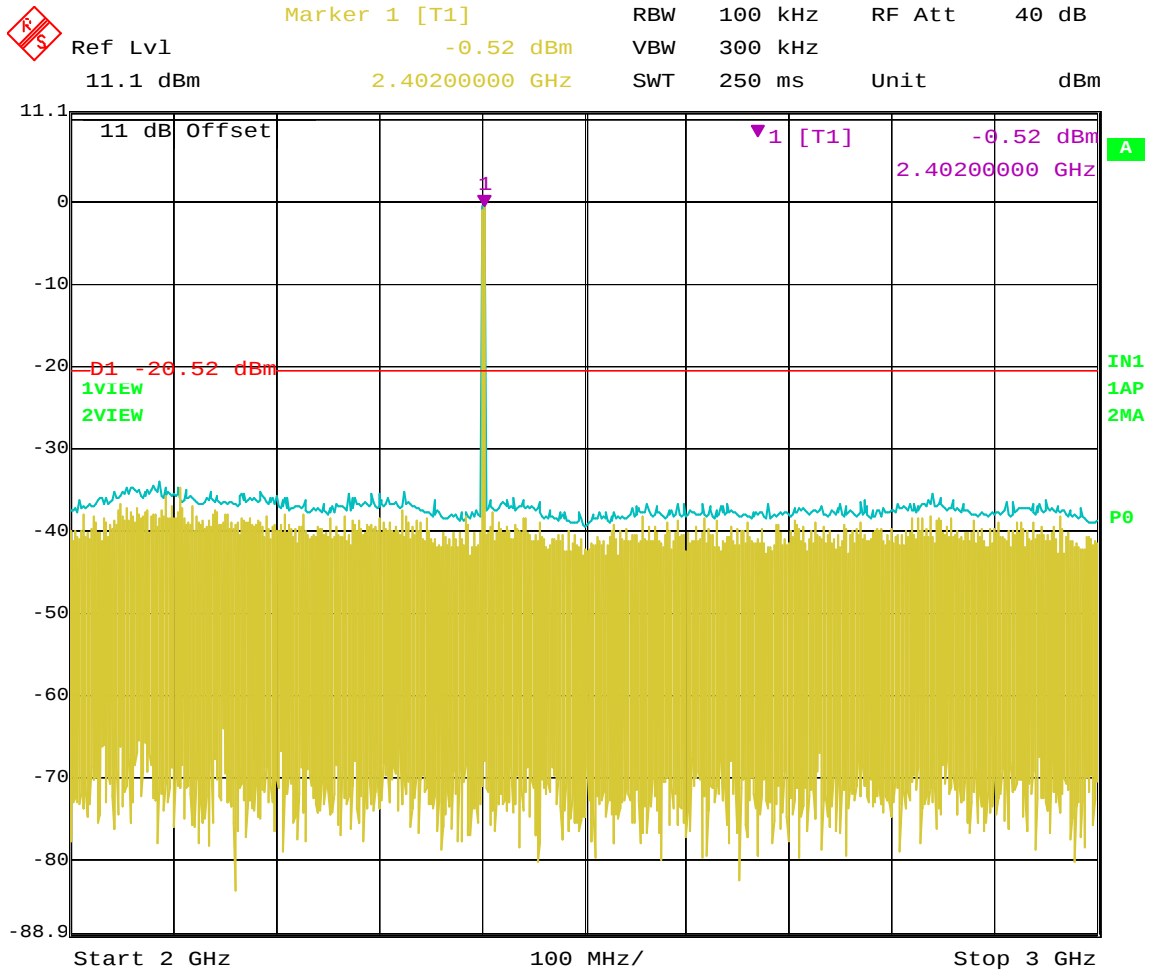
BLUETOOTH MODULE

MODEL: BT260146

CHANNEL	PEAK POWER OUTPUT (dBm)
LOW (2402 MHz)	1.7 dBm
MIDDLE (2441 MHz)	3.0 dBm
HIGH (2480 MHz)	1.5 dBm

RF CONDUCTED ANTENNA TEST

DATA SHEETS

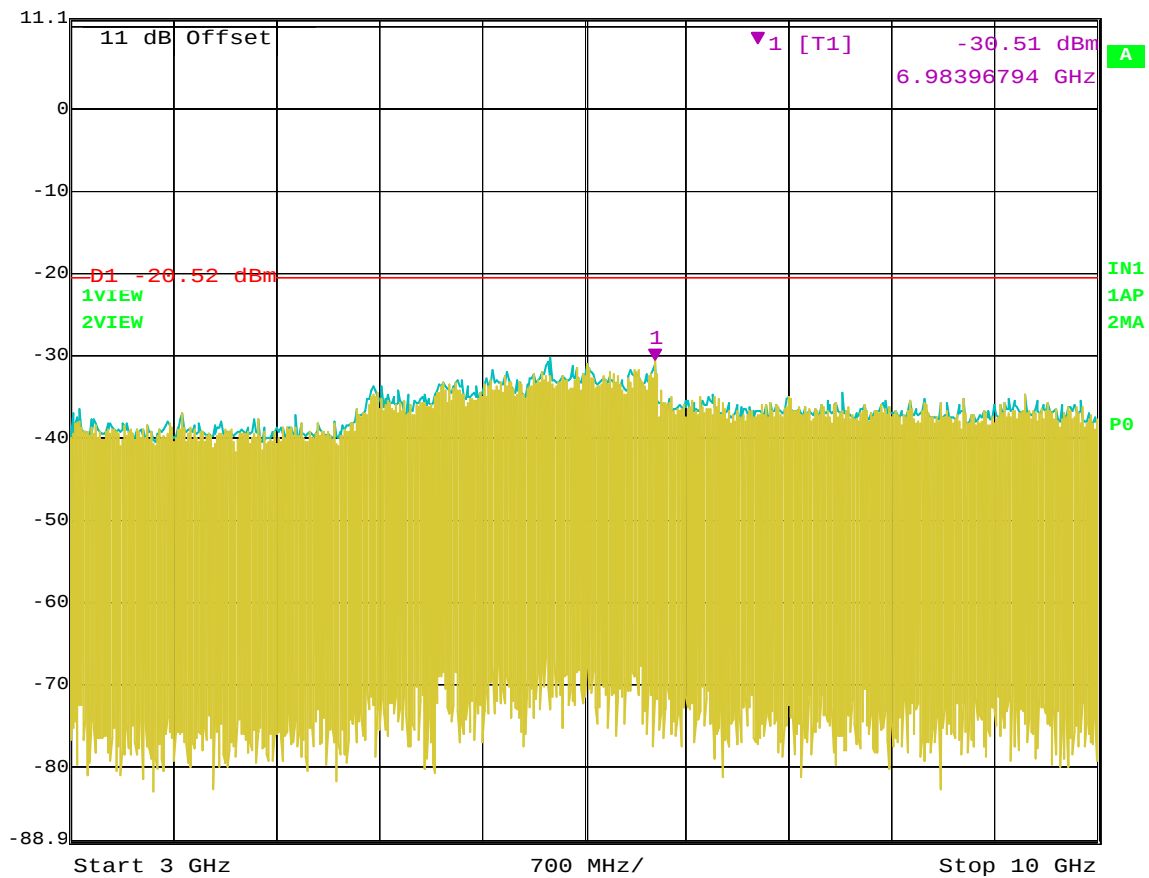


Date: 2.MAR.2004 23:19:57

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

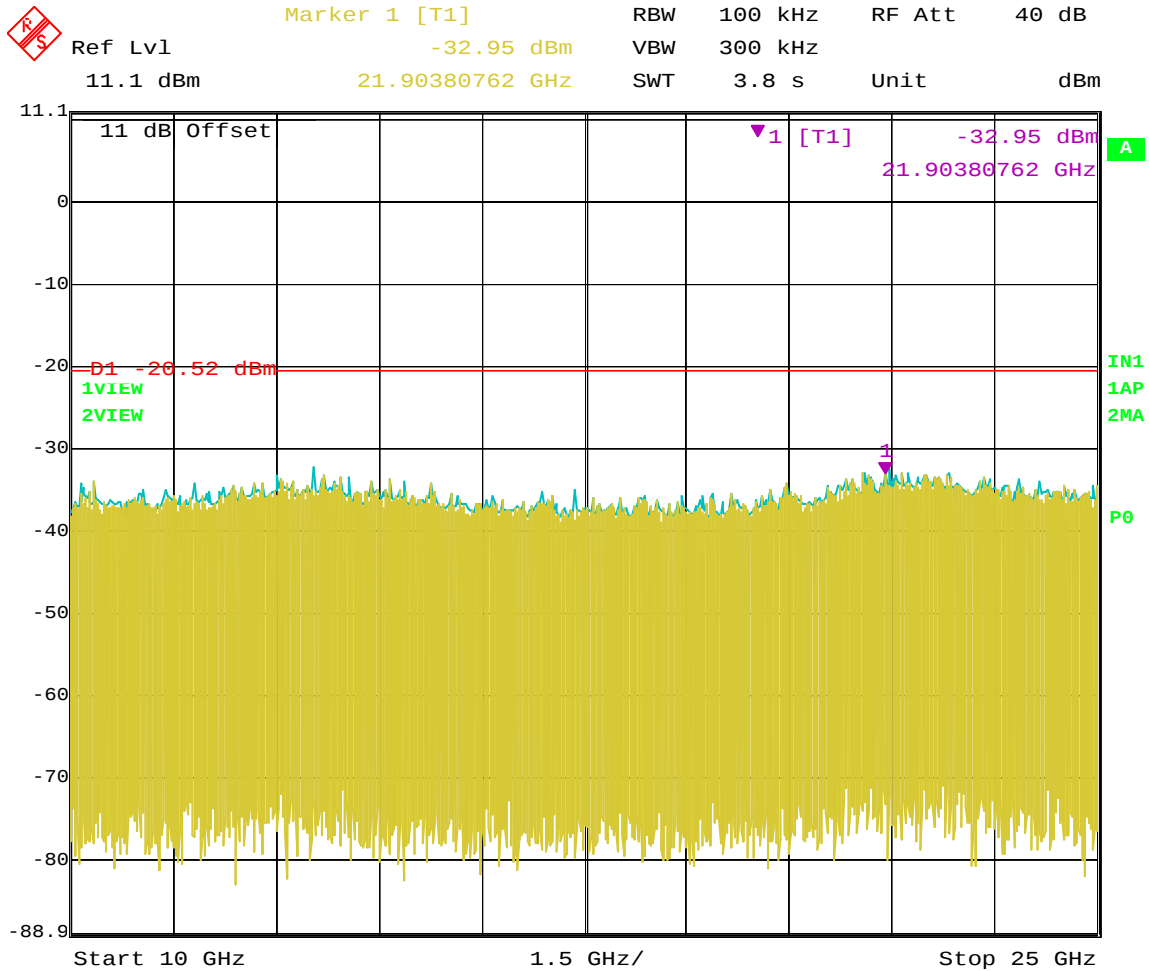


Ref Lvl 11.1 dBm
Marker 1 [T1] -30.51 dBm
6.98396794 GHz
RBW 100 kHz RF Att 40 dB
VBW 300 kHz
SWT 1.75 s Unit dBm



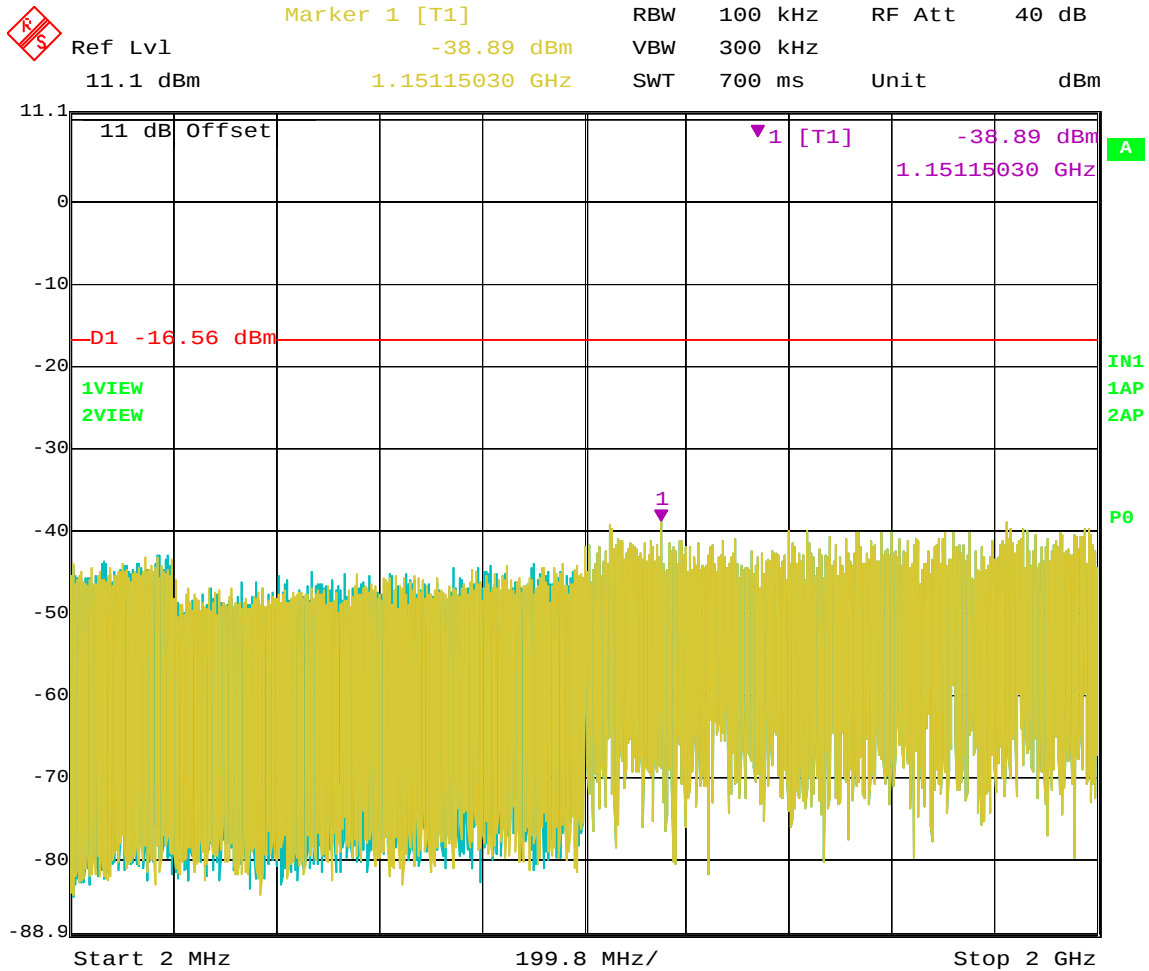
Date: 2.MAR.2004 23:21:32

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



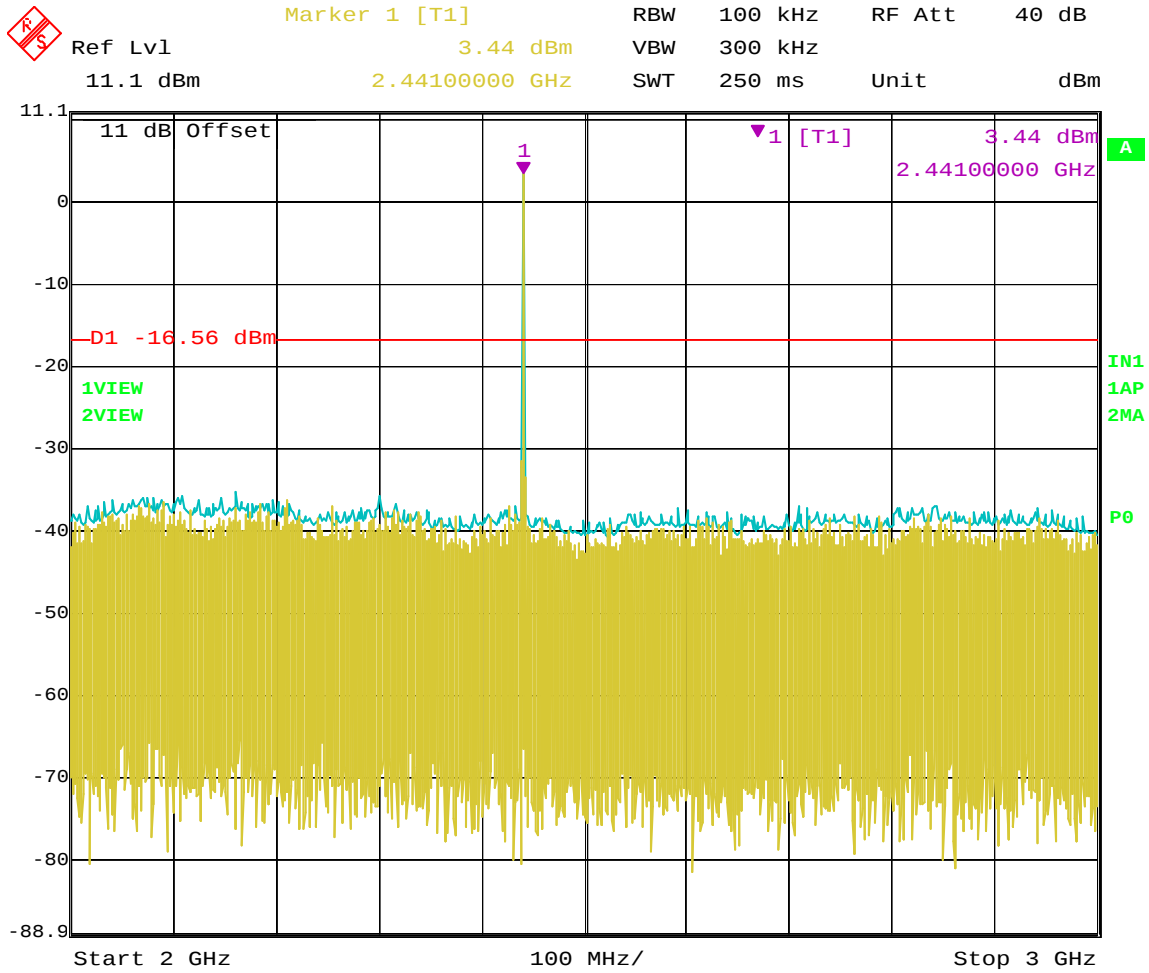
Date: 2.MAR.2004 23:22:18

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



Date: 2.MAR.2004 23:24:17

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

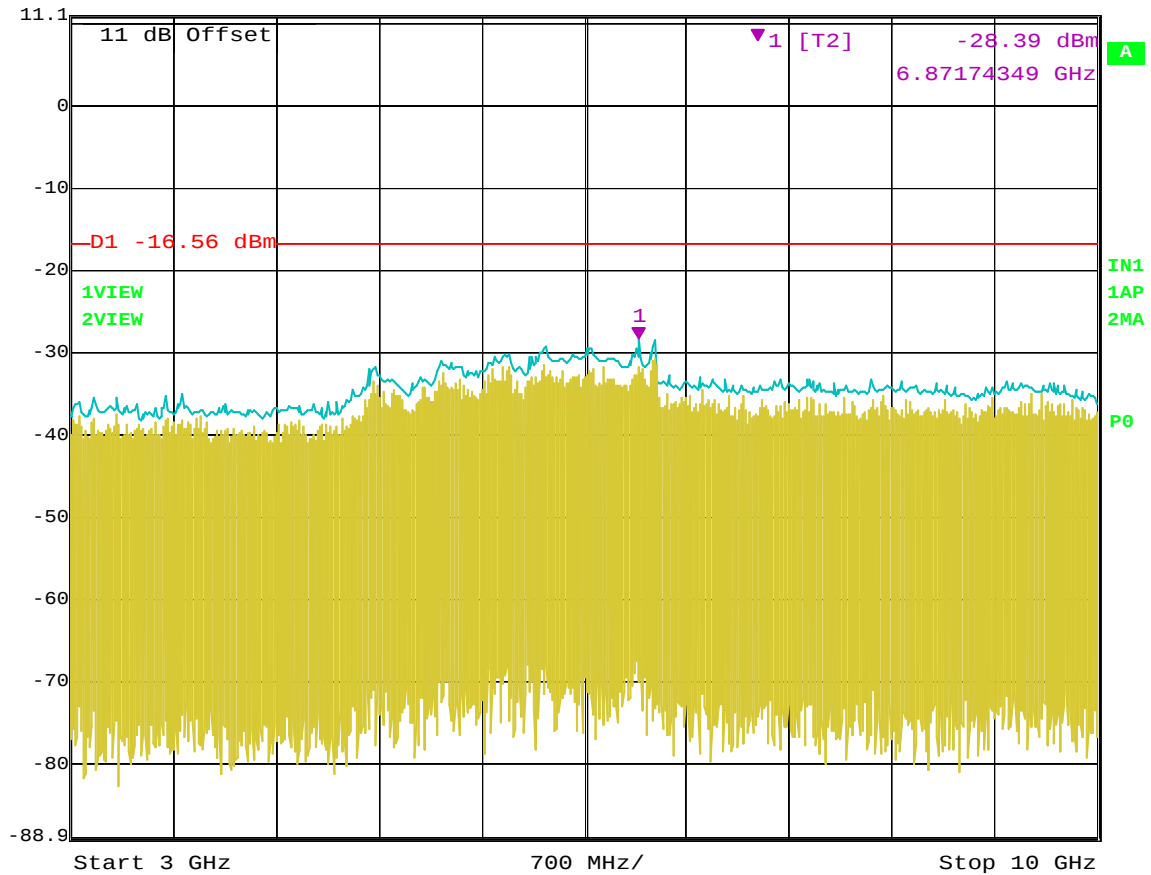


Date: 2.MAR.2004 23:23:35

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



Ref Lvl 11.1 dBm
Marker 1 [T2] -28.39 dBm
6.87174349 GHz
RBW 100 kHz RF Att 40 dB
VBW 300 kHz
SWT 1.75 s Unit dBm



Date: 2.MAR.2004 23:38:55

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



Marker 1 [T2]

RBW 100 kHz RF Att 40 dB

Ref Lvl

-32.72 dBm

VBW 300 kHz

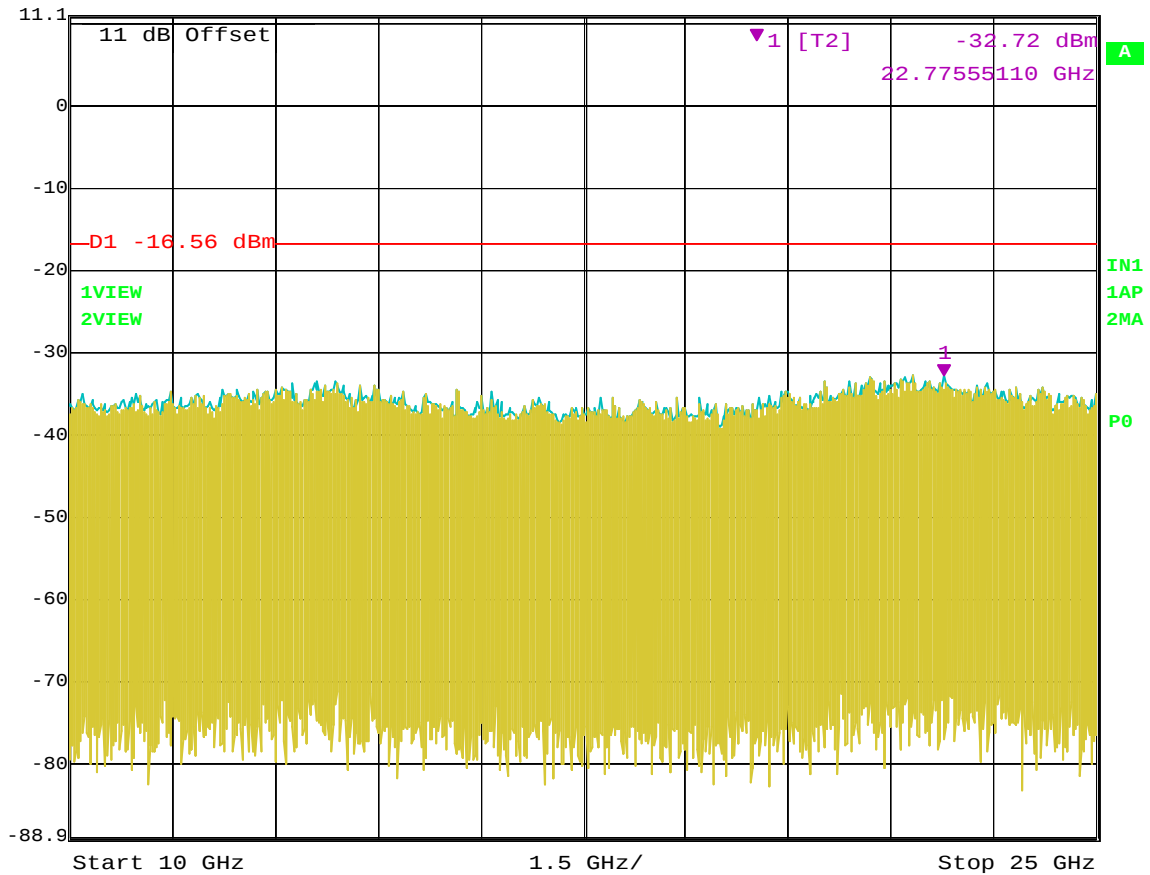
11.1 dBm

22.7755110 GHz

SWT 3.8 s

Unit

dBm



Date: 2.MAR.2004 23:39:40

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



Marker 1 [T2]

RBW 100 kHz RF Att 40 dB

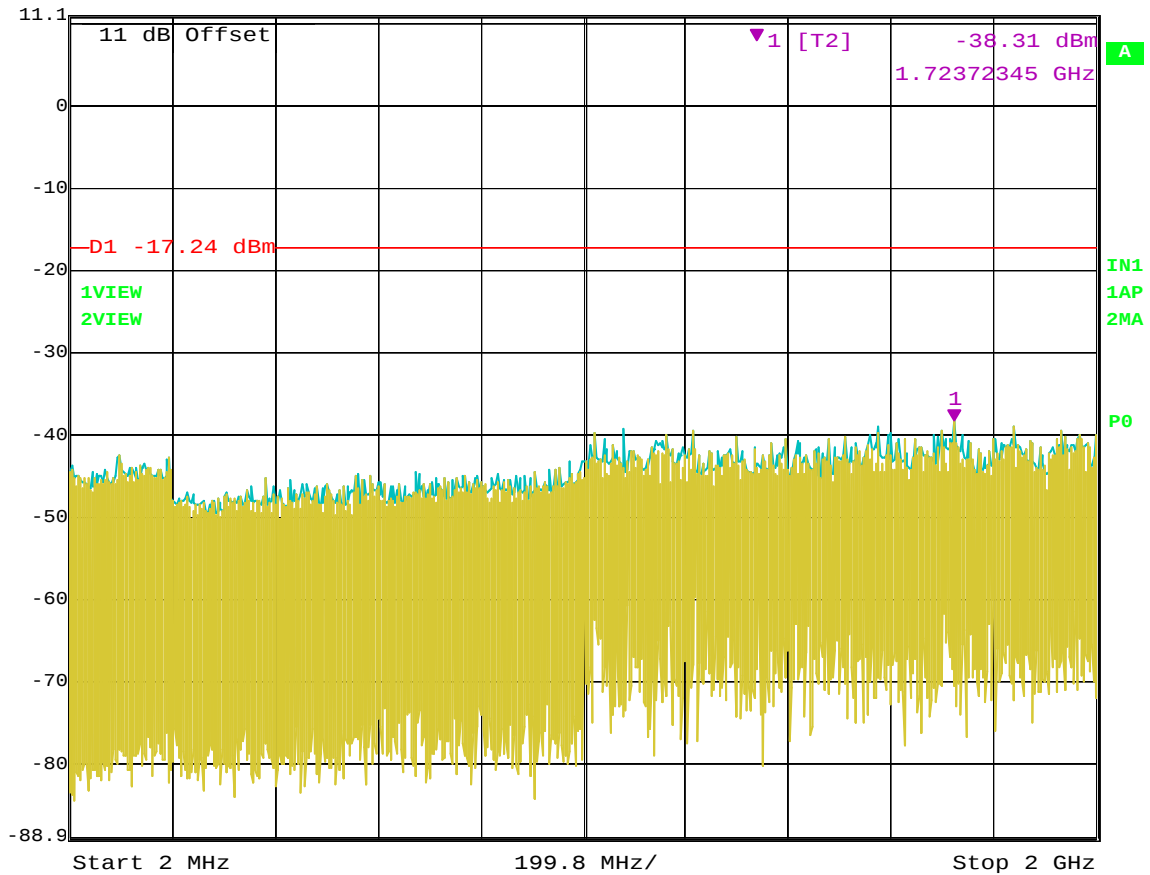
Ref Lvl -38.31 dBm

VBW 300 kHz

11.1 dBm 1.72372345 GHz

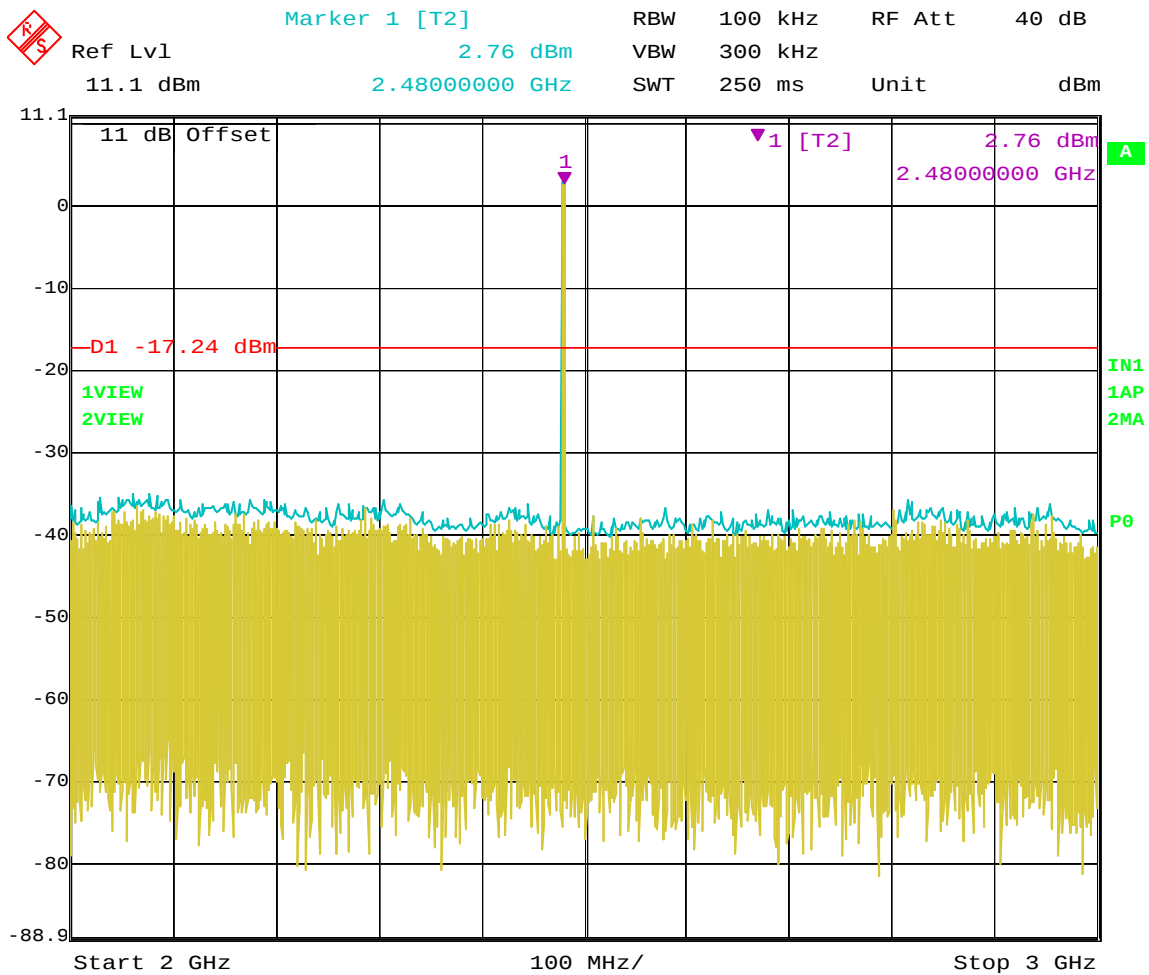
SWT 700 ms

Unit dBm



Date: 2.MAR.2004 23:41:46

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



Date: 2.MAR.2004 23:40:44

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



Marker 1 [T2]

RBW 100 kHz RF Att 40 dB

Ref Lvl

-30.49 dBm

VBW 300 kHz

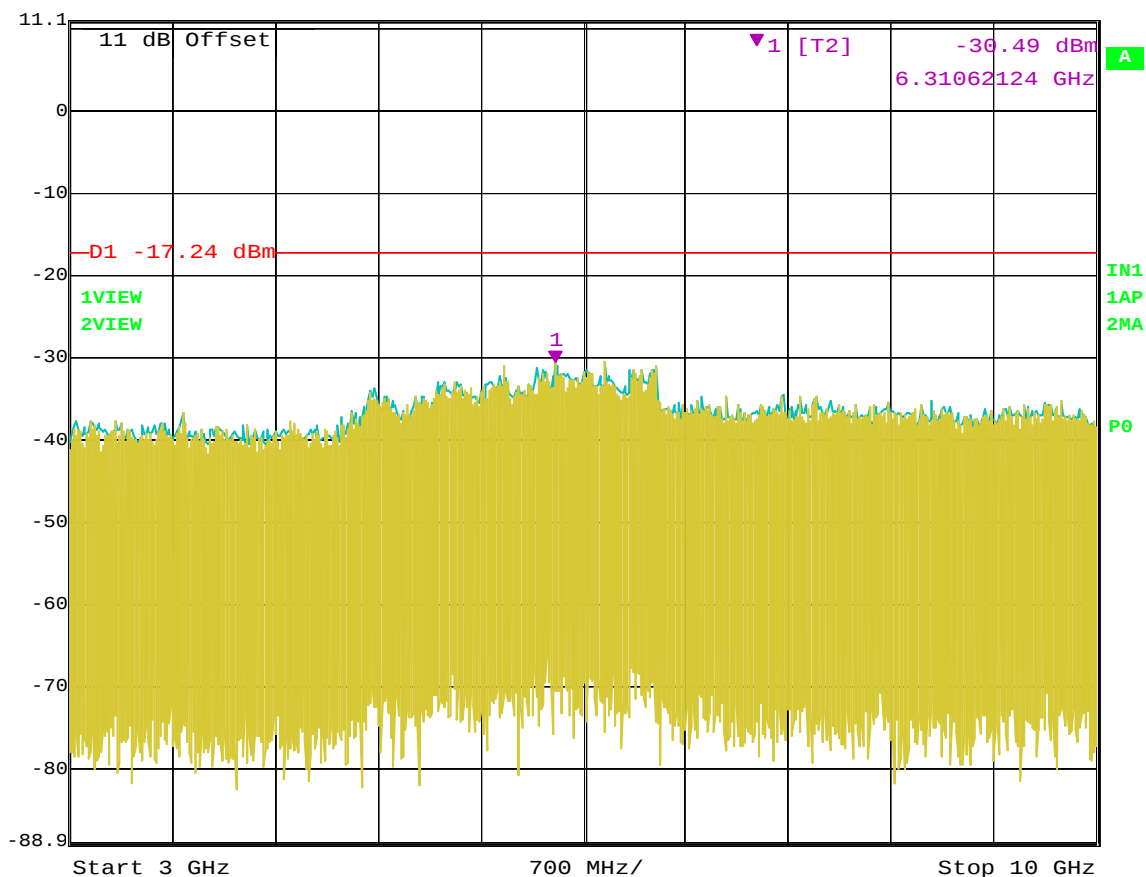
11.1 dBm

6.31062124 GHz

SWT 1.75 s

Unit

dBm

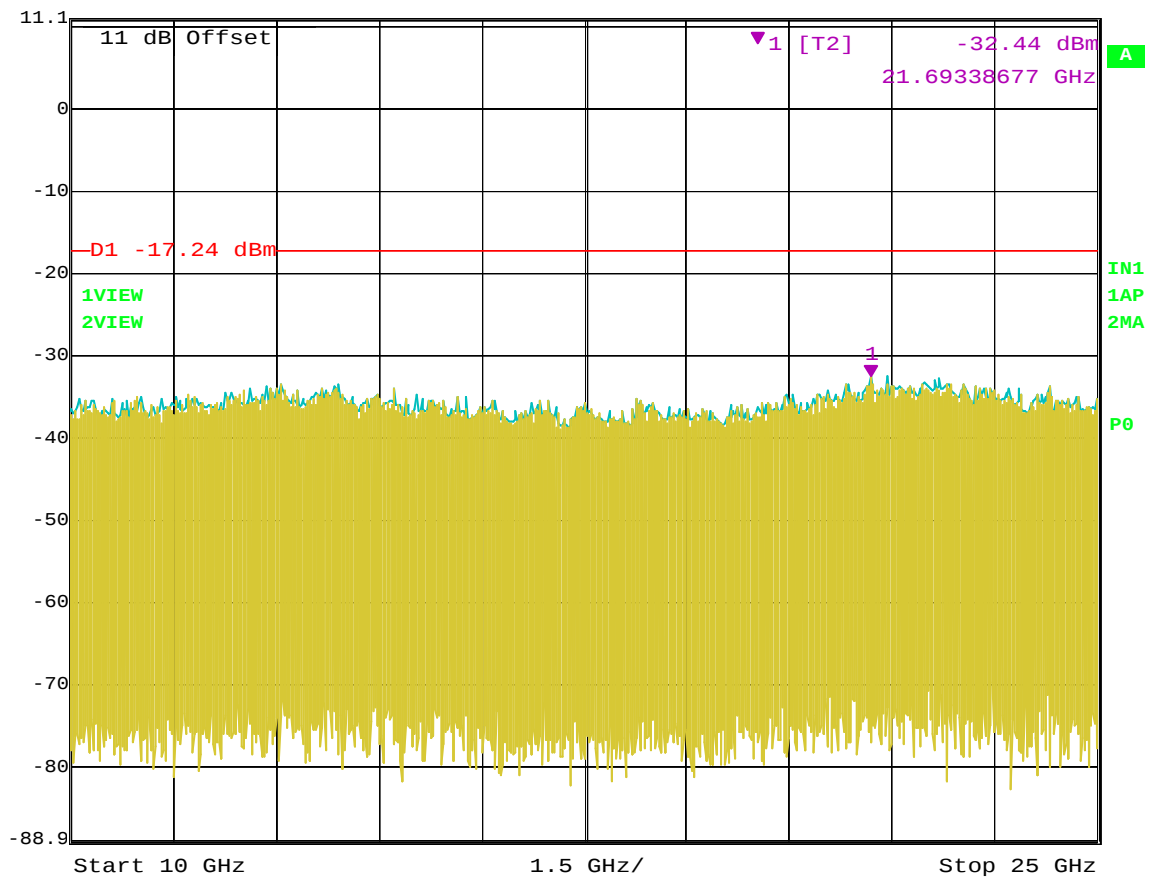


Date: 2.MAR.2004 23:42:28

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



Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl -32.44 dBm VBW 300 kHz
11.1 dBm 21.69338677 GHz SWT 3.8 s Unit dBm



Date: 2.MAR.2004 23:43:14

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



CHANNEL HOPPING SEPARATION

DATA SHEET



Marker 3 [T2]

RBW 100 kHz RF Att 40 dB

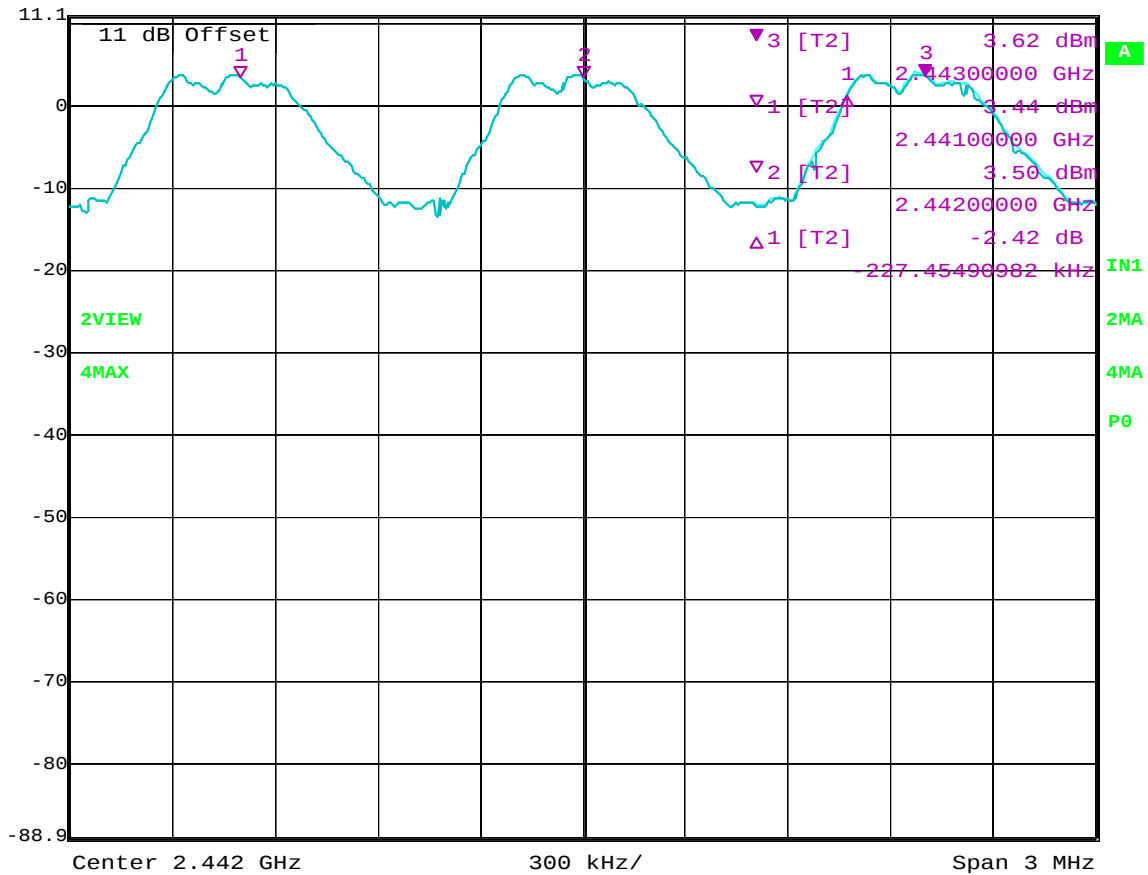
Ref Lvl 3.62 dBm

VBW 1 MHz

11.1 dBm 2.44300000 GHz

SWT 20 ms

Unit dBm



Date: 2.MAR.2004 20:18:39

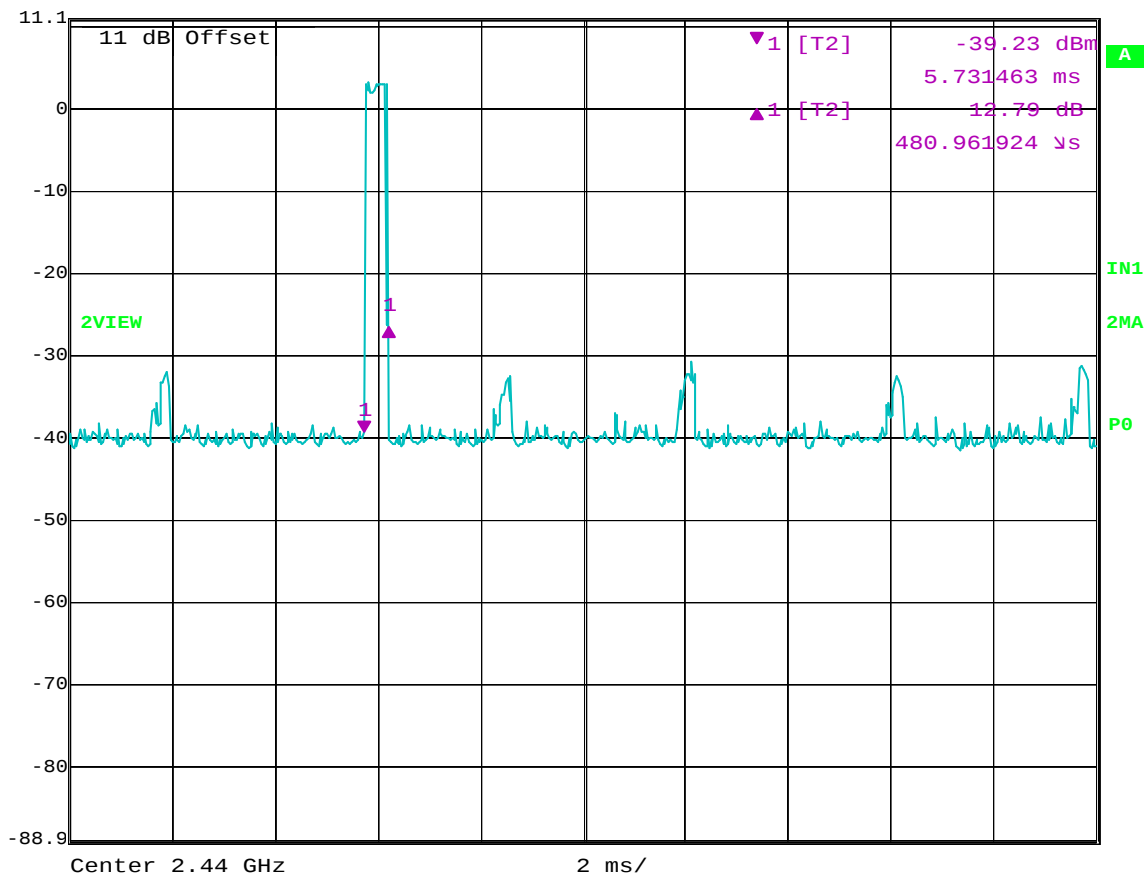
Channel Hopping Separation Test

AVERAGE TIME OF OCCUPANCY

DATA SHEETS

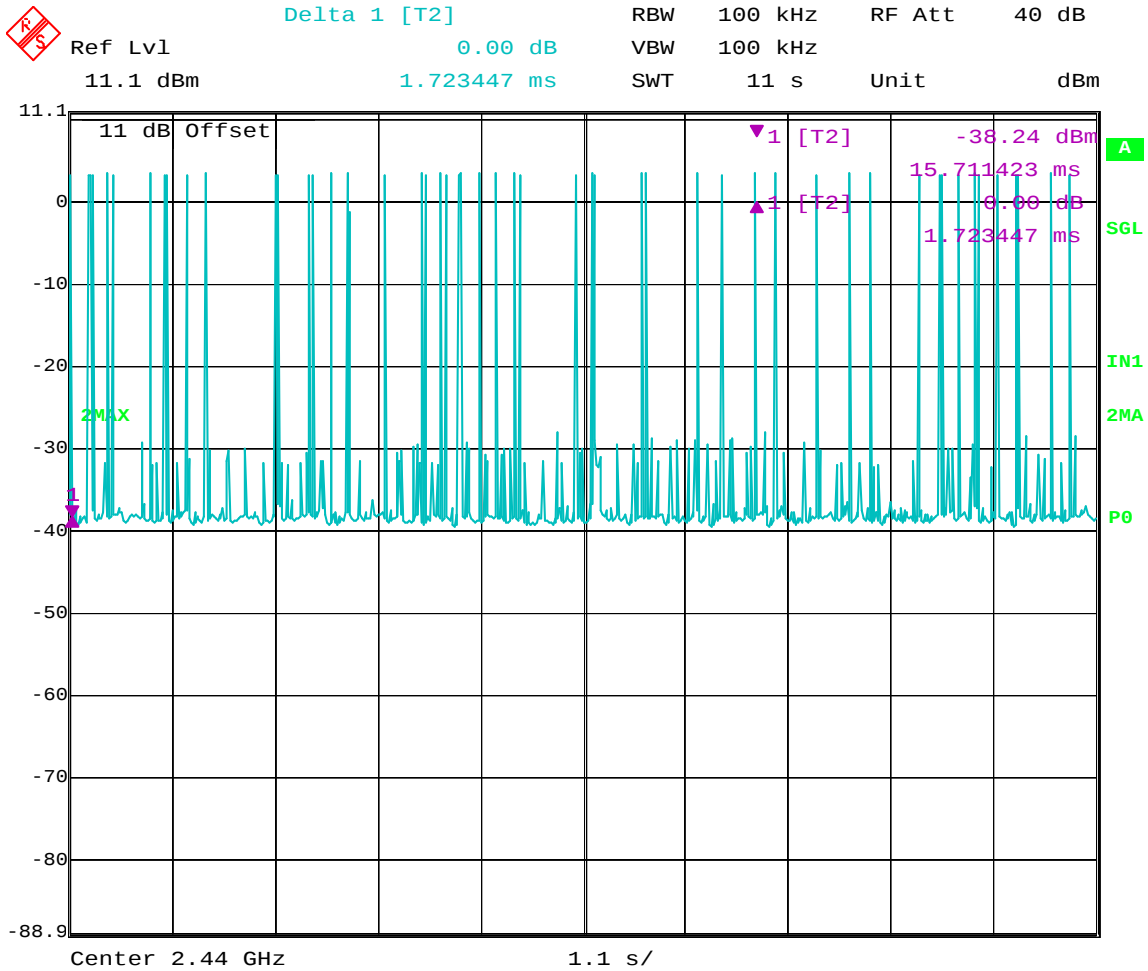


Ref Lvl 11.1 dBm Delta 1 [T2] 12.79 dB RBW 100 kHz RF Att 40 dB
Unit dBm



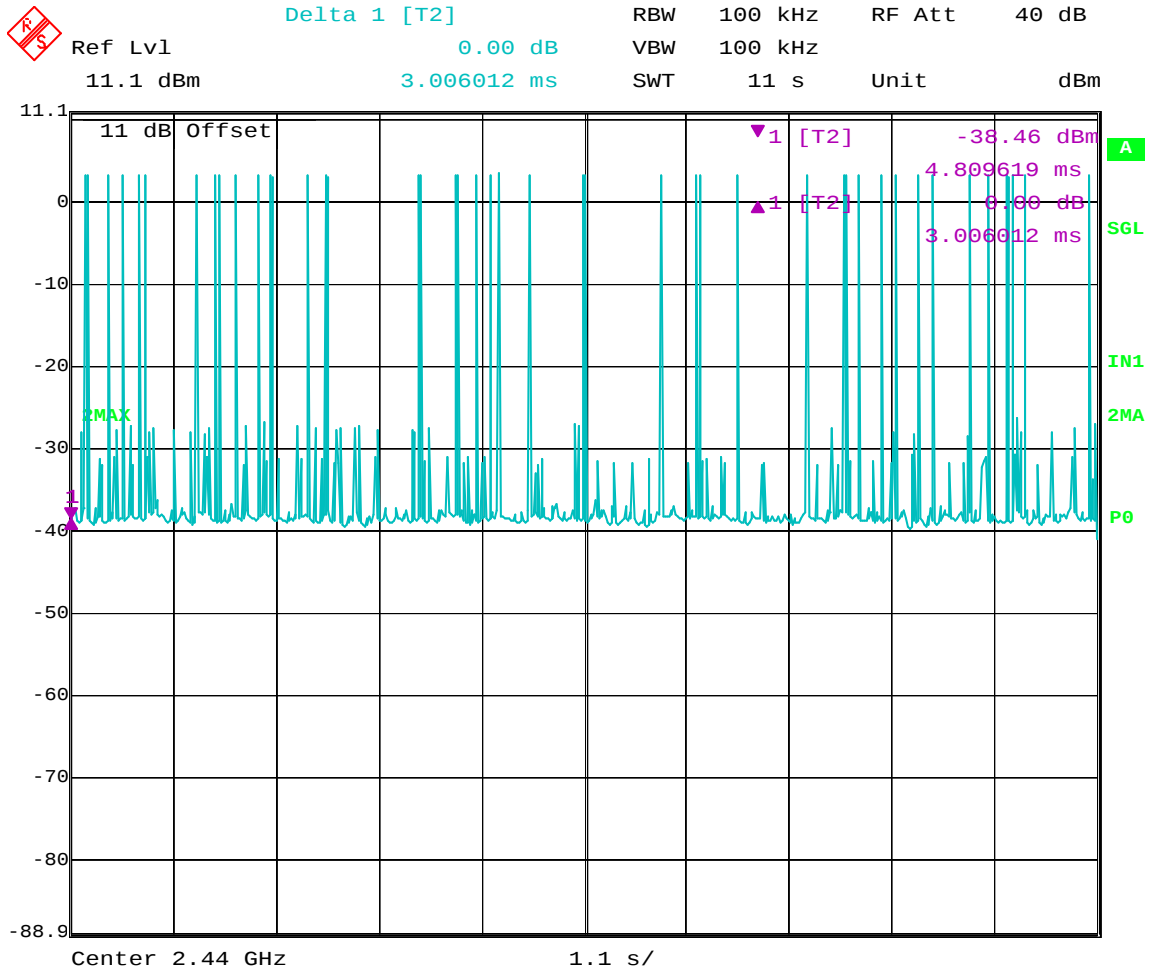
Date: 2.MAR.2004 20:40:13

Time of One DH1 Pulse = 480.96 uS



Date: 2.MAR.2004 22:23:27

Number of Pulses in 11 seconds = 50
 Number of Pulses in 31.6 seconds = $50 * 2.8727 = 143.635$ Pulses
 $143.635 \text{ Pulses} * 1.723447 \text{ mS} = \mathbf{247.547 \text{ mS} / 31.6 \text{ seconds}}$
 Limit = $400 \text{ mS} / 31.6 \text{ seconds}$



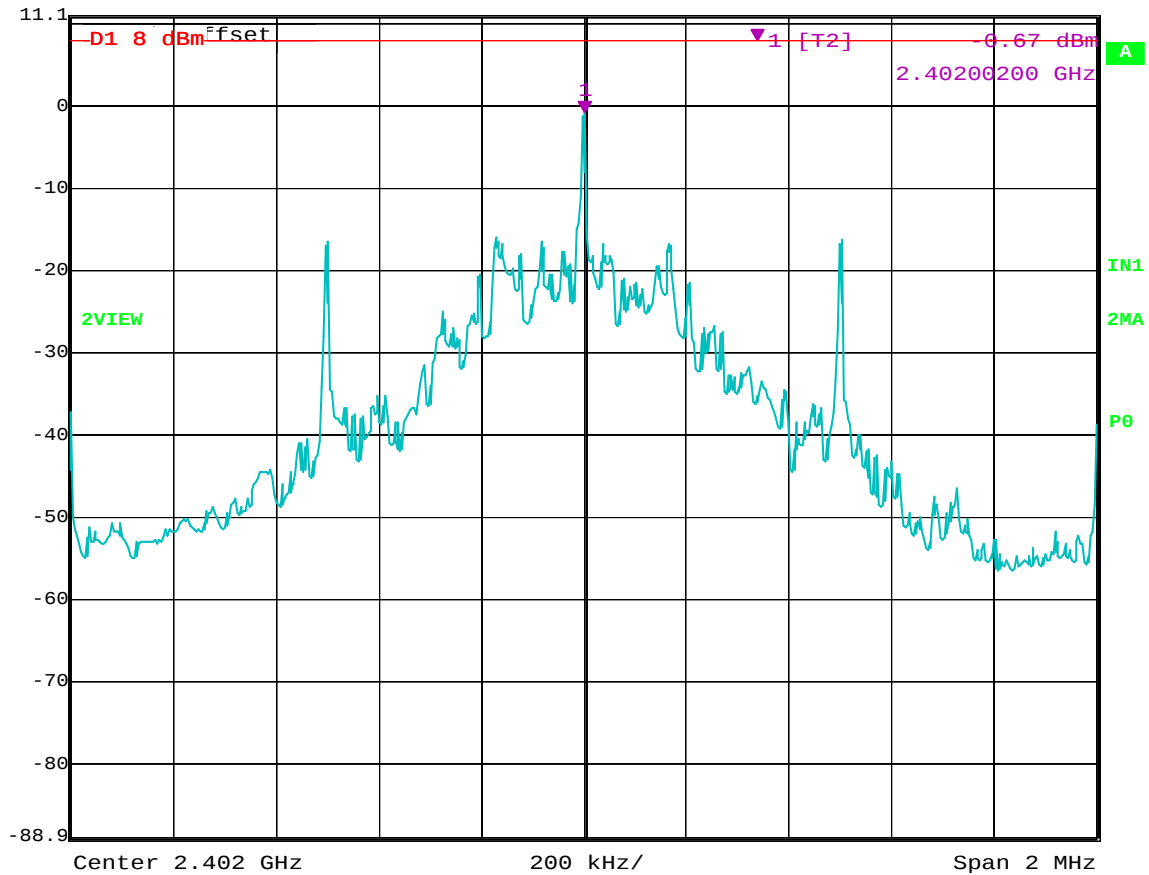
Date: 2.MAR.2004 22:50:22

Number of Pulses in 11 seconds = 42
 Number of Pulses in 31.6 seconds = 42 * 2.8727 = 120.6534
 120.6534 Pulses * 3.006012 mS = **362.685568 mS / 31.6 seconds**
 Limit = 400 mS / 31.6 seconds

SPECTRAL DENSITY OUTPUT***DATA SHEETS***

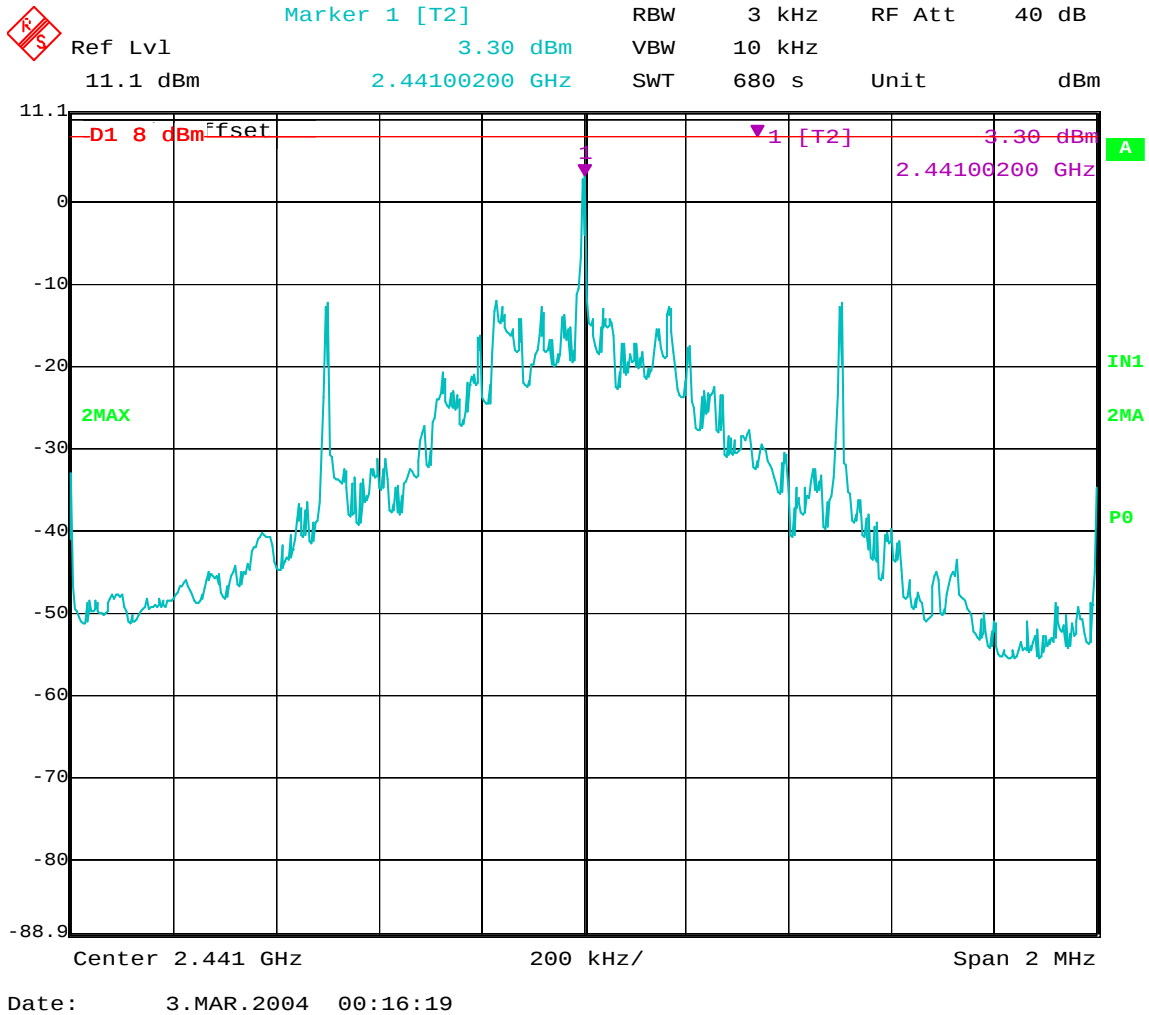


Ref Lvl 11.1 dBm Marker 1 [T2] -0.67 dBm RBW 3 kHz RF Att 40 dB
2.40200200 GHz VBW 10 kHz Unit dBm
SWT 680 s

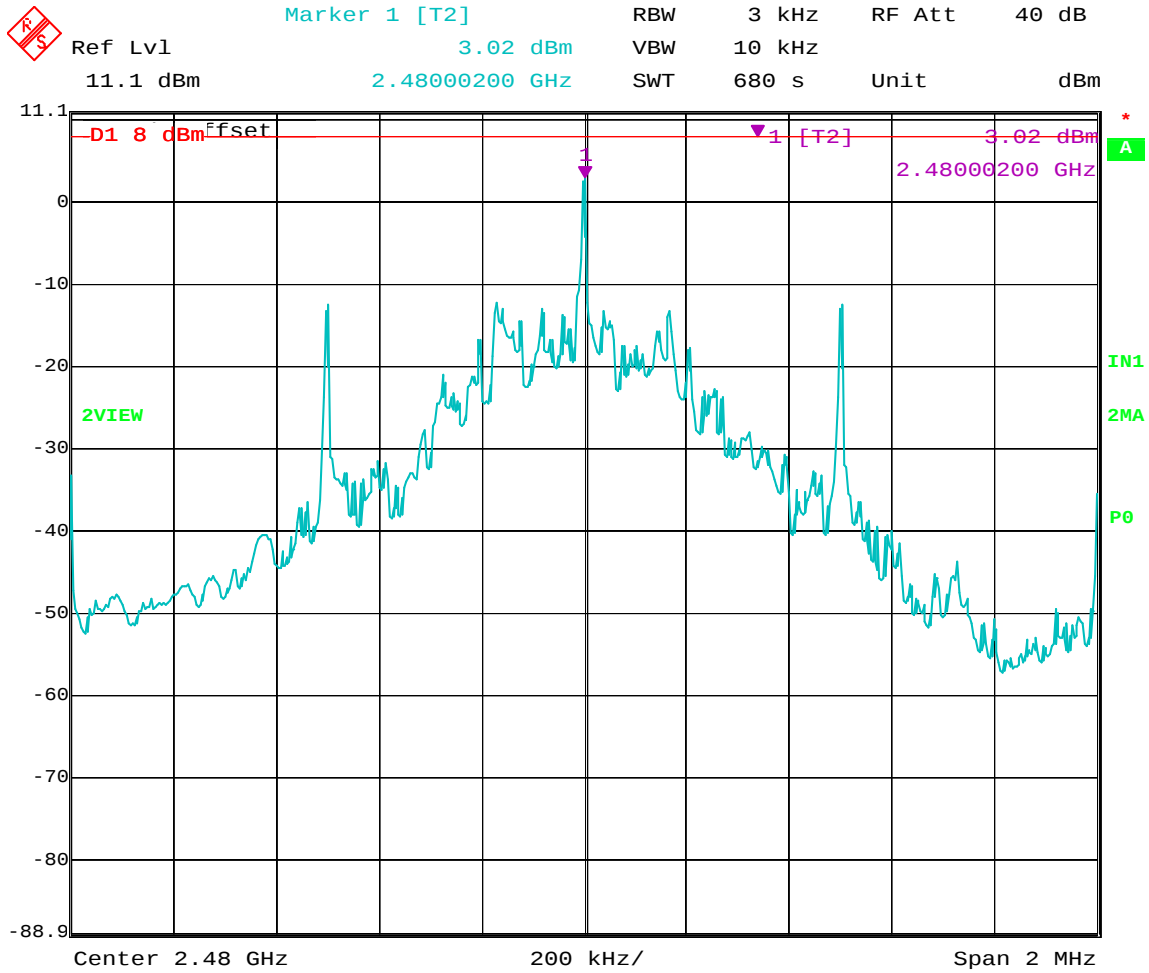


Date: 3.MAR.2004 00:28:19

Spectral Density Output – Low Channel



Spectral Density Output – Middle Channel



Spectral Density Output – High Channel



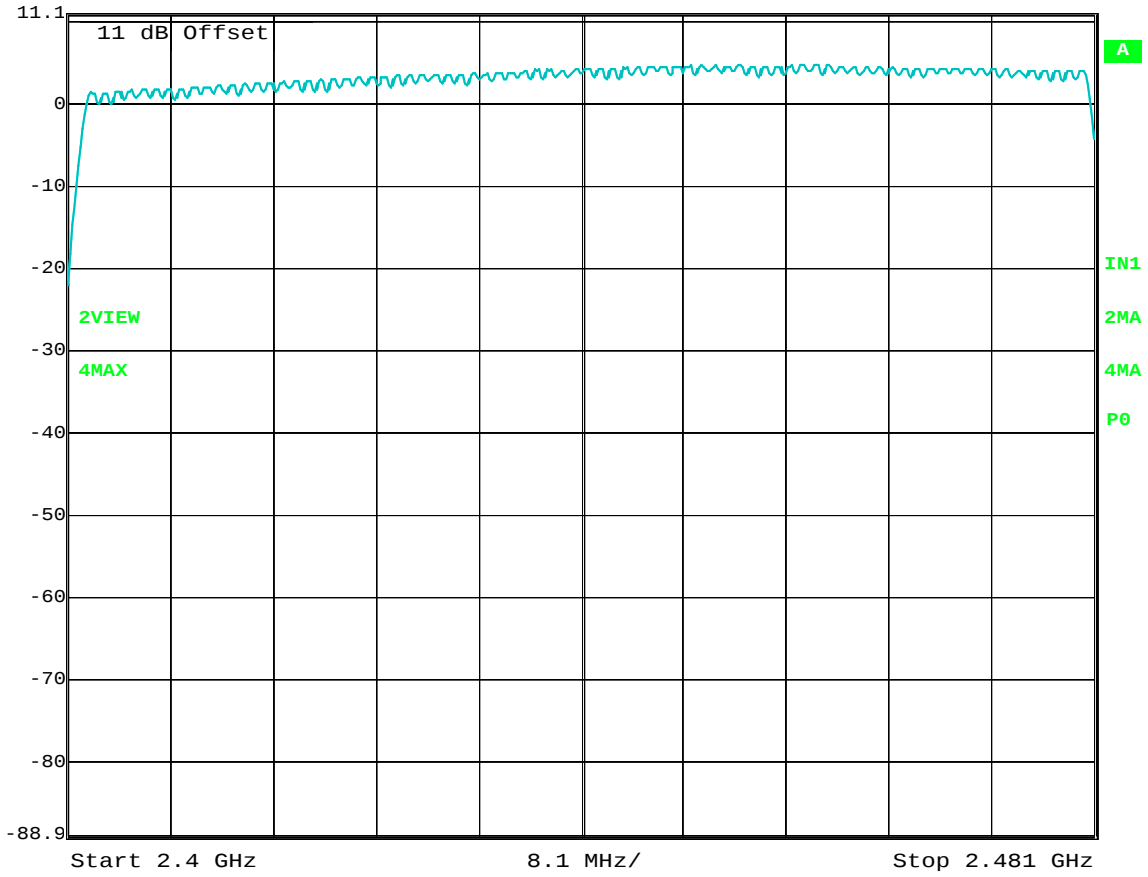
NUMBER OF HOPPING FREQUENCIES

DATA SHEET



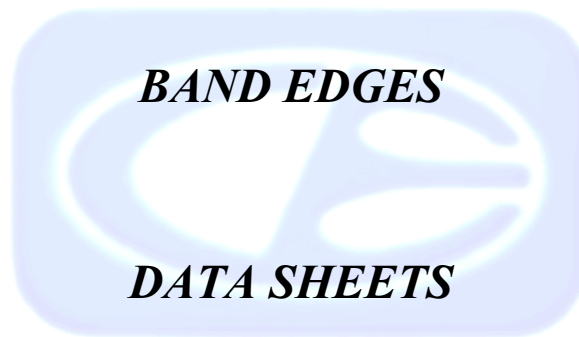
Ref Lvl
11.1 dBm

RBW 1 MHz RF Att 40 dB
VBW 1 MHz
SWT 20 ms Unit dBm



Date: 2.MAR.2004 20:32:38

Number of Frequencies (79 Total)

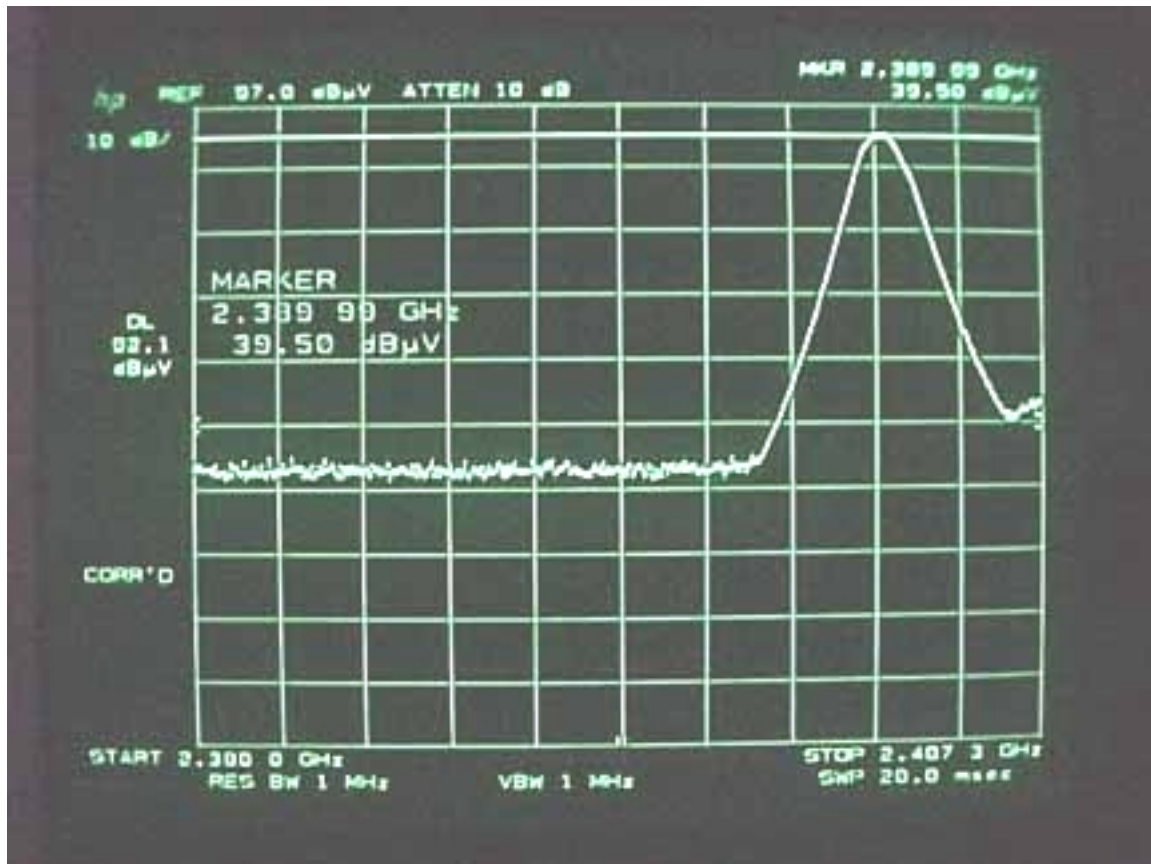


RADIATED EMISSIONS (FCC SECTION 15.209 AND 15.247)

COMPANY	O'NEIL PRODUCT DEVELOPMENT	DATE	3/4/2004
EUT	BLUETOOTH MODULE	DUTY CYCLE	<10 %
MODEL	BT260146	PEAK TO AVG	20 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	KYLE FUJIMOTO	LAB	A

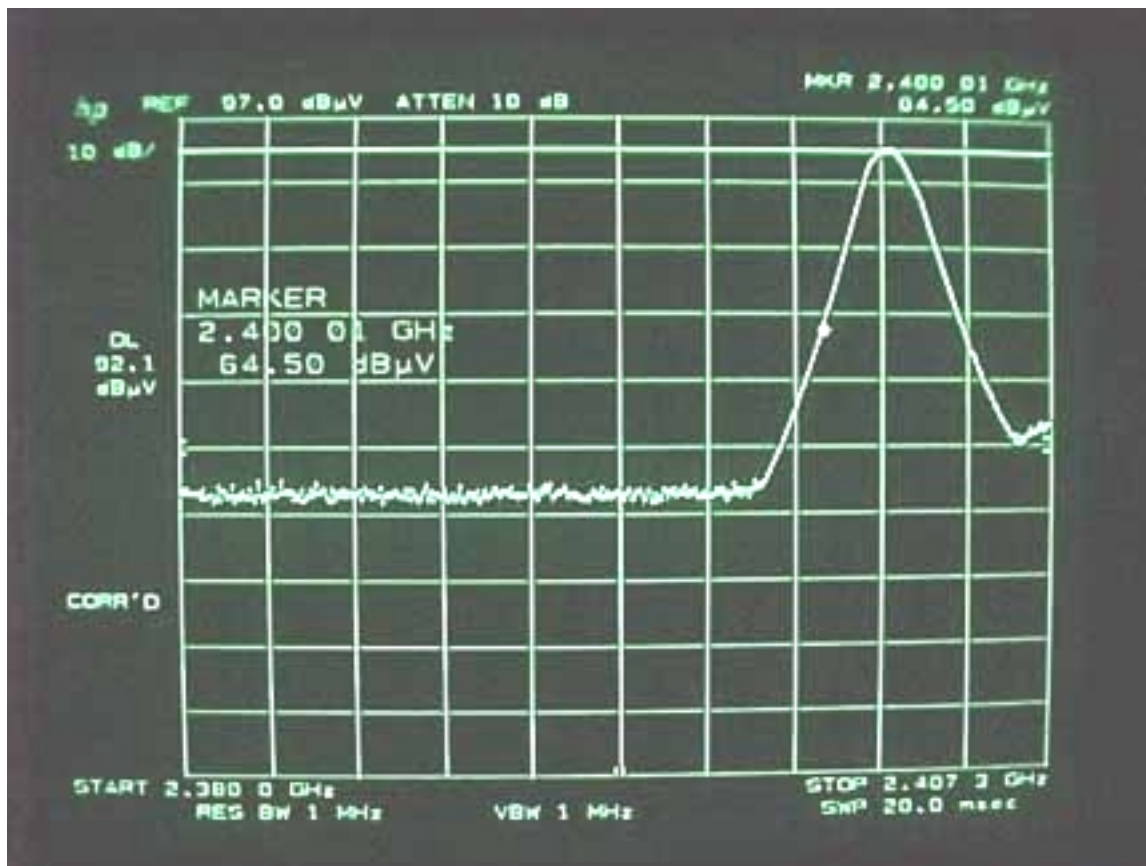
Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2390.0000	39.5	19.5 A	V	2.0	225	Z	LOW	31.5	4.6	30.0	0.0	0.0	25.6	-28.4	54.0	Band Edge Lower Channel
																Worst Case Polar. & Axis
2483.5000	50.1	30.1 A	V	2.0	90	Y	HIGH	31.6	4.7	30.0	0.0	0.0	36.4	-17.6	54.0	Band Edge High Channel
																Worst Case Polar. & Axis

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING



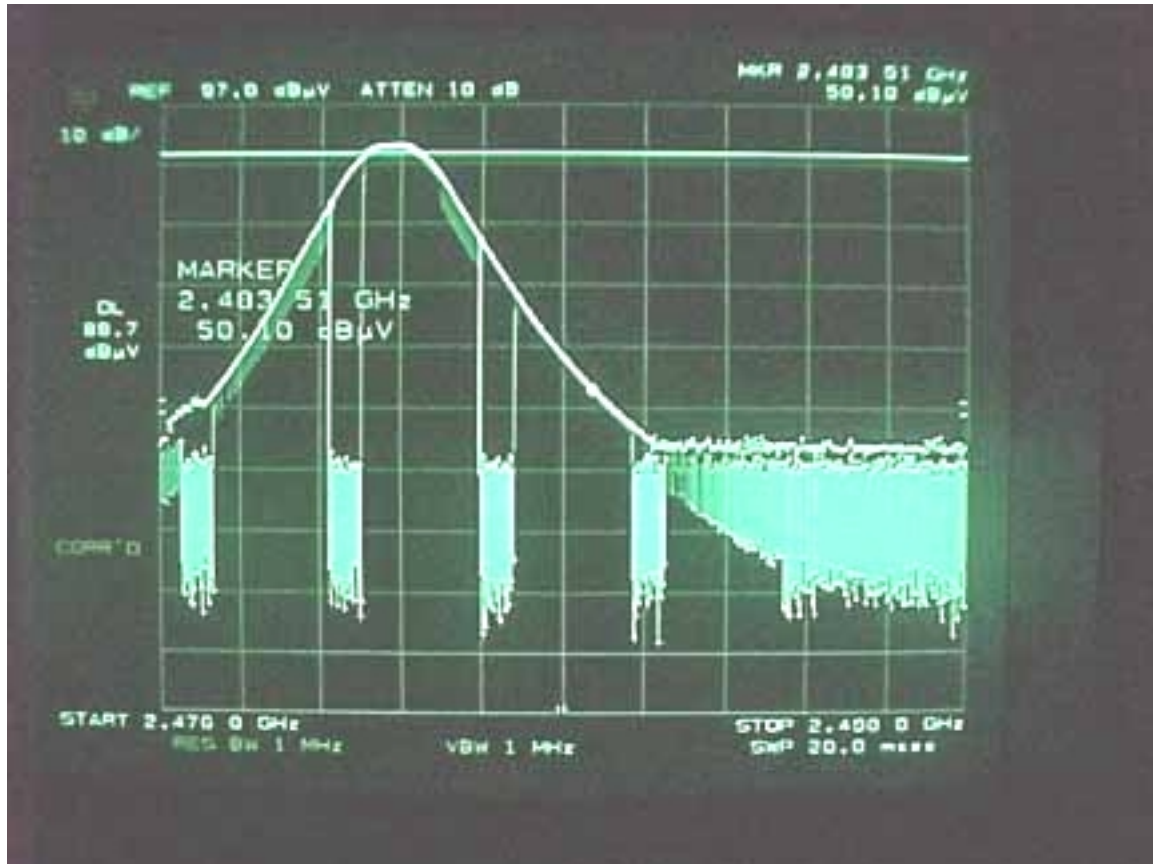
O'NEIL PRODUCT DEVELOPMENT
BLUETOOTH MODULE
MODEL: BT260146
FCC SUBPART C – BAND EDGE – LOW CHANNEL – 03-04-04

**PHOTOGRAPH SHOWING THE LOWER
BAND EDGE AT 2390 MHz**



O'NEIL PRODUCT DEVELOPMENT
BLUETOOTH MODULE
MODEL: BT260146
FCC SUBPART C – BAND EDGE – LOW CHANNEL – 03-04-04

**PHOTOGRAPH SHOWING THE LOWER
BAND EDGE AT 2400 MHz**



O'NEIL PRODUCT DEVELOPMENT
BLUETOOTH MODULE
MODEL: BT260146
FCC SUBPART C – BAND EDGE – HIGH CHANNEL – 03-04-04

**PHOTOGRAPH SHOWING THE UPPER
BAND EDGE AT 2483.5 MHz**