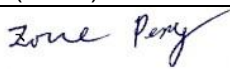


FCC Test Report

FCC EVALUATION REPORT FOR VERIFICATION	
Project Reference No.	151403
Product	Sound Blaster Wireless Rock-Outdoor Speaker
Brand Name	Creative Labs
Model	SB1280
Alternate Model	N/A
Tested according to	FCC Rules and Regulations Part 15 Subpart C 2007, ANSI C63.4-2003

Tested in period	2010-05-15 to 2010-06-30		
Issued date	2010-07-04		
Name and address of the Test House	 Nemko Hong Kong Ltd. Unit 1-5, 15/F, CCT Telecom Building, 11 Wo Shing Street, Fotan, Shatin, Hong Kong Phone : (+ 852) 2675 0288 Fax : (+ 852) 2675 0550		
Tested by			2010-07-04
	Zone Peng		date
Verified by			2010-07-04
	Daria Liu		date

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1. Client Information

1.1 Applicant

Company Name:	Creative Labs INC
Company Address:	1901 McCarthy Blvd, Milpitas, California, United States Milpitas California

1.2 Manufacturer

Company Name:	Celewave Electronics(Shenzhen) Co.,Ltd
Company Address:	No 1.2 building,No 2 Industry District,Shang heng lang Huaxing Road,Dalang Street,Baoan District,Shenzhen City, Guangdong, China

1.3 Scope

- Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.



2. Equipment under Test (EUT)

2.1 Identification of EUT

Category: **Sound Blaster Wireless ROCK-Outdoor Speaker**
Model Name: **SB1280**
Alternate model: **N/A**
Brand name: **Creative Labs**
Technical data (Rating, etc.): **As below**

2.2 Detail spec:

Spec: **11.1VDC lithium battery(without charge)**

Operation Frequency: **2412 MHz -2464MHz**

Channel Number : **3**

Type of Modulation : **DSSS\ QPSK !**

Antenna Type: **Integral Antenna**

Antenna Number : **2**

Antenna gain : **5.5dBi**

Output power: **10.44dBm**

Remark: **The 2 Antenna can not work together ,only can work individually.**

2.3 Additional Information Related to Testing

CH1:2412MHz

CH2:2438MHz

CH3:2464MHz

2.4 Picture Documentation

- Pictures can be found in Appendix B and C.

3. General Test Conditions

3.1 Location

These measurement tests were conducted at
NS Technology Co., Ltd.–ELA 616
Chenwu Industrial Zone, Houjie Town, Dongguan, Guangdong, China
FCC Registration No.: 502831.

AUDIX Technology (Shenzhen) Co.,Ltd–ELA 135
No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
FCC Registration No.:90454
FCC Registration No.:794232
Note: all test are witnessed by NEMKO engineer

3.2 Operating Environment

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

Parameters	Recording during test	Accepted deviation
Ambient temperature	18-20°C	15 – 35 °C
Relative humidity	45-52%	30 - 60%
Atmospheric pressure	101.2 kPa -101.3kPa	86-106kPa

3.3 Operating During Test

Test mode

TM1 : NEW BETTERY ANTENNA 1 TX MODE

TM2 : NEW BETTERY ANTENNA 2 TX MODE

3.4 Test Equipment

The test equipments used in testing are calibrated on a regular basis. For most of the testing equipments accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipments used are defined in each test section of this report.

4. Measurement Uncertainty

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95 %.

Radiated emission: 30MHz~1 GHz 2.62 dB
1GHz~18GHz 2.64dB
18GHz~25GHz 4.79dB

5. Radiated Electromagnetic Disturbances

5.1 Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m or 10m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

For below 1GHz

RBW=120 kHz; VBW=300KHz. The frequency range from 30MHz to 1000MHz is checked.

For above 1GHz. The frequency range from 1GHz to 25GHz(10th harmonics) is checked.

RBW=1MHz ; VBW=1MHz, PK detector for peak emissions measurement above 1GHz

RBW=1MHz ; VBW=10Hz, PK detector for average emissions measure above 1GHz

5.2 Measurement Equipment

For radiated emission test (30MHz-1GHz)

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Spectrum Analyzer	09.05.30	E7405A	MY45118807	Agilent
☒	EMI Test Receiver	10.06.10	ESVS10	841431/004	Rohde&Schwarz
☒	Bilog Antenna	09.10.15	CBL 6111D	25758	Teseq
☒	10m Semi-anechoic Chamber	10.05.02	21.4m*12.1m*8.8m	NSEMC006	ETS-LINDGREN
☒	RF Cable	10.05.02	IMRO-400	10m Cable 1#10m	IMRO
☒	RF Cable	10.05.02	IMRO-400	10m Cable 2#3m	IMRO
☒	Signal Amplifier	10.05.02	8447D	2944A11174	Agilent

For radiated emission test (1GHz~18GHz)

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Horn Antenna	09.07.13	3117	00062558	EMCO
☒	Spectrum Analyzer	09.05.30	8593E	3448U00806	HP
☒	PREAMplifier	09.05.31	PEC-38-30M18G-12-SFF	NSEMC001	BURGEON
☒	RF Cable	10.05.02	M06/25-RG102	966 Cable 2#	DRAKA

For radiated emission test (18GHz~25GHz)

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Spectrum Analyzer	10.05.08	E4446A	US44300459	Agilent
☒	PREAMplifier	10.05.08	8449B	3008A02495	Agilent
☒	RF Cable	10.05.08	SUCOFLEX 102	28620/2	Hubersuhner
☒	RF Cable	10.05.08	SUCOFLEX 102	271471/4	Hubersuhner
☒	RF Cable	10.05.08	SUCOFLEX 102	29086/2	Hubersuhner
☒	RF Cable	10.05.08	SUCOFLEX 102	271473/4	Hubersuhner
☒	Horn Antenna	09.10.25	3116	00060089	EMCO

5.3 Test Result

Connect mode	Antenna Polarity	Remark	Test Data	Test Result
TM1	Horizontal	30-1000MHz	Diagram 001	Pass
	Vertical	30-1000MHz	Diagram 002	Pass
TM2	Horizontal	30-1000MHz	Diagram 003	Pass
	Vertical	30-1000MHz	Diagram 004	Pass
TM1 CH1	Horizontal	1GHz-18GHz	Diagram 005*	Pass
	Vertical	1GHz-18GHz	Diagram 006*	Pass
TM2 CH1	Horizontal	1GHz-18GHz	Diagram 007*	Pass
	Vertical	1GHz-18GHz	Diagram 008*	Pass
TM1 CH2	Horizontal	1GHz-18GHz	Diagram 009*	Pass
	Vertical	1GHz-18GHz	Diagram 010*	Pass
TM2 CH2	Horizontal	1GHz-18GHz	Diagram 011*	Pass
	Vertical	1GHz-18GHz	Diagram 012*	Pass
TM1 CH3	Horizontal	1GHz-18GHz	Diagram 013*	Pass
	Vertical	1GHz-18GHz	Diagram 014*	Pass
TM2 CH3	Horizontal	1GHz-18GHz	Diagram 015*	Pass
	Vertical	1GHz-18GHz	Diagram 016*	Pass
TM1 CH1	Horizontal	18GHz-25GHz	Diagram 017#	Pass
	Vertical	18GHz-25GHz	Diagram 018#	Pass
TM2 CH1	Horizontal	18GHz-25GHz	Diagram 019#	Pass
	Vertical	18GHz-25GHz	Diagram 020#	Pass
TM1 CH2	Horizontal	18GHz-25GHz	Diagram 021#	Pass
	Vertical	18GHz-25GHz	Diagram 022#	Pass
TM2 CH2	Horizontal	18GHz-25GHz	Diagram 023#	Pass
	Vertical	18GHz-25GHz	Diagram 024#	Pass
TM1 CH3	Horizontal	18GHz-25GHz	Diagram 025#	Pass
	Vertical	18GHz-25GHz	Diagram 026#	Pass
TM2 CH3	Horizontal	18GHz-25GHz	Diagram 027#	Pass
	Vertical	18GHz-25GHz	Diagram 028#	Pass

Remark:

*) Because PK value is lower than AV limit , so only show PK value as below .

#) Because PK value is more lower than AV limit for 6dB, so only show PK diagram as below.

NOTES:

1. All modes were measured and the worst case emission was reported.
2. H =Horizontal V=Vertical
3. Emission = Reading +Antenna Factor + Cable Loss –Amp Factor(if exist)
4. Emission level dB μ V = 20 log Emission level μ V/m
5. The lower limit shall apply at the transition frequencies
6. All the emissions appearing within 15.205 Restricted bands shall not exceed the limits shown in 15.209,all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

Remark :

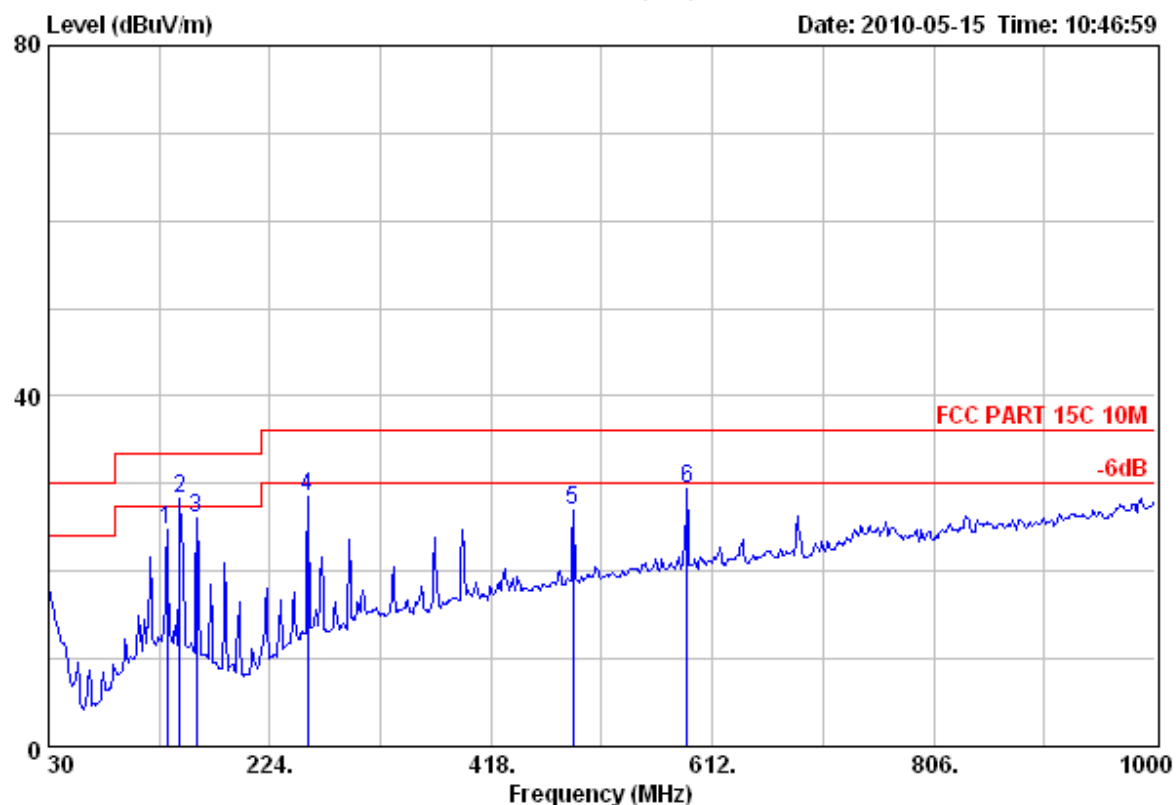
The limit of 15.209(a) of 3 meter distance is

Frequency MHz	Distance m	Field strength		Distance m	Field strength dB μ V/m(QP)
		μ V/m	dB μ V/m(QP)		
30-88	3	100	40.0	10	30.0
88-216	3	150	43.5	10	33.5
216-960	3	200	46.0	10	36.0
960-1000	3	500	54.0	10	44.0
Above 1000	3	74.0 dB μ V/m (PK) 54.0 dB μ V/m (AV)		/	/

15.205 Restricted bands of operation:

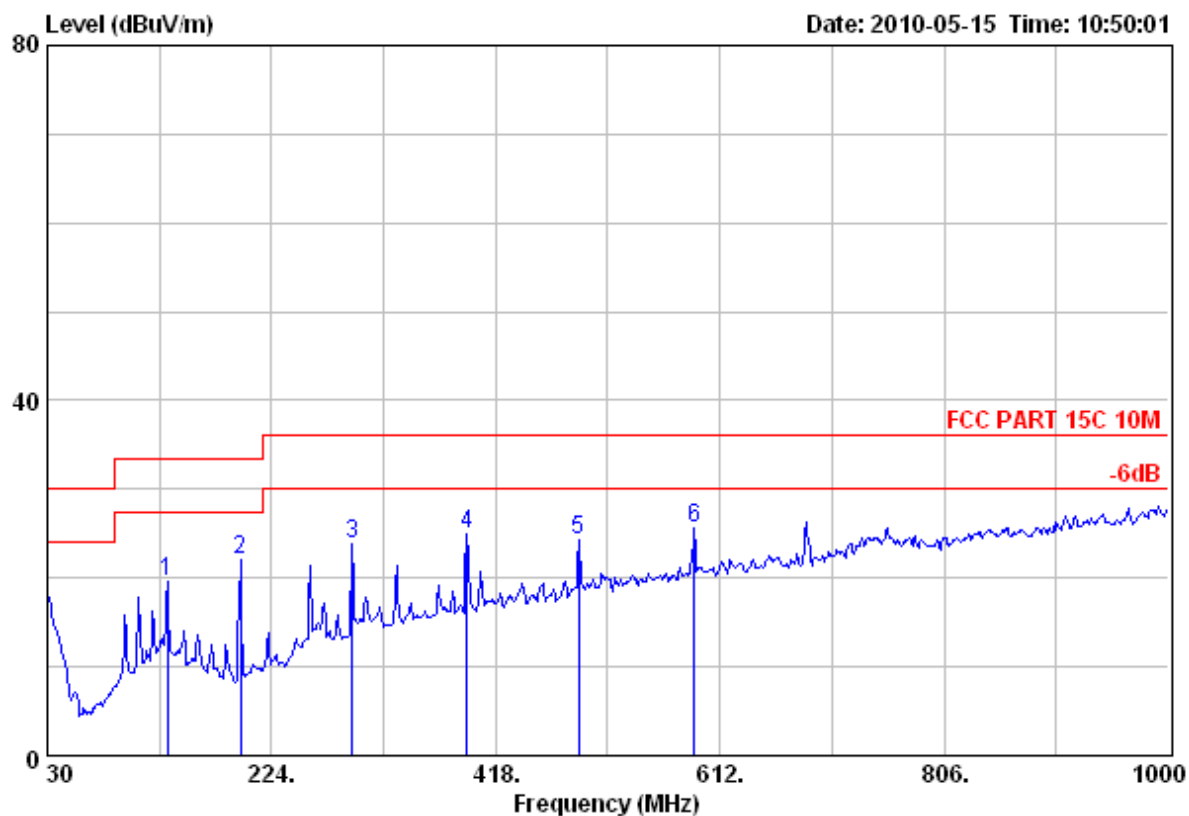
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(?)

5.3.1 Diagram 001



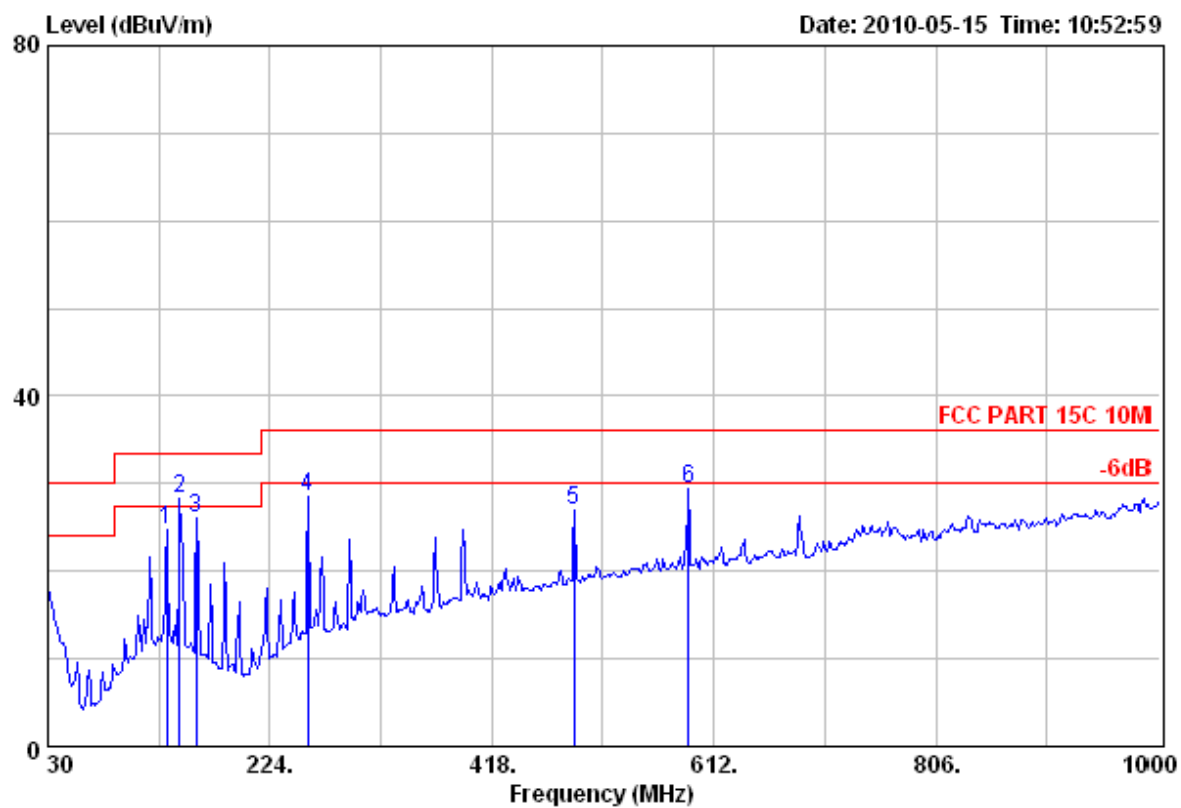
		Emission				Ant. Cable		
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	Remark
1	133.79	24.81	33.50	8.69	11.83	11.46	1.52	QP
2	145.43	28.33	33.50	5.17	15.84	10.90	1.59	QP
3	159.98	25.98	33.50	7.52	14.31	10.00	1.67	QP
4	256.98	28.55	36.00	7.45	14.32	12.20	2.03	QP
5	489.78	26.89	36.00	9.11	6.61	17.50	2.78	QP
6	589.69	29.31	36.00	6.69	7.05	19.20	3.06	QP

5.3.2 Diagram 002



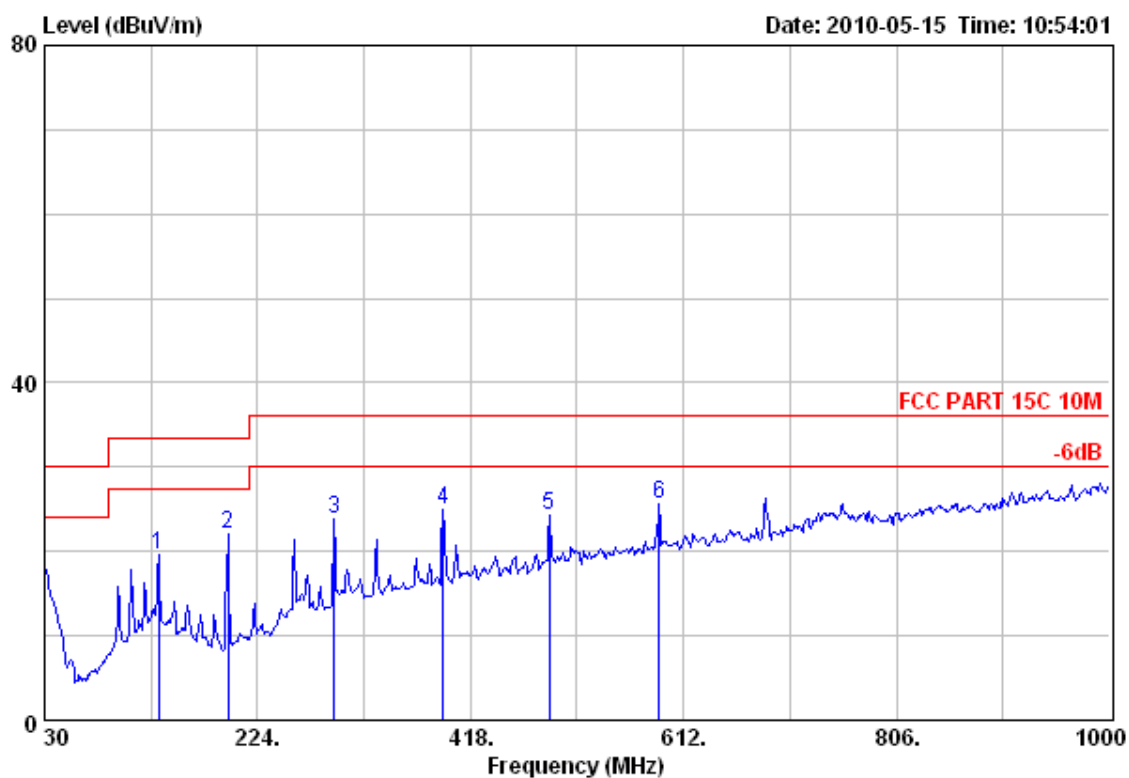
		Emission				Ant.	Cable	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	133.79	19.69	33.50	13.81	6.71	11.46	1.52	QP
2	196.84	22.02	33.50	11.48	12.79	7.42	1.81	QP
3	293.84	23.77	36.00	12.23	9.06	12.56	2.15	QP
4	392.78	24.91	36.00	11.09	6.83	15.58	2.50	QP
5	489.78	24.40	36.00	11.60	4.12	17.50	2.78	QP
6	589.69	25.63	36.00	10.37	3.37	19.20	3.06	QP

5.3.3 Diagram 003



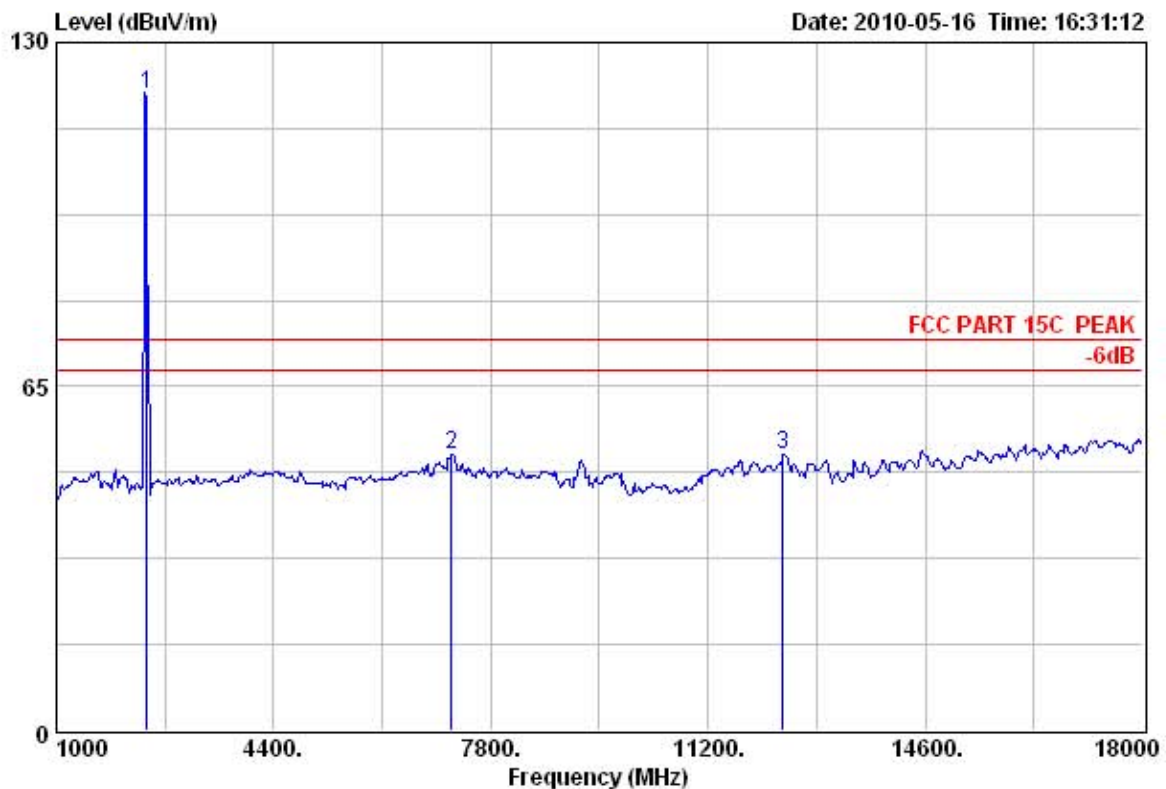
	Emission					Ant.	Cable	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	133.76	24.68	33.50	8.82	11.70	11.46	1.52	QP
2	145.39	28.36	33.50	5.14	15.77	11.00	1.59	QP
3	159.97	25.94	33.50	7.56	14.27	10.00	1.67	QP
4	256.89	28.65	36.00	7.35	14.42	12.20	2.03	QP
5	489.81	26.85	36.00	9.15	6.57	17.50	2.78	QP
6	589.68	29.35	36.00	6.65	7.09	19.20	3.06	QP

5.3.4 Diagram 004



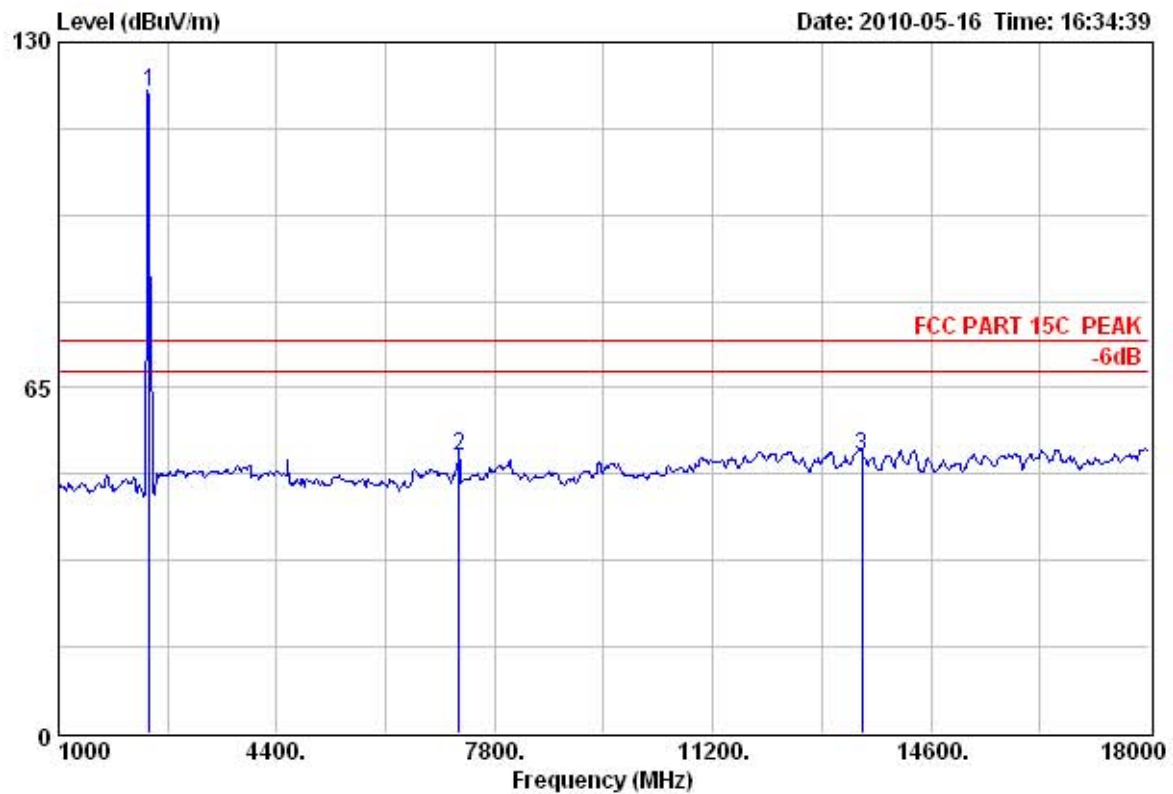
	Emission					Ant.	Cable	
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	Remark
1	133.78	19.71	33.50	13.79	6.73	11.46	1.52	QP
2	196.82	22.11	33.50	11.39	12.88	7.42	1.81	QP
3	293.87	23.81	36.00	12.19	9.10	12.56	2.15	QP
4	392.78	24.86	36.00	11.14	6.78	15.58	2.50	QP
5	489.78	24.38	36.00	11.62	4.10	17.50	2.78	QP
6	589.67	25.63	36.00	10.37	3.37	19.20	3.06	QP

5.3.5 Diagram 005



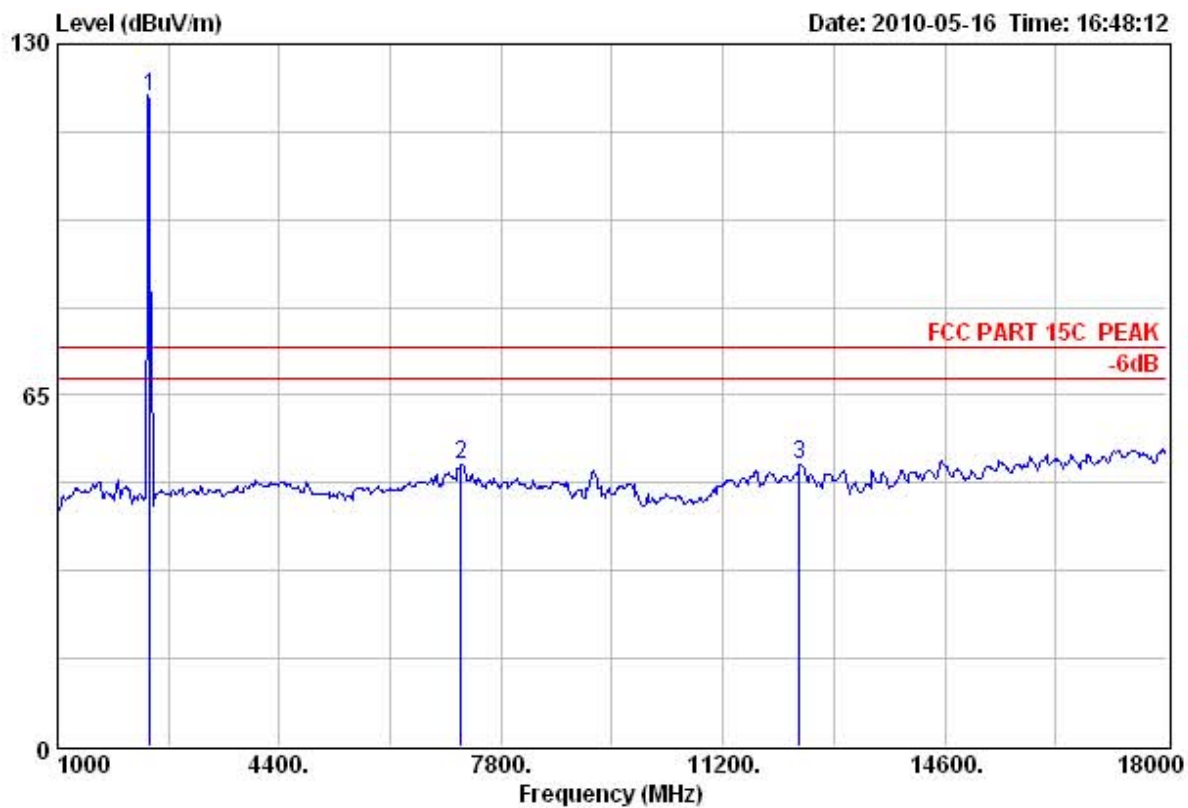
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Remark
1	2412.00	120.16			127.13	31.50	2.23	40.70	Peak
2	7188.00	52.22	74.00	21.78	54.05	36.86	2.52	41.21	Peak
3	12373.00	52.24	74.00	21.76	45.99	39.95	2.84	36.54	Peak

5.3.6 Diagram 006



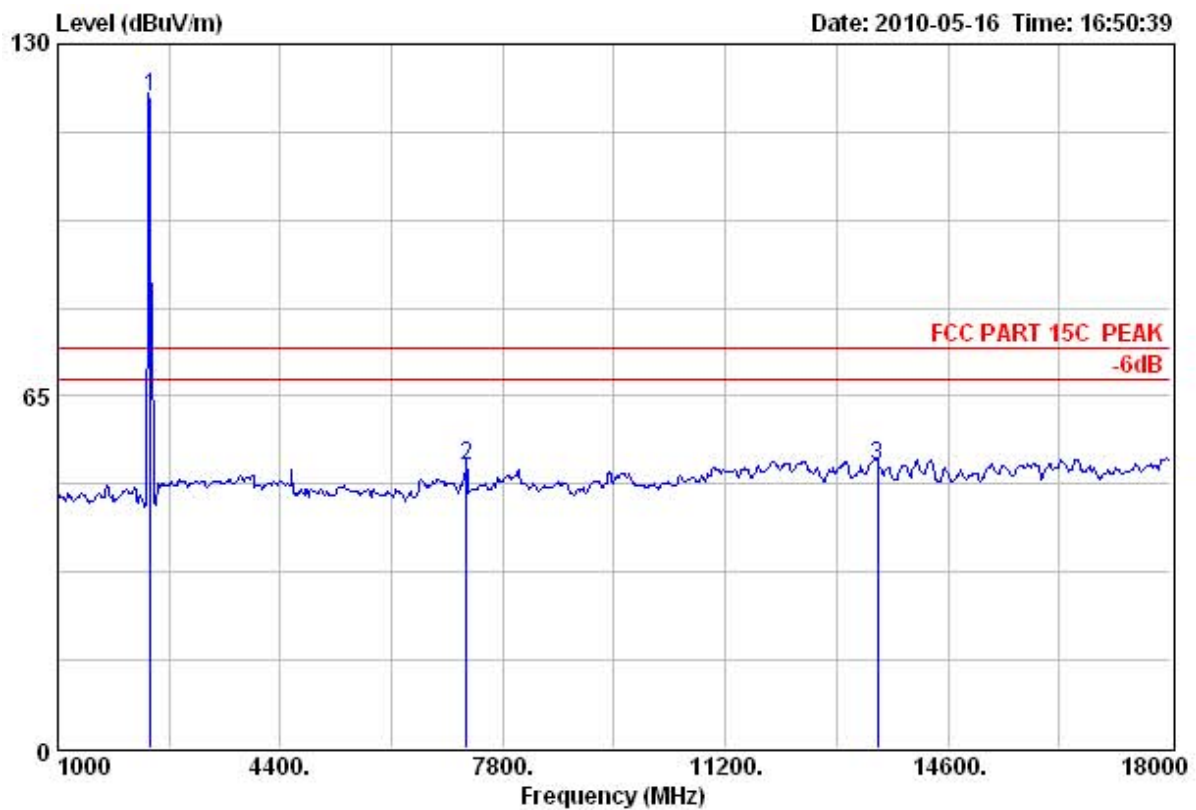
	Emission					Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2412.00	120.53			127.50	31.50	2.23	40.70	Peak
2	7239.00	52.16	74.00	21.84	53.98	36.85	2.53	41.20	Peak
3	13529.00	52.32	74.00	21.68	47.30	40.37	2.91	38.26	Peak

5.3.7 Diagram 007



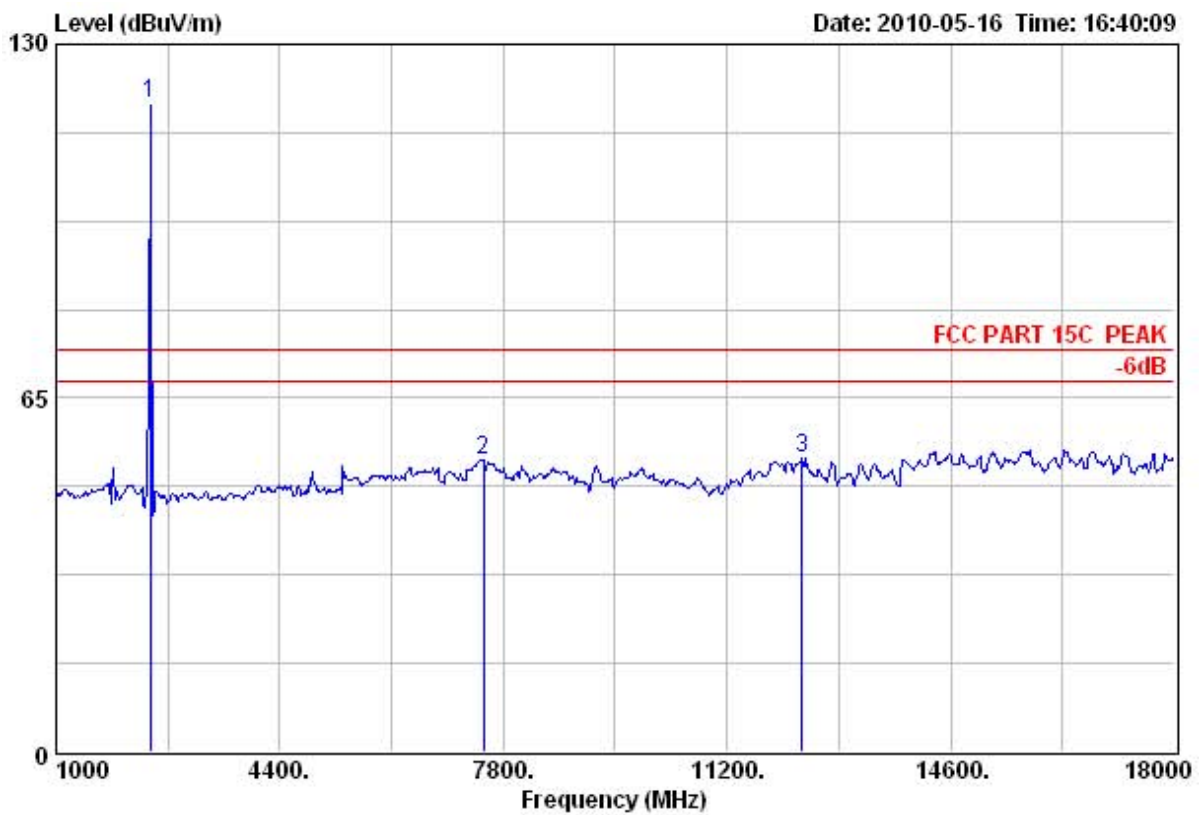
	Emission				Reading	Ant. Factor	Cable Loss	Amp Factor	Remark
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)					
1	2412.00	120.24			127.21	31.50	2.23	40.70	Peak
2	7188.00	52.26	74.00	21.74	54.09	36.86	2.52	41.21	Peak
3	12373.00	52.26	74.00	21.74	46.01	39.95	2.84	36.54	Peak

5.3.8 Diagram 008



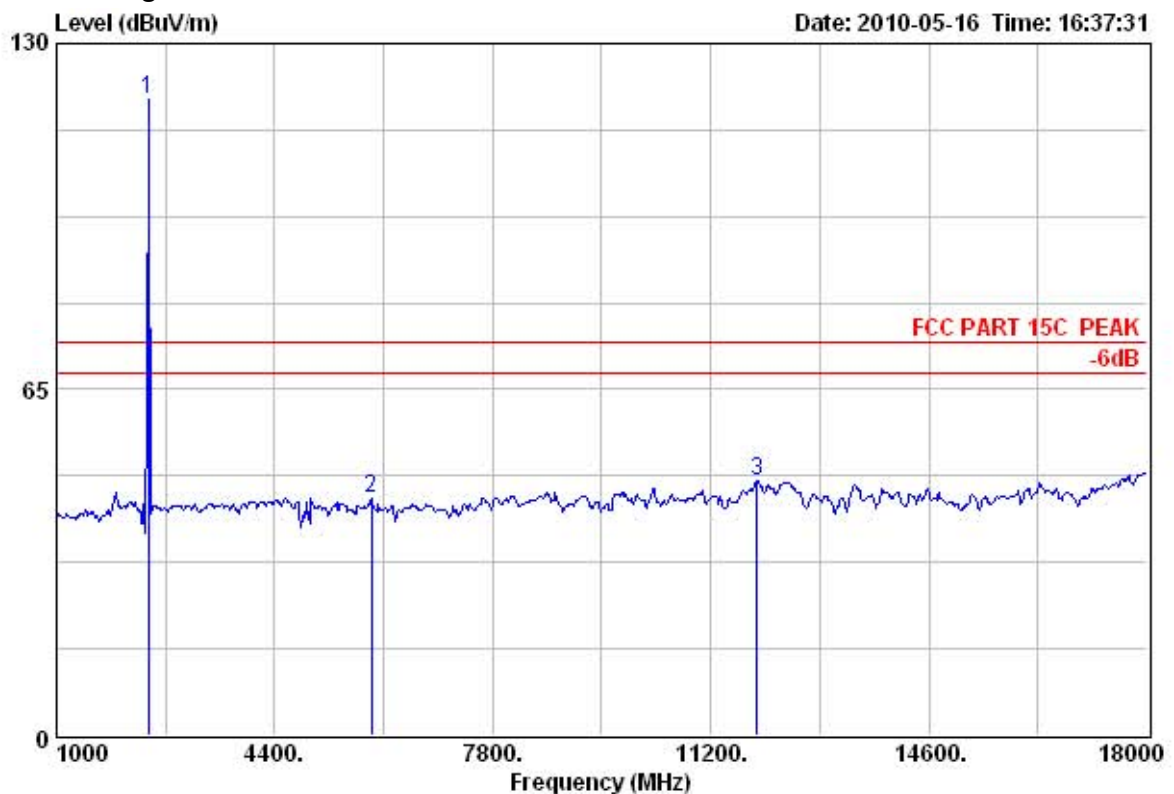
	Emission					Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2412.00	120.26			127.23	31.50	2.23	40.70	Peak
2	7239.00	52.09	74.00	21.91	53.91	36.85	2.53	41.20	Peak
3	13529.00	52.18	74.00	21.82	47.16	40.37	2.91	38.26	Peak

5.3.9 Diagram 009



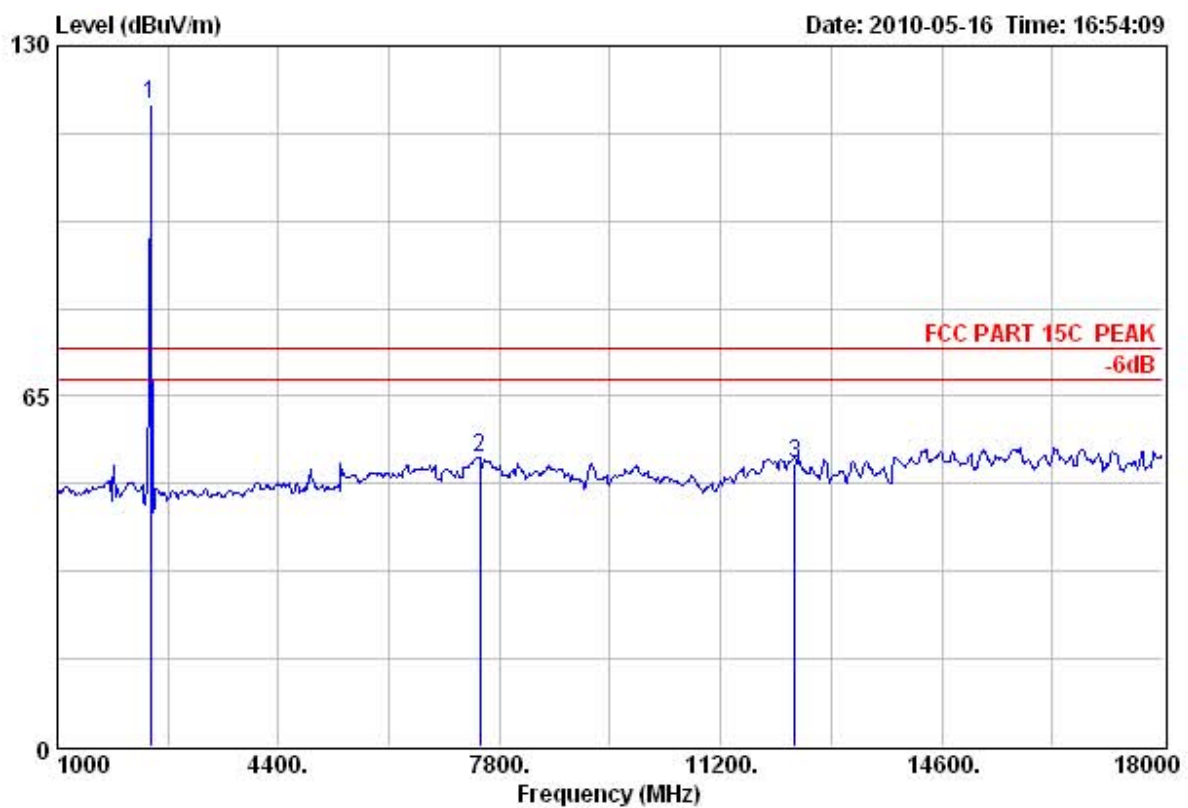
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Remark
1	2438.00	119.26			126.19	31.54	2.23	40.70	Peak
2	7494.00	53.67	74.00	20.33	55.47	36.80	2.54	41.14	Peak
3	12339.00	53.81	74.00	20.19	47.53	39.94	2.84	36.50	Peak

5.3.10 Diagram 010



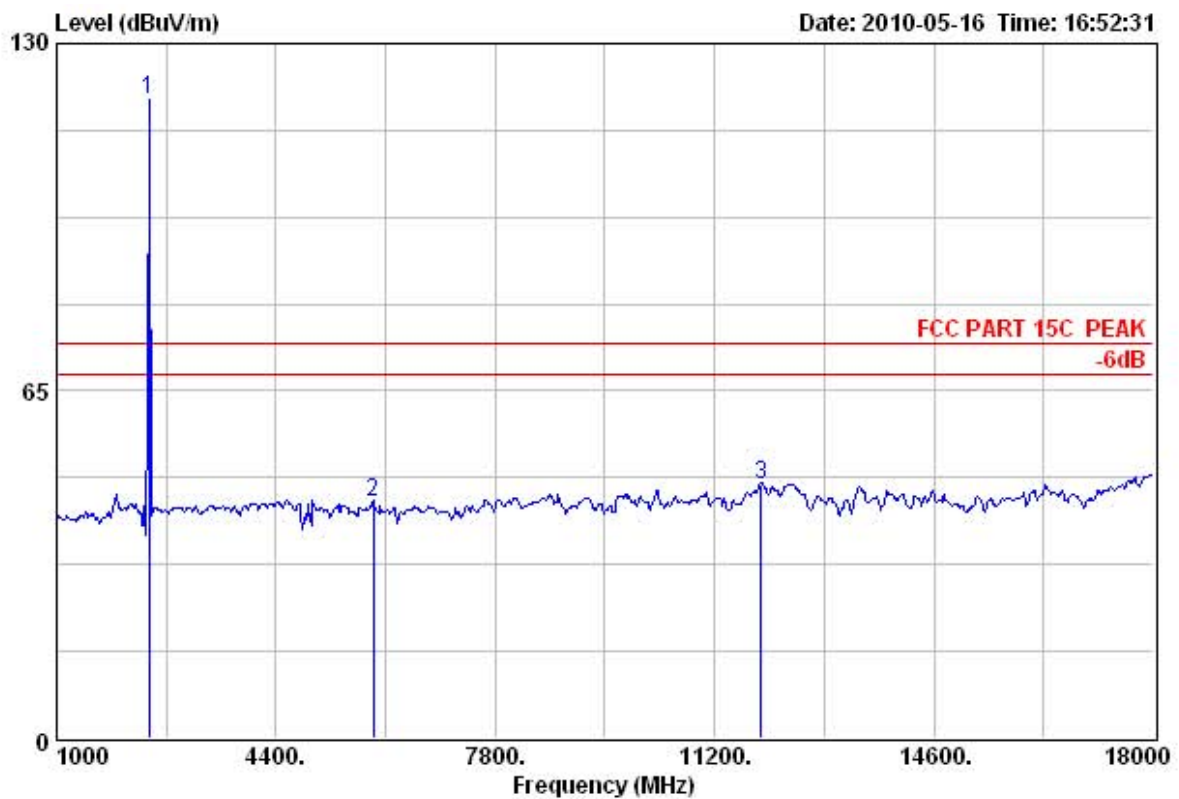
	Freq.	Emission Level	Limits	Margin	Reading	Ant.	Cable	Amp	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	Factor	Loss	Factor	
						(dB/m)	(dB)	(dB)	
1	2438.00	119.63			126.56	31.54	2.23	40.70	Peak
2	5913.00	44.51	74.00	29.49	47.87	35.99	2.45	41.80	Peak
3	11914.00	47.83	74.00	26.17	41.57	39.67	2.82	36.23	Peak

5.3.11 Diagram 011



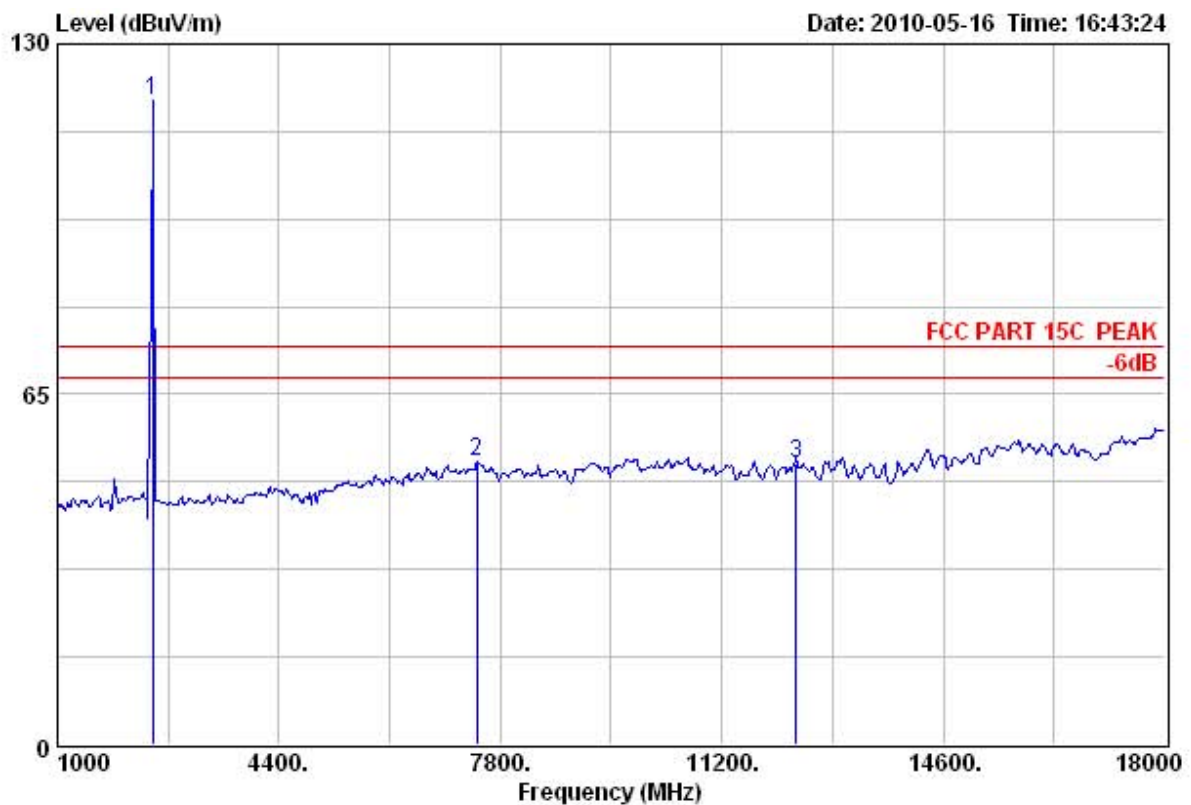
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Remark
1	2438.00	119.18			126.11	31.54	2.23	40.70	Peak
2	7494.00	53.58	74.00	20.42	55.38	36.80	2.54	41.14	Peak
3	12339.00	52.47	74.00	21.53	46.19	39.94	2.84	36.50	Peak

5.3.12 Diagram 012



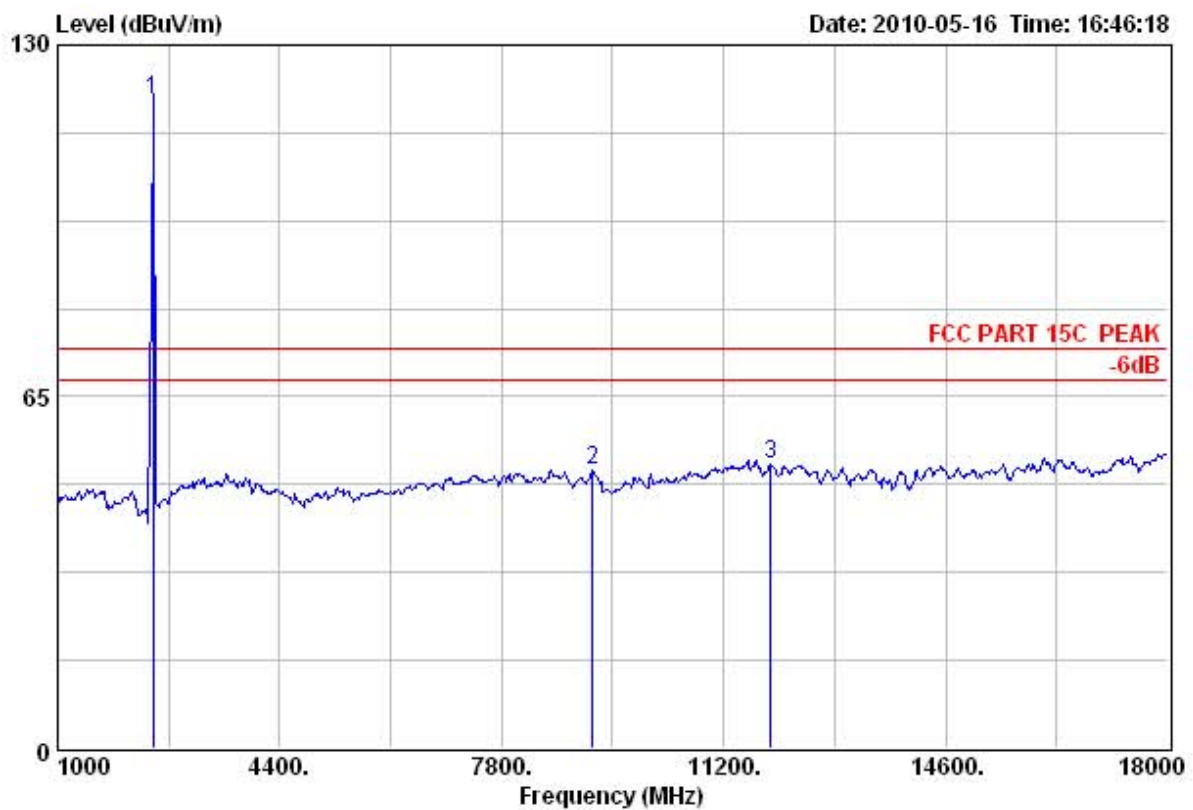
		Emission				Ant.	Cable	Amp	
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Remark
1	2438.00	119.56			126.49	31.54	2.23	40.70	Peak
2	5913.00	44.35	74.00	29.65	47.71	35.99	2.45	41.80	Peak
3	11914.00	47.57	74.00	26.43	41.31	39.67	2.82	36.23	Peak

5.3.13 Diagram 013



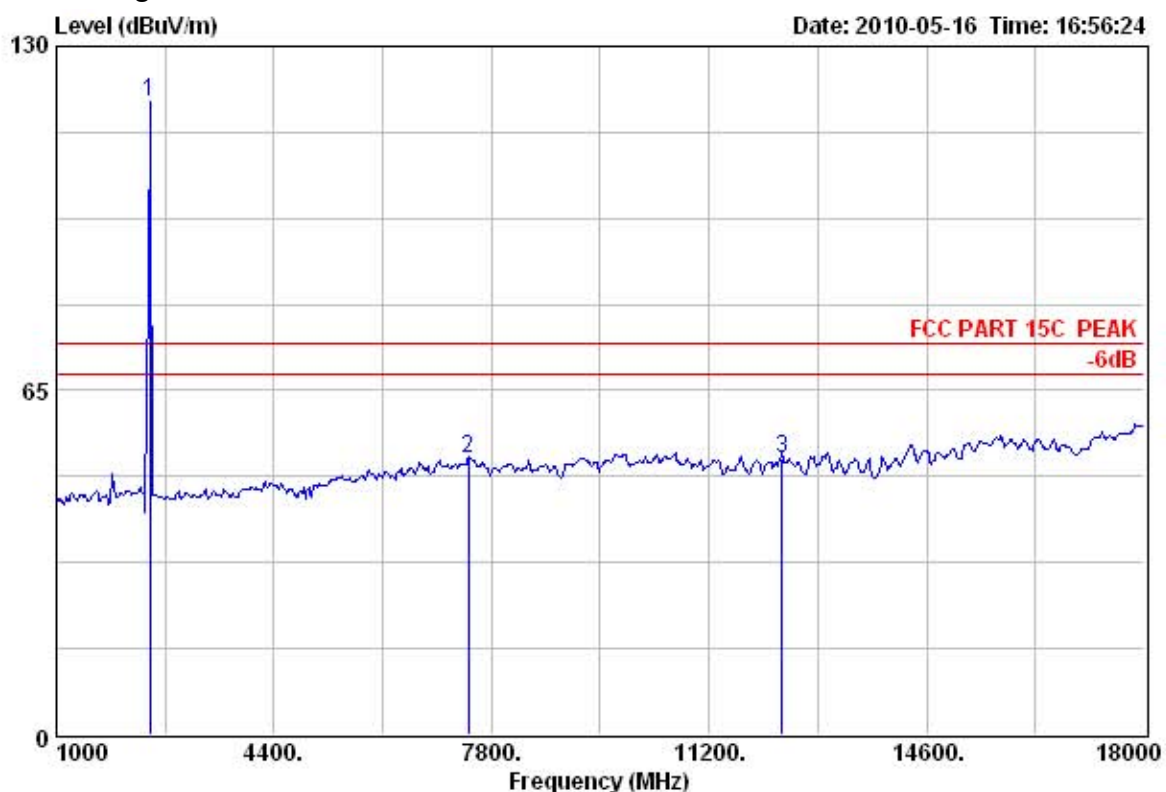
	Freq.	Emission				Ant.	Cable	Amp	
	(MHz)	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
		(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2464.00	119.52			126.43	31.56	2.23	40.70	Peak
2	7443.00	52.45	74.00	21.55	54.25	36.81	2.54	41.15	Peak
3	12339.00	52.30	74.00	21.70	46.02	39.94	2.84	36.50	Peak

5.3.14 Diagram 014



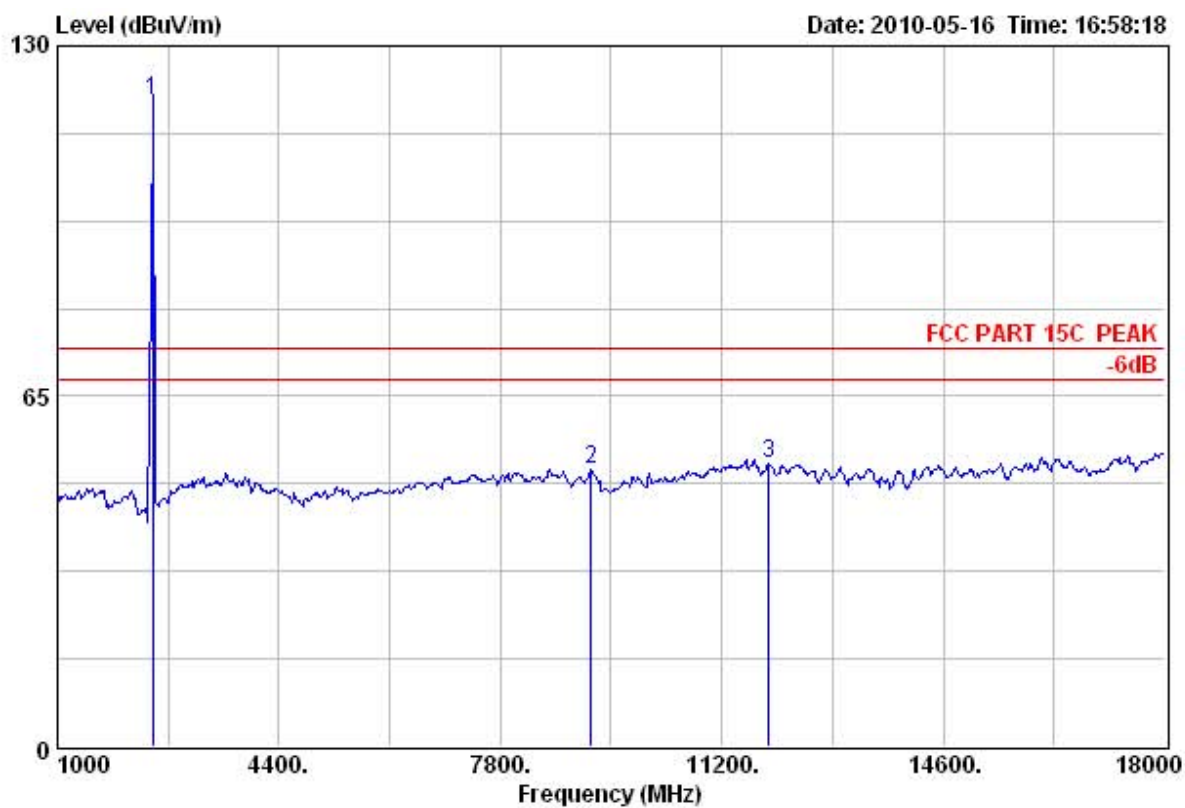
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Remark
1	2464.00	119.79			126.70	31.56	2.23	40.70	Peak
2	9194.00	51.60	74.00	22.40	52.36	37.25	2.65	40.66	Peak
3	11914.00	52.44	74.00	21.56	46.18	39.67	2.82	36.23	Peak

5.3.15 Diagram 015



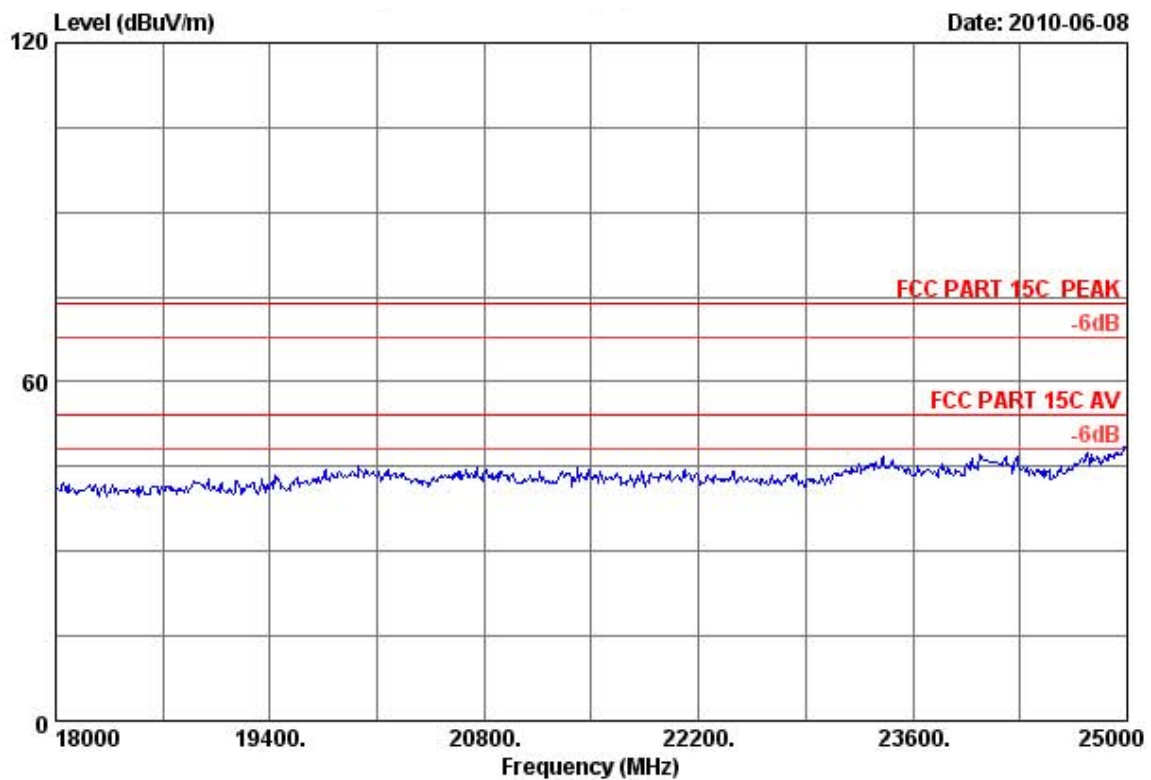
		Emission				Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2464.00	119.47			126.38	31.56	2.23	40.70	Peak
2	7443.00	52.16	74.00	21.84	53.96	36.81	2.54	41.15	Peak
3	12339.00	52.12	74.00	21.88	45.84	39.94	2.84	36.50	Peak

5.3.16 Diagram 016

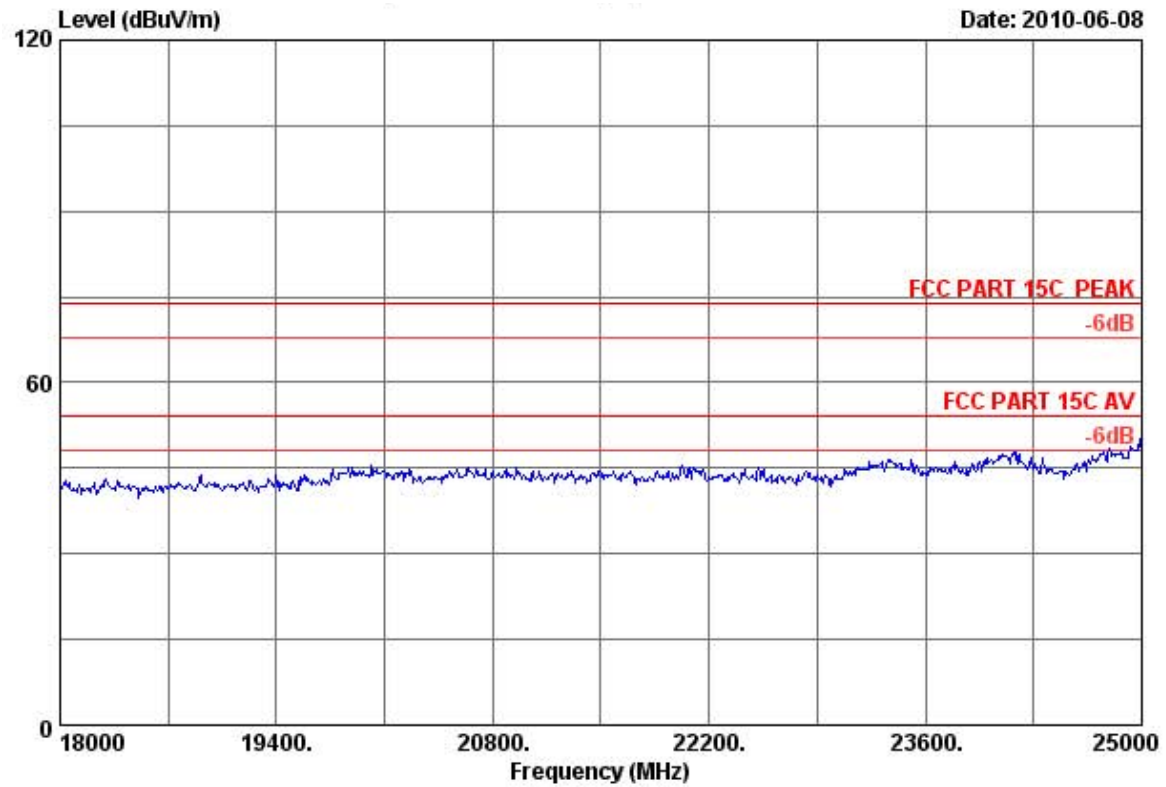


		Emission				Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2464.00	119.79			126.70	31.56	2.23	40.70	Peak
2	9194.00	51.60	74.00	22.40	52.36	37.25	2.65	40.66	Peak
3	11914.00	52.44	74.00	21.56	46.18	39.67	2.82	36.23	Peak

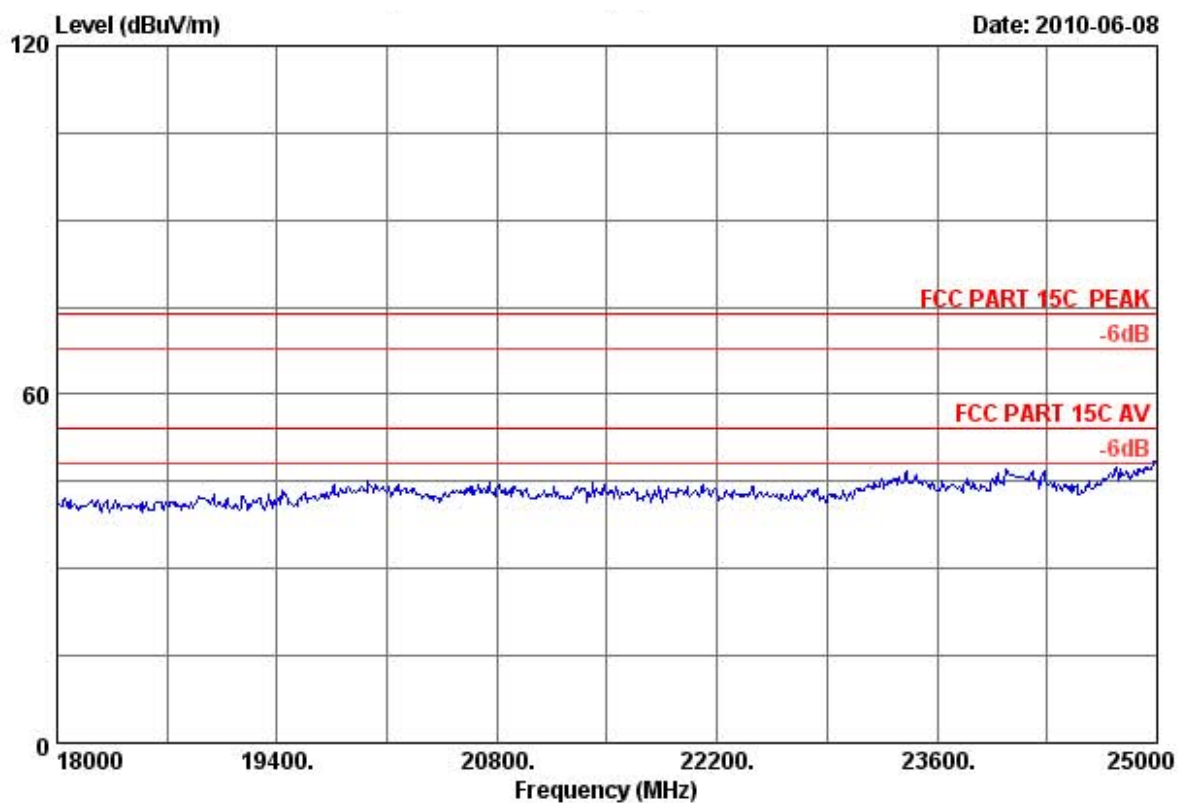
5.3.17 Diagram 017



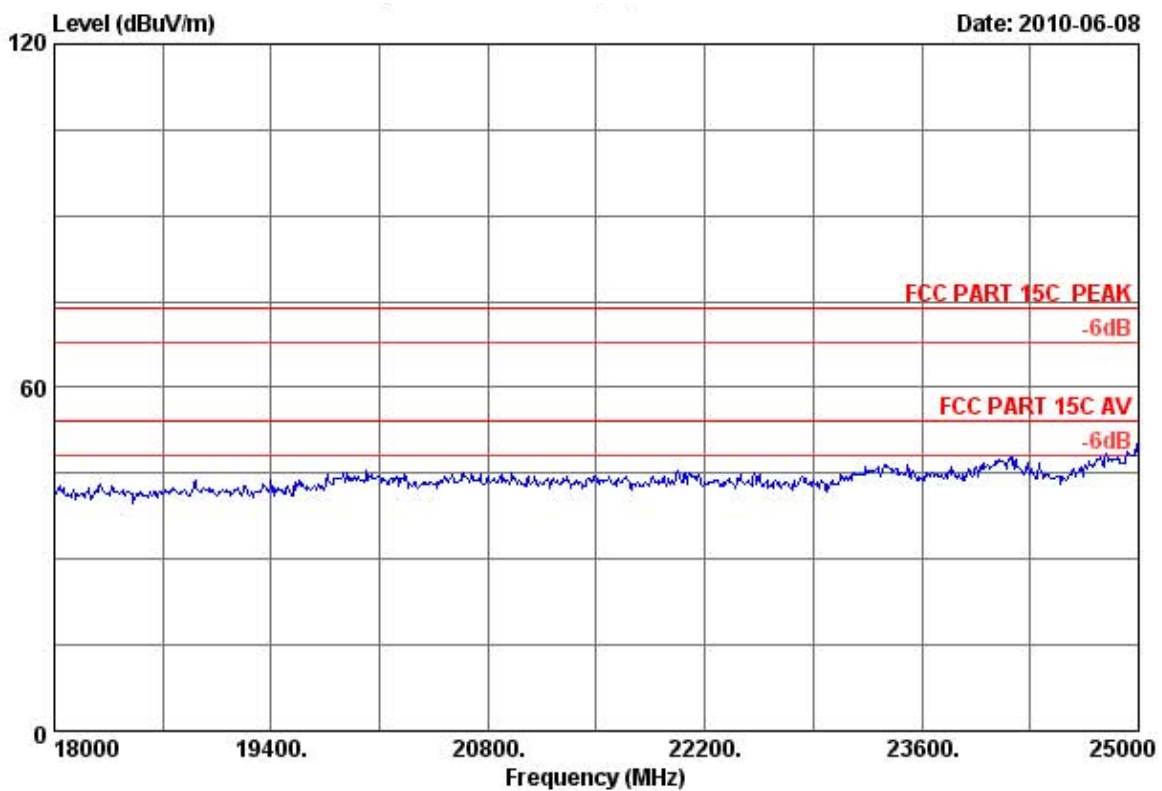
5.3.18 Diagram 018



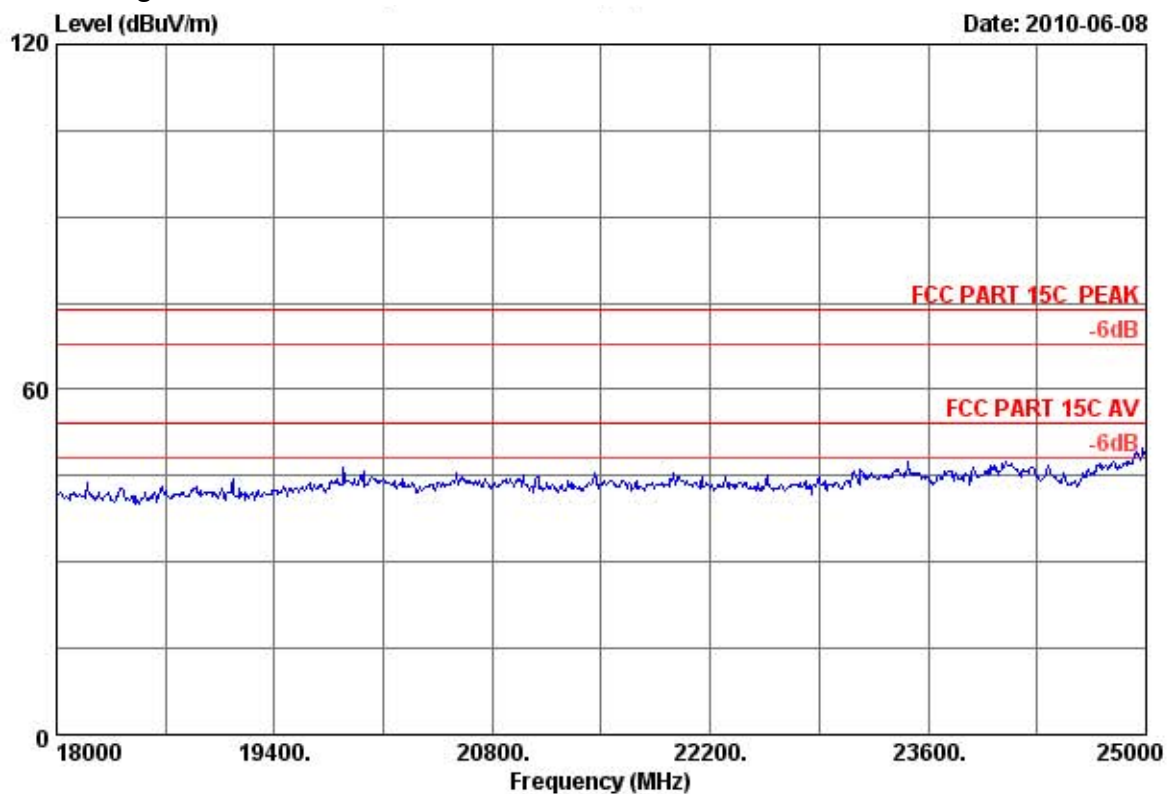
5.3.19 Diagram 019



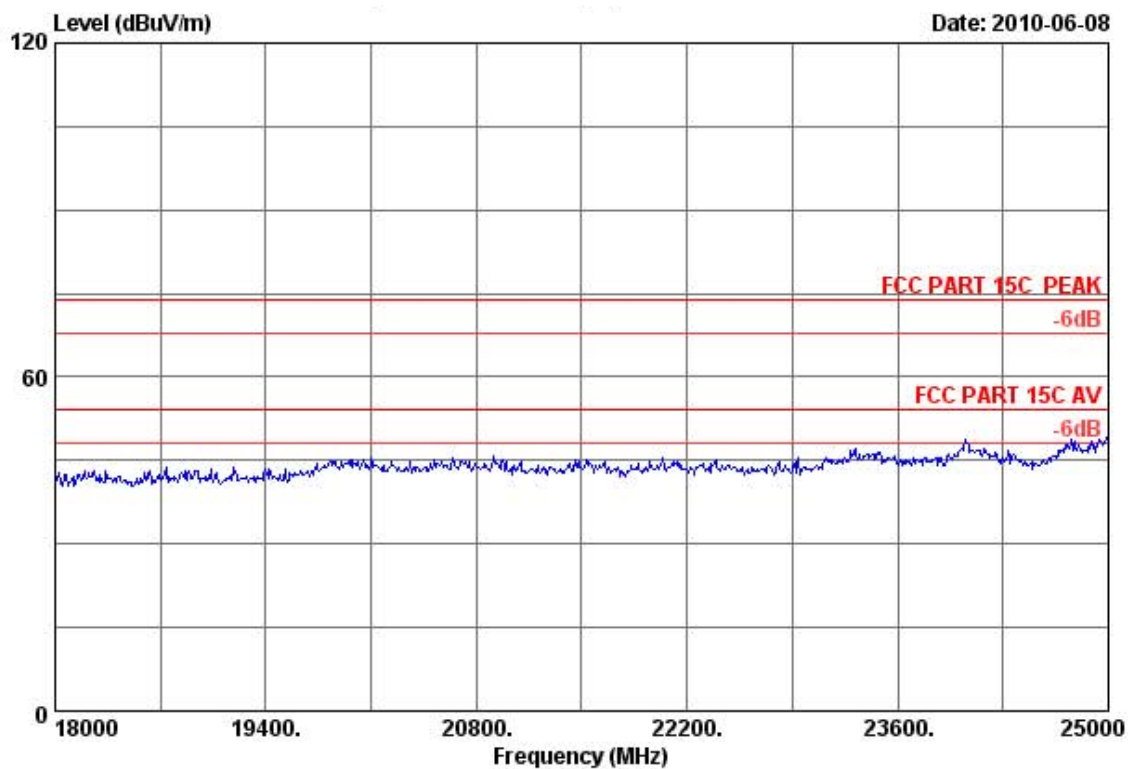
5.3.20 Diagram 020



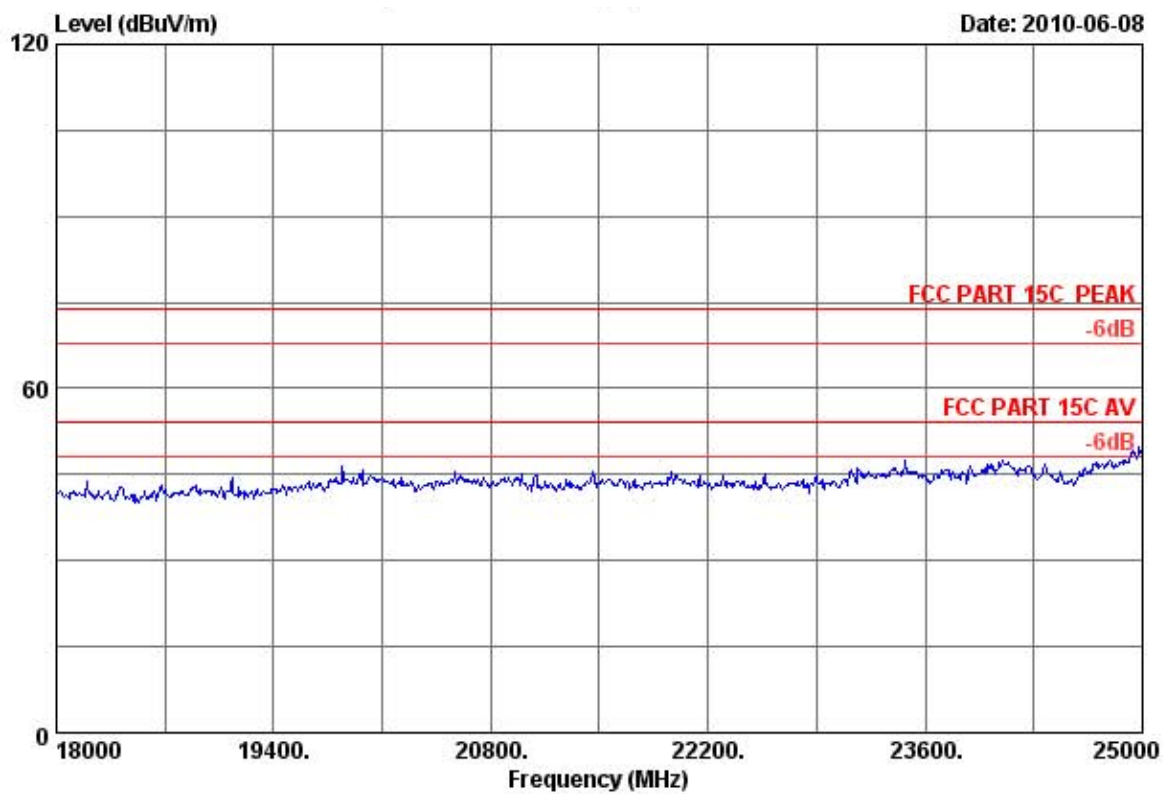
5.3.21 Diagram 021



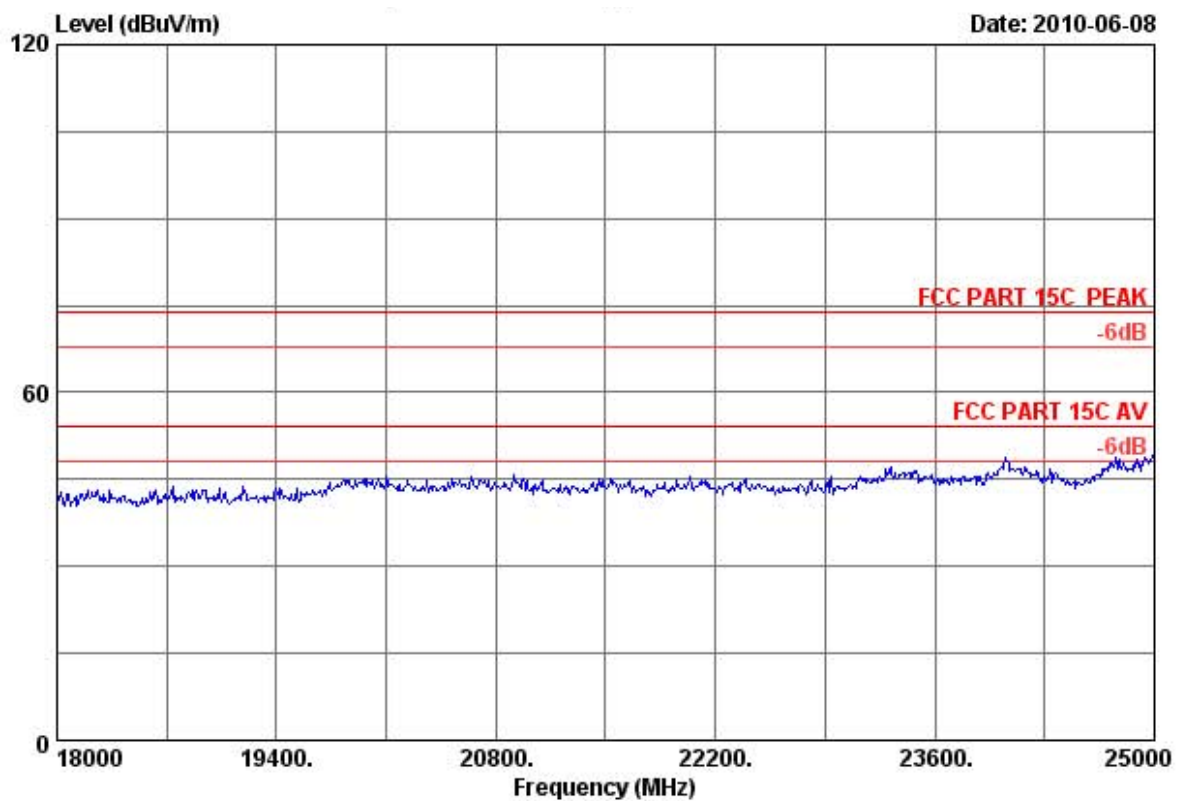
5.3.22 Diagram 022



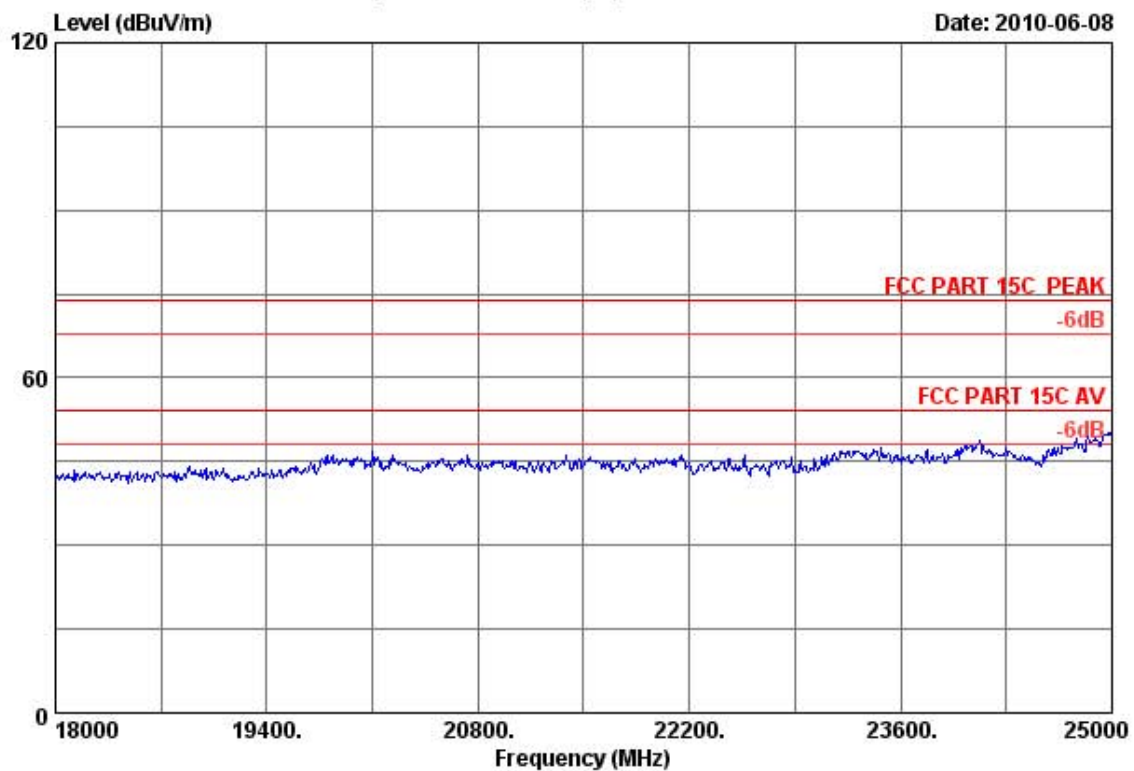
5.3.23 Diagram 023



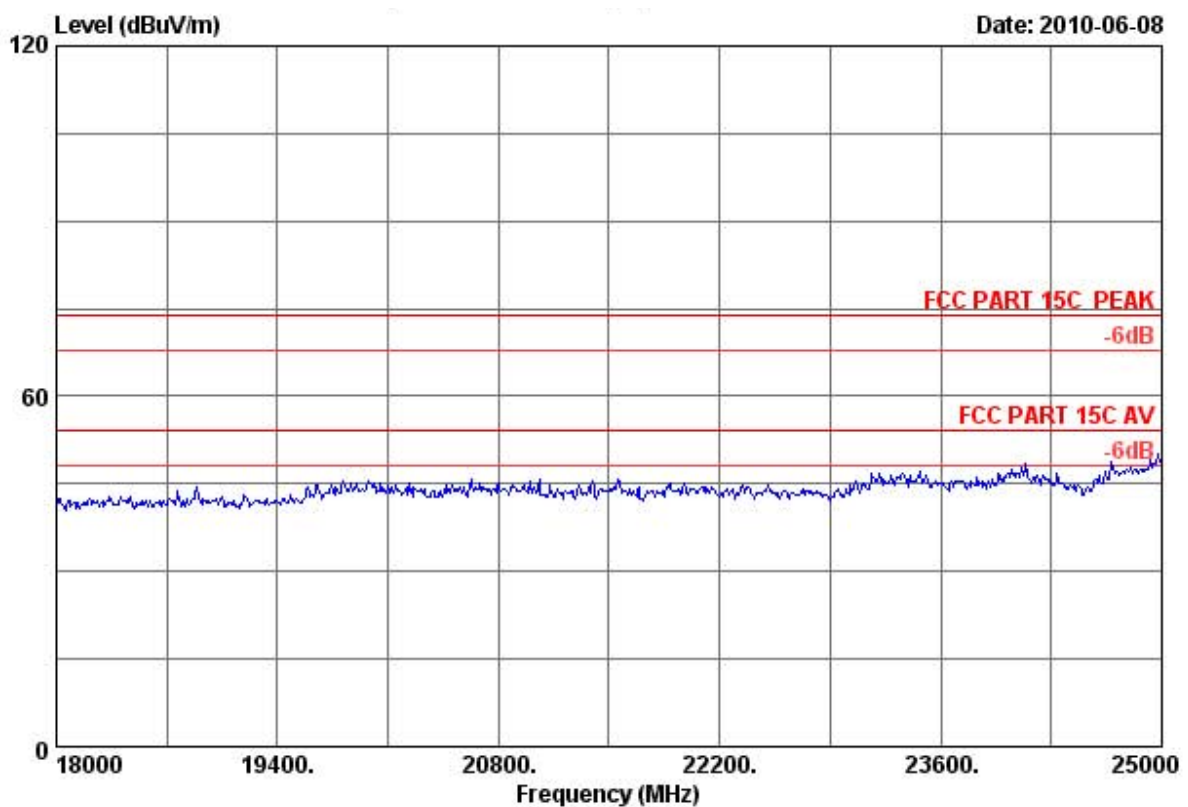
5.3.24 Diagram 024



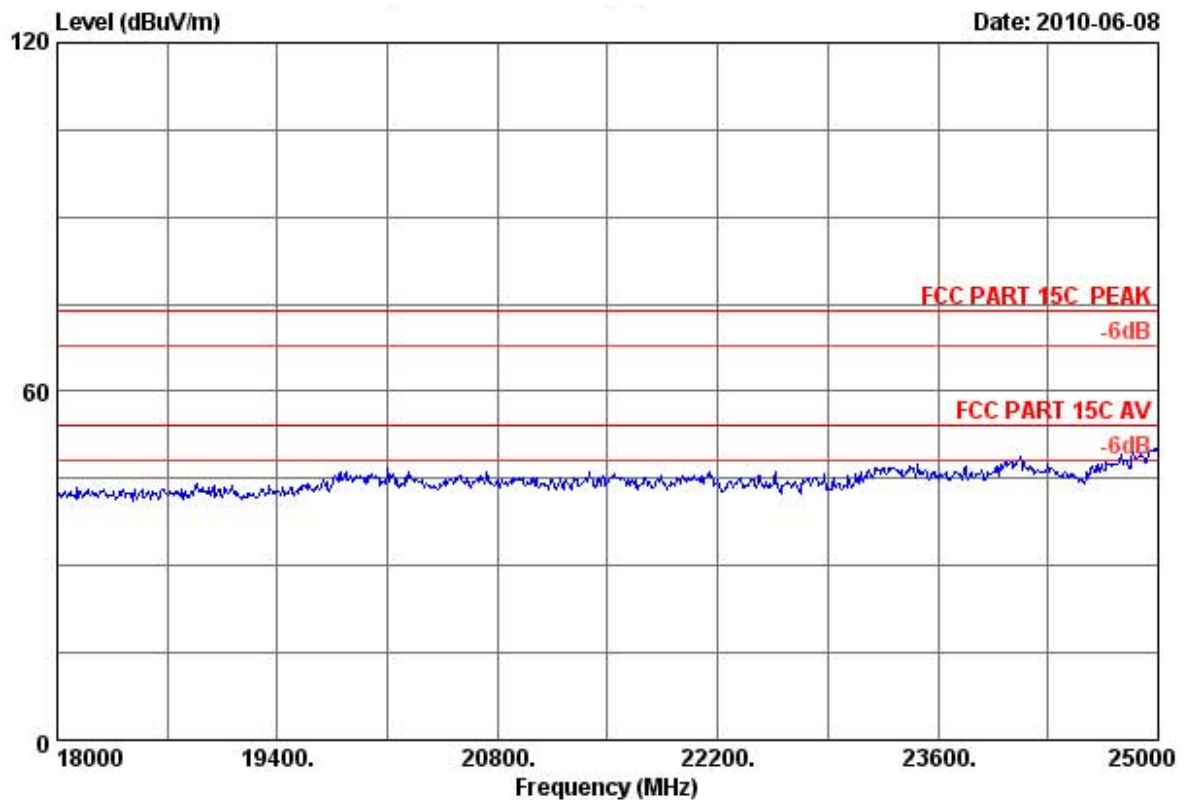
5.3.25 Diagram 025



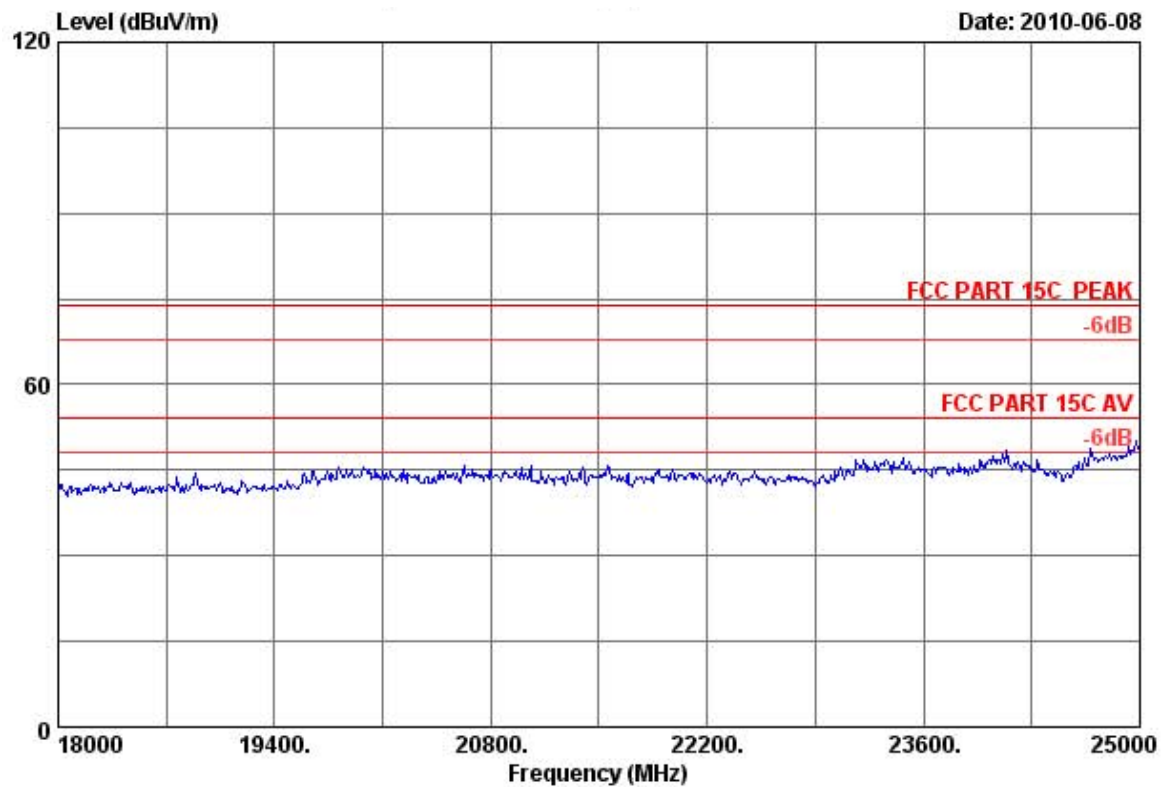
5.3.26 Diagram 026



5.3.27 Diagram 027



5.3.28 Diagram 028



6. 6dB Bandwidth Test

6.1 Test Procedure

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum with the power of which is lower than peak power for 6dB.

6.2 Measurement Equipment

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Spectrum Analyzer	Jul.31,09	FSL3	101507	Rohde&Schwarz
☒	Attenuator	Jan 13,10	8491B	MY39264940	Agilent

6.3 Test Result

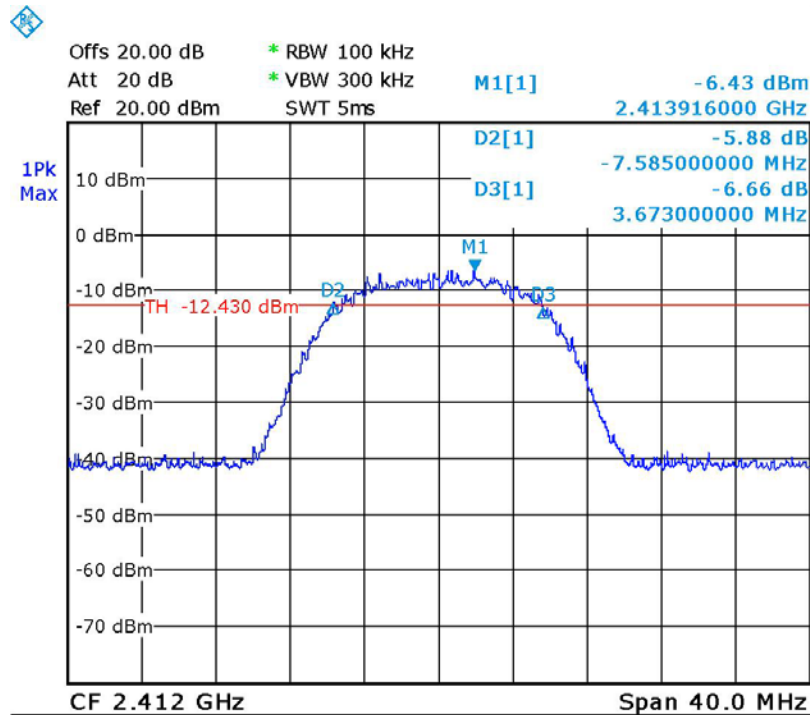
TM1:

Channel	Diagram	6dB bandwidth MHz	Limit MHz	Result
1	029	11.258	≥ 0.5	Pass
2	030	11.337	≥ 0.5	Pass
3	031	11.337	≥ 0.5	Pass

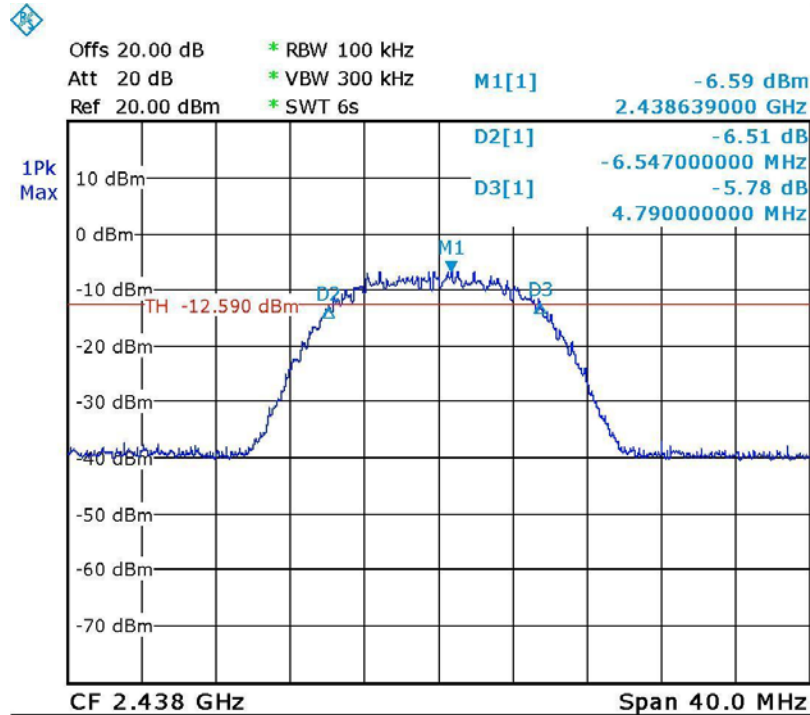
TM2

Channel	Diagram	6dB bandwidth MHz	Limit MHz	Result
1	032	11.177	≥ 0.5	Pass
2	033	11.337	≥ 0.5	Pass
3	034	11.337	≥ 0.5	Pass

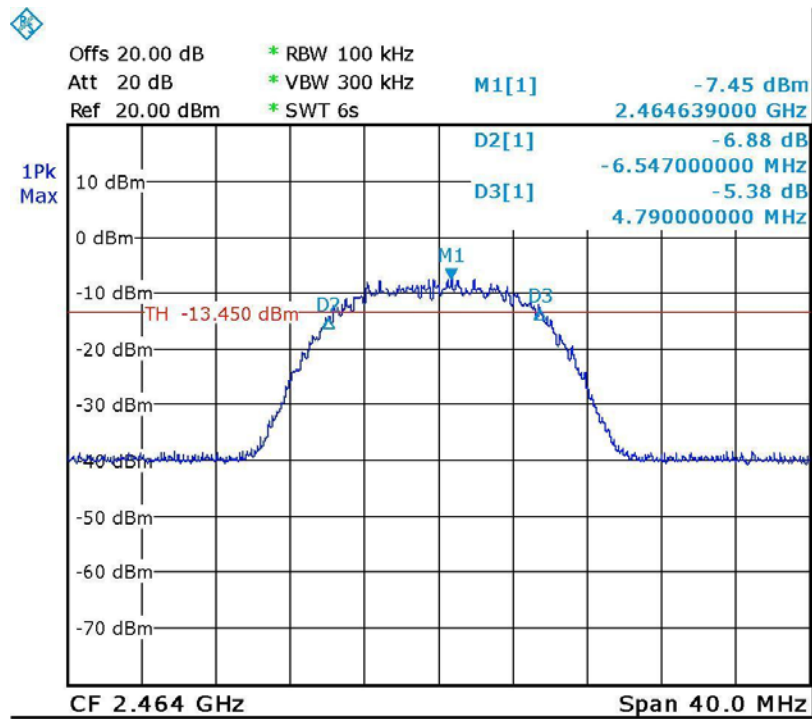
6.3.1 Diagram 029



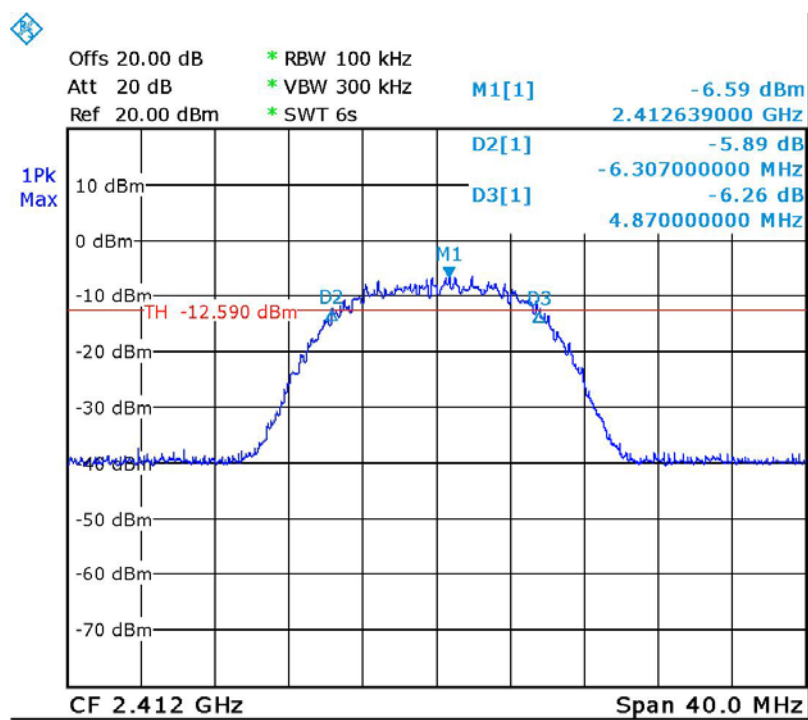
6.3.2 Diagram 030



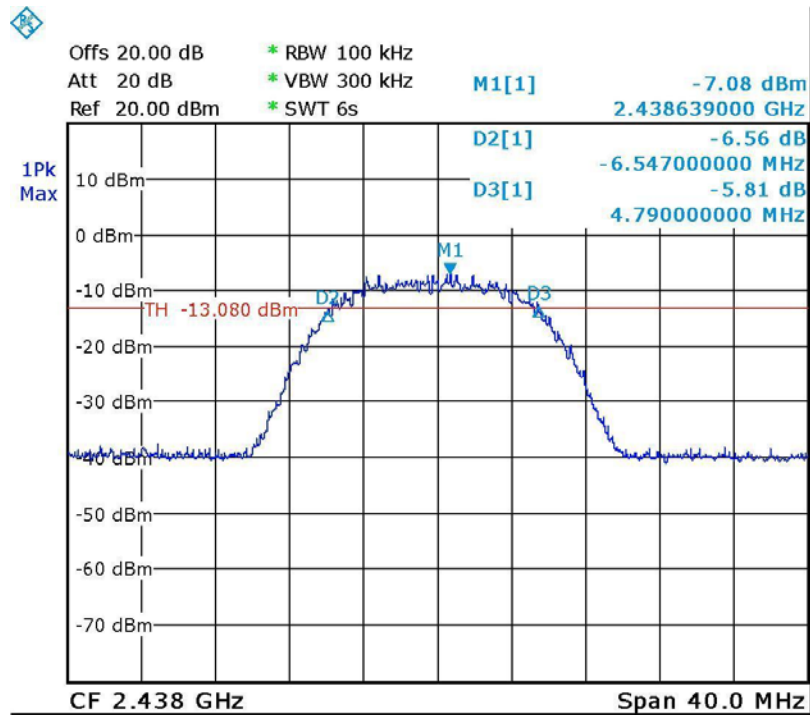
6.3.3 Diagram 031



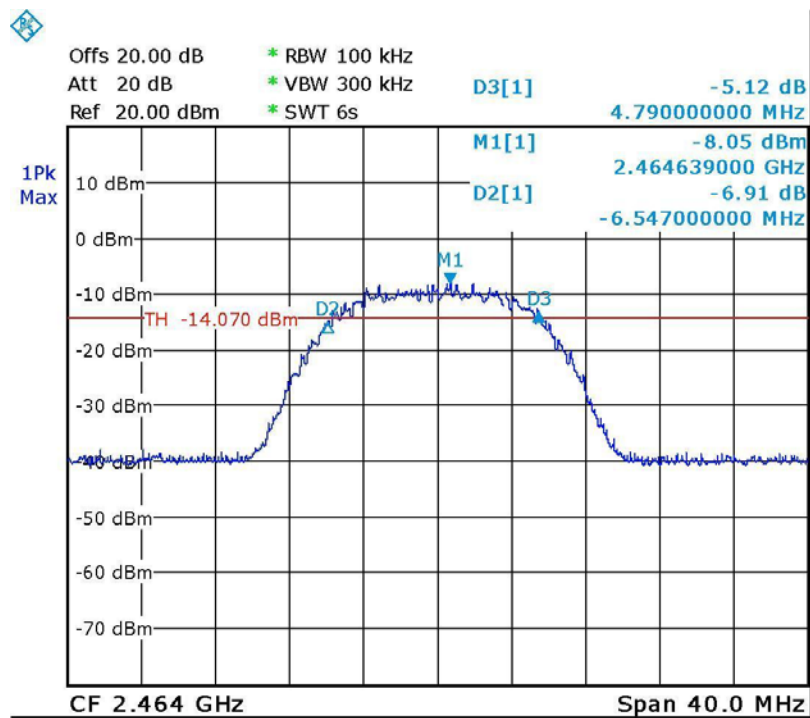
6.3.4 Diagram 032



6.3.5 Diagram 033



6.3.6 Diagram 034



7. Band Edge Compliance Test

7.1 Test Procedure

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

RBW=1MHz ; VBW=1MHz, Sweep=AUTO, PK detector for peak emissions measurement

RBW=1MHz ; VBW=10Hz, Sweep=AUTO, PK detector for average emissions measure

7.2 Measurement Equipment

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Horn Antenna	09.07.13	3117	00062558	EMCO
☒	Spectrum Analyzer	09.05.30	8593E	3448U00806	HP
☒	PREAMplifier	09.05.31	PEC-38-30M18G-12-SFF	NSEMC001	BURGEON
☒	RF Cable	10.05.02	M06/25-RG102	966 Cable 2#	DRAKA

7.3 Test Result

Connect mode	Antenna Polarity	Remark	Test Data	Test Result
TM1 CH1	Horizontal	PK	Diagram 035	Pass
	Vertical	PK	Diagram 036	Pass
TM1 CH1	Horizontal	AV	Diagram 037	Pass
	Vertical	AV	Diagram 038	Pass
TM2 CH1	Horizontal	PK	Diagram 039	Pass
	Vertical	PK	Diagram 040	Pass
TM2 CH1	Horizontal	AV	Diagram 041	Pass
	Vertical	AV	Diagram 042	Pass
TM1 CH3	Horizontal	PK	Diagram 043	Pass
	Vertical	PK	Diagram 044	Pass
TM1 CH3	Horizontal	AV	Diagram 045	Pass
	Vertical	AV	Diagram 046	Pass
TM2 CH3	Horizontal	PK	Diagram 047	Pass
	Vertical	PK	Diagram 048	Pass
TM2 CH3	Horizontal	AV	Diagram 049	Pass
	Vertical	AV	Diagram 050	Pass

NOTES:

1. All modes were measured and the worst case emission was reported.
2. H =Horizontal V=Vertical
3. Emission = Reading +Antenna Factor + Cable Loss –Amp Factor(if exist)
4. Emission level dB μ V = 20 log Emission level μ V/m
5. All the emissions appearing within 15.205 Restricted bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

Remark :

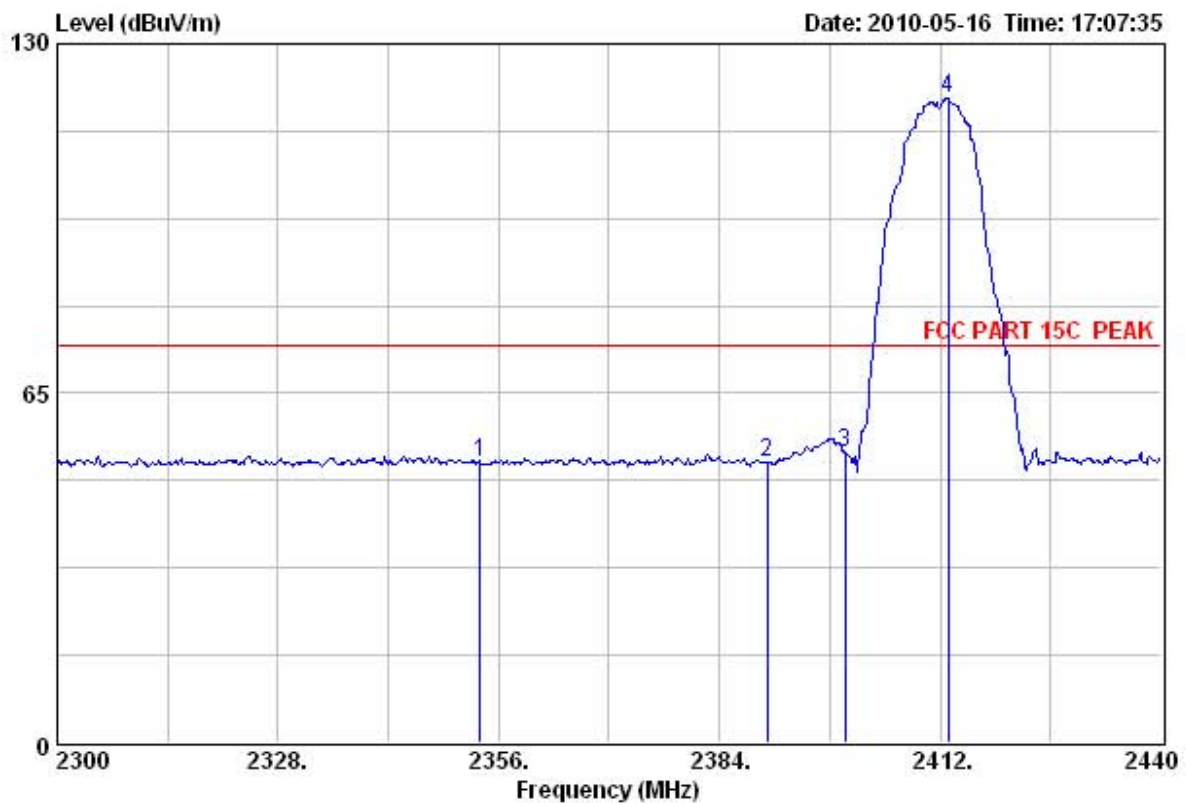
The limit of 15.209(a) of 3 meter distance is

Frequency MHz	Distance m	Field strength		Distance m	Field strength dB μ V/m(QP)
		μ V/m	dB μ V/m(QP)		
30-88	3	100	40.0	10	30.0
88-216	3	150	43.5	10	33.5
216-960	3	200	46.0	10	36.0
960-1000	3	500	54.0	10	44.0
Above 1000	3	74.0 dB μ V/m (PK) 54.0 dB μ V/m (AV)		/	/

15.205 Restricted bands of operation:

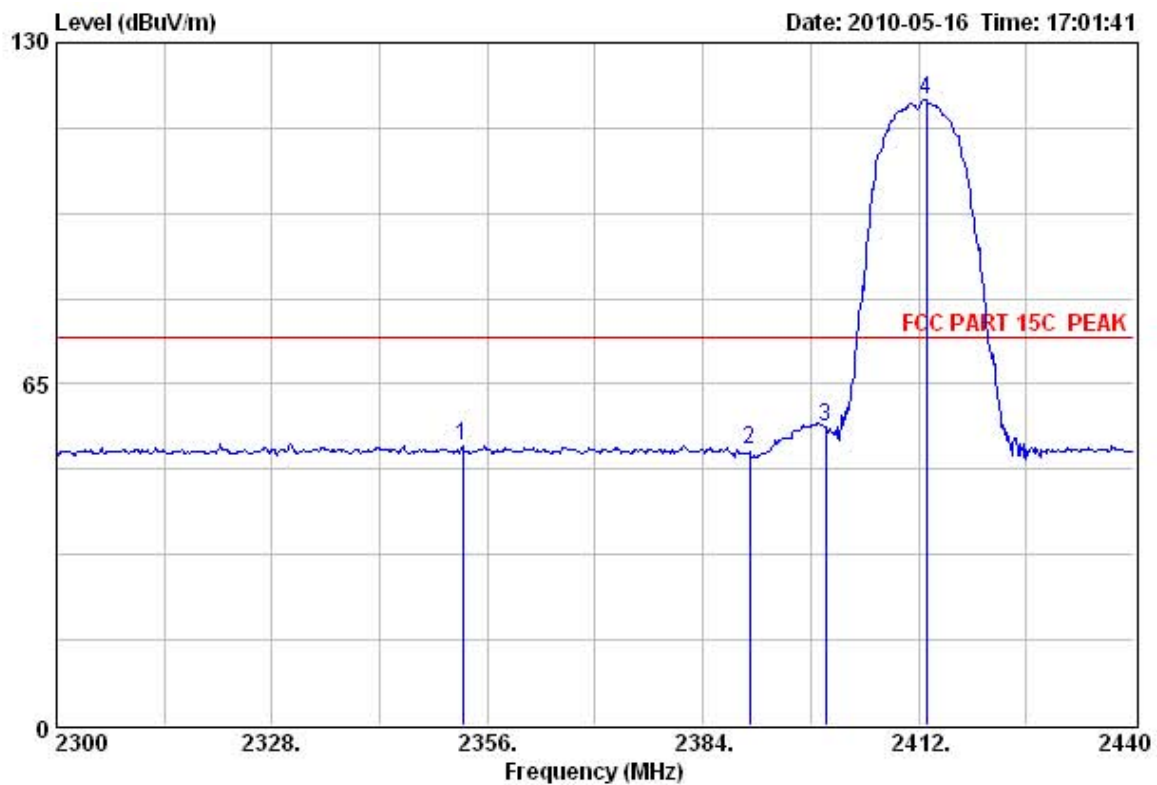
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

7.3.1 Diagram 035



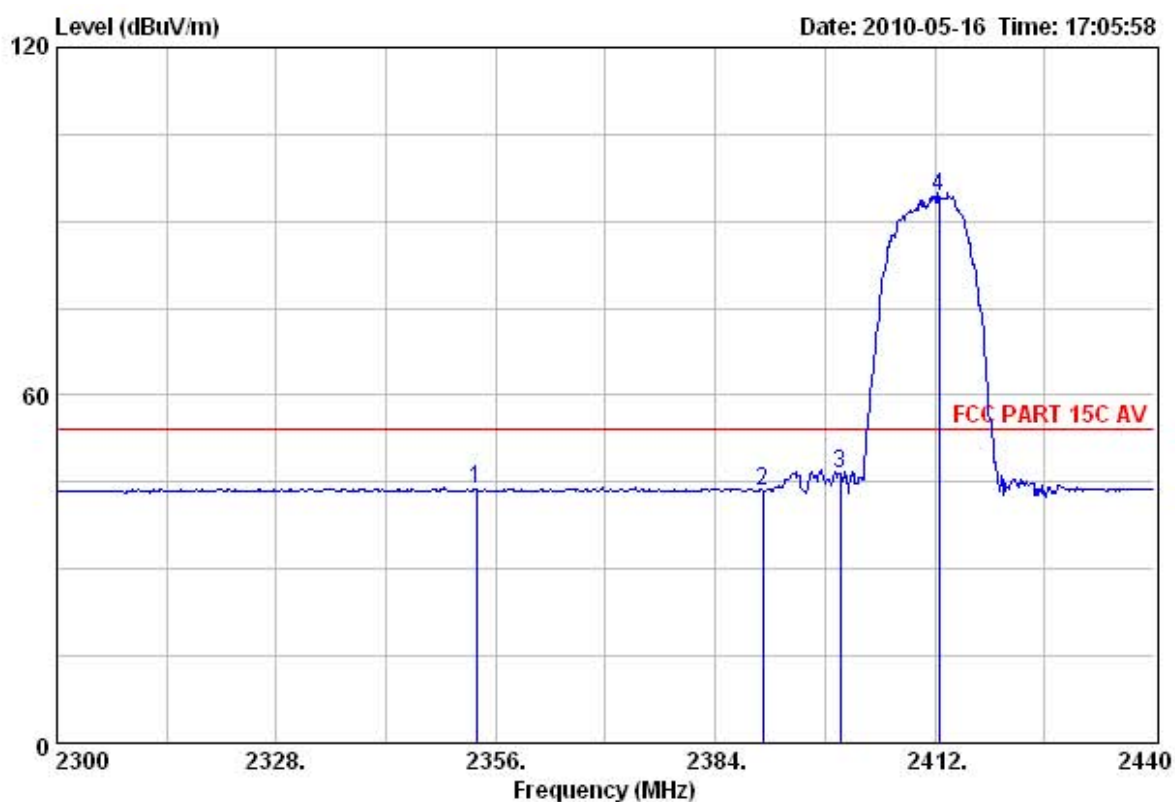
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Remark
1	2353.62	52.10	74.00	21.90	18.43	31.45	2.22	Peak
2	2390.00	52.11	74.00	21.89	18.41	31.48	2.22	Peak
3	2400.00	54.01	74.00	19.99	20.28	31.50	2.23	Peak
4	2412.98	119.81			86.08	31.50	2.23	Peak

7.3.2 Diagram 036



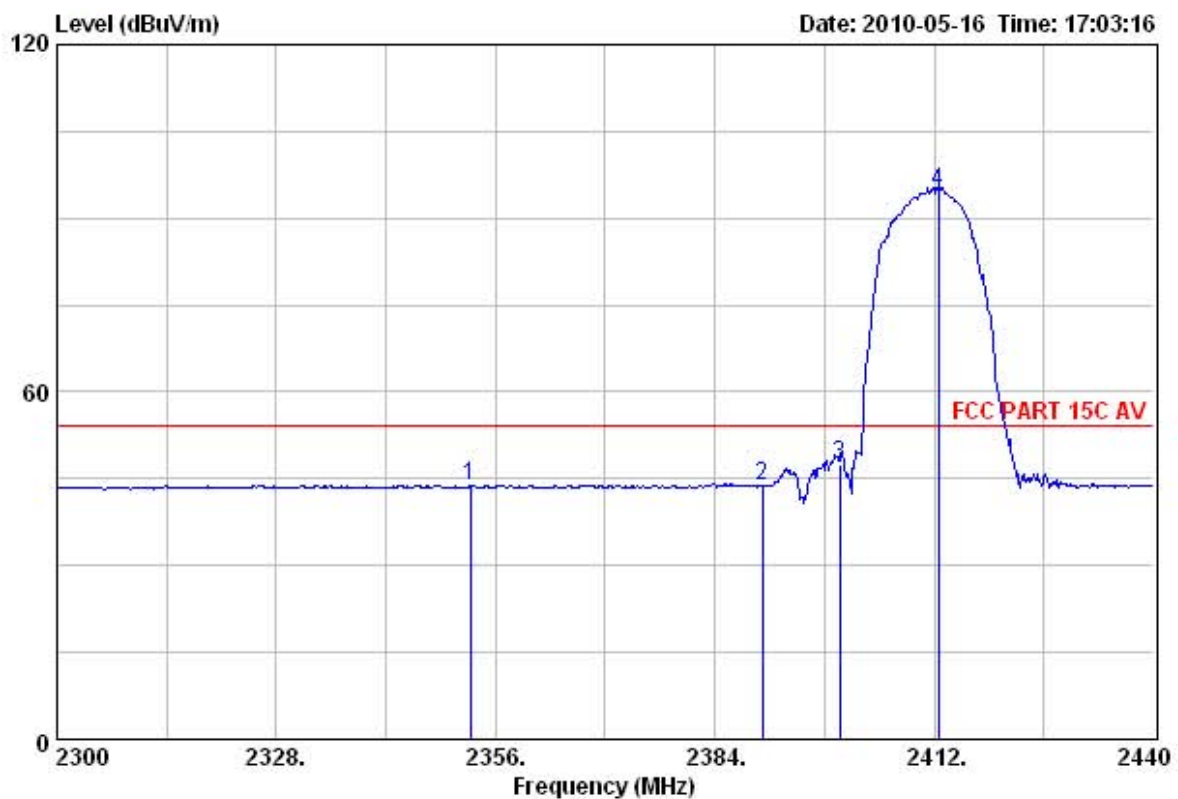
	Emission					Ant.	Cable	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	2352.78	53.33	74.00	20.67	19.66	31.45	2.22	Peak
2	2390.00	52.41	74.00	21.59	18.71	31.48	2.22	Peak
3	2400.00	56.82	74.00	17.18	23.09	31.50	2.23	Peak
4	2412.98	119.18			85.45	31.50	2.23	Peak

7.3.3 Diagram 037



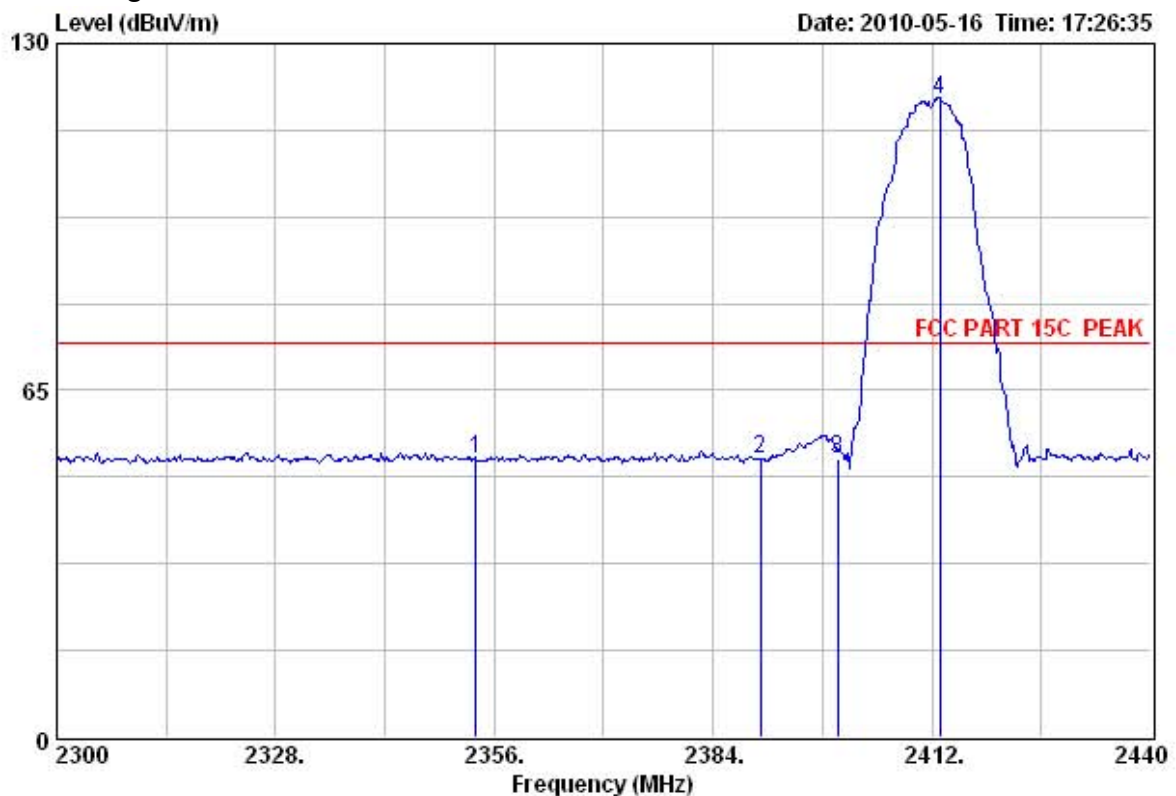
	Emission					Ant.	Cable	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	2353.50	43.64	54.00	10.36	9.97	31.45	2.22	Average
2	2390.00	43.57	54.00	10.43	9.87	31.48	2.22	Average
3	2400.00	46.30	54.00	7.70	12.57	31.50	2.23	Average

7.3.4 Diagram 038



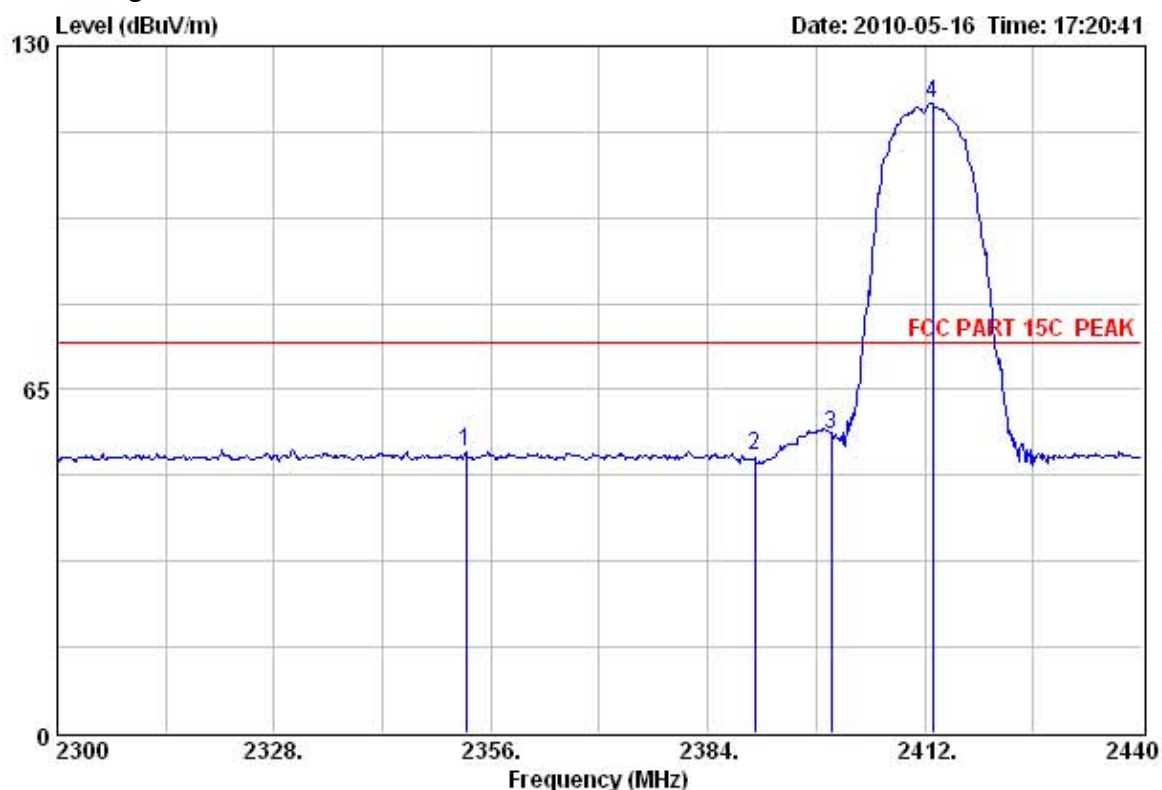
		Emission				Ant.	Cable	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	2352.78	43.65	54.00	10.35	9.98	31.45	2.22	Average
2	2390.00	43.73	54.00	10.27	10.03	31.48	2.22	Average
3	2400.00	47.49	54.00	6.51	13.76	31.50	2.23	Average

7.3.5 Diagram 039



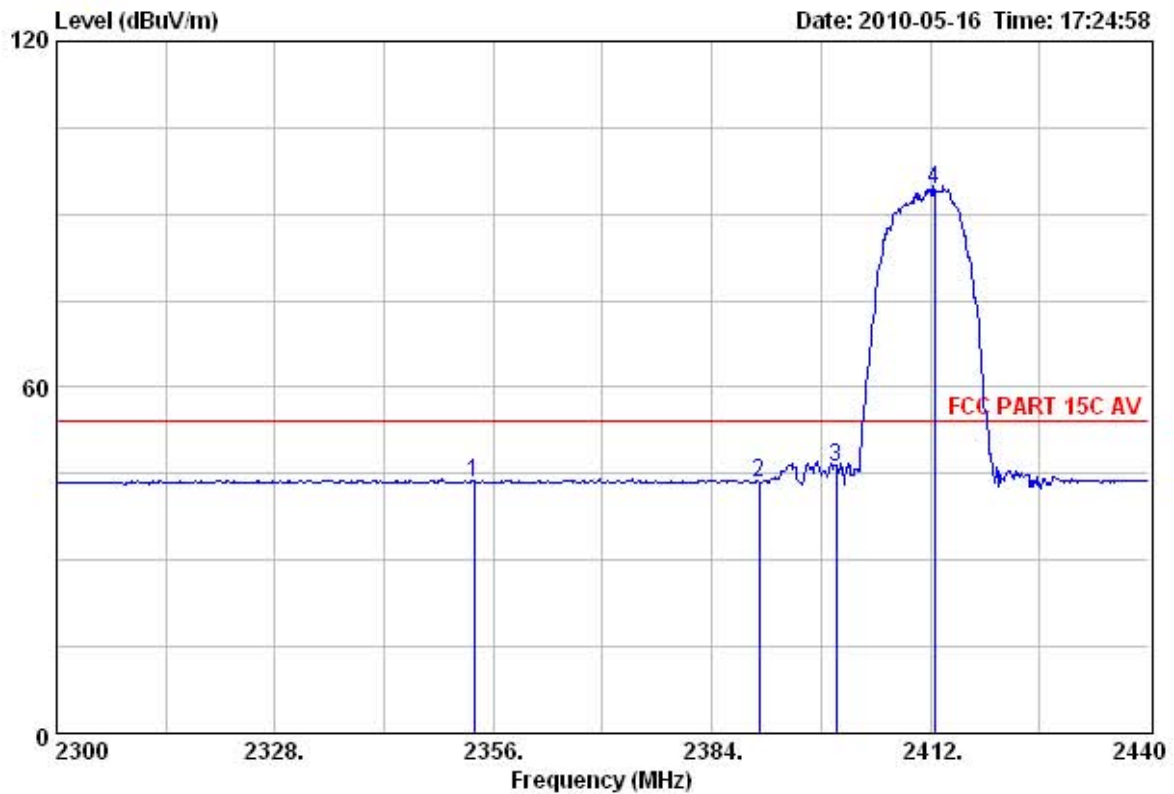
	Emission					Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2353.62	52.24	74.00	21.76	59.27	31.45	2.22	40.70	Peak
2	2390.00	52.09	74.00	21.91	59.09	31.48	2.22	40.70	Peak
3	2400.00	52.26	74.00	21.74	59.23	31.50	2.23	40.70	Peak
4	2412.98	119.57			126.54	31.50	2.23	40.70	Peak

7.3.6 Diagram 040



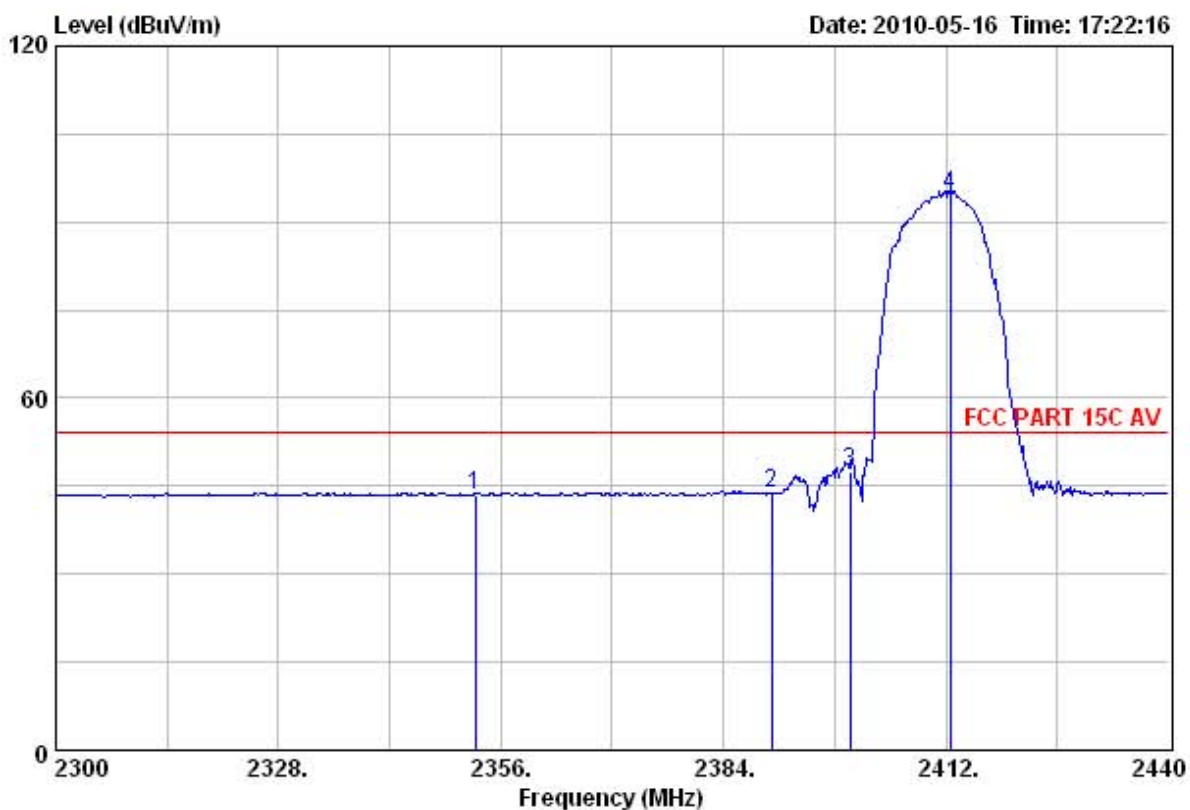
		Emission				Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2352.78	53.24	74.00	20.76	60.27	31.45	2.22	40.70	Peak
2	2390.00	52.62	74.00	21.38	59.62	31.48	2.22	40.70	Peak
3	2400.00	56.67	74.00	17.33	63.64	31.50	2.23	40.70	Peak
4	2412.98	119.08			126.05	31.50	2.23	40.70	Peak

7.3.7 Diagram 041



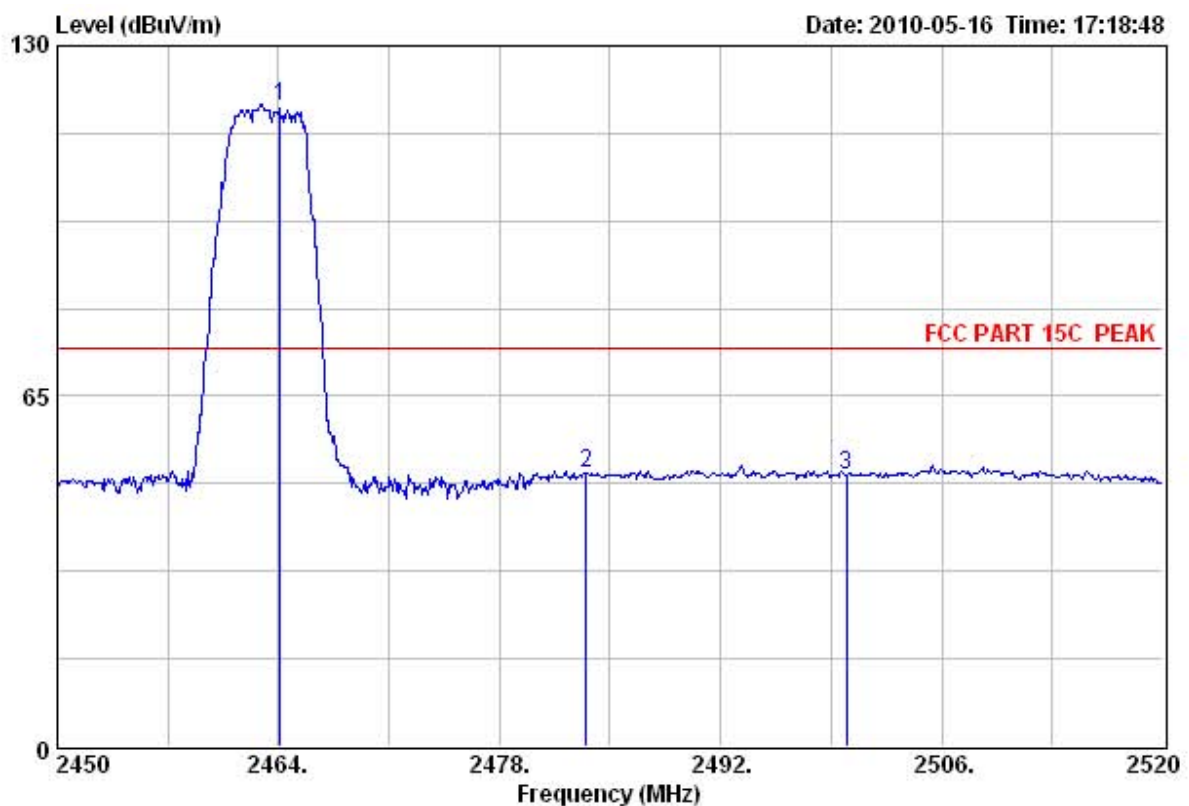
	Emission					Ant.	Cable	Amp	
	Freq.	Level	Limits	Margin	Reading	Factor	Loss	Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2353.50	43.57	54.00	10.43	50.60	31.45	2.22	40.70	Average
2	2390.00	43.38	54.00	10.62	50.38	31.48	2.22	40.70	Average
3	2400.00	46.18	54.00	7.82	53.15	31.50	2.23	40.70	Average

7.3.8 Diagram 042



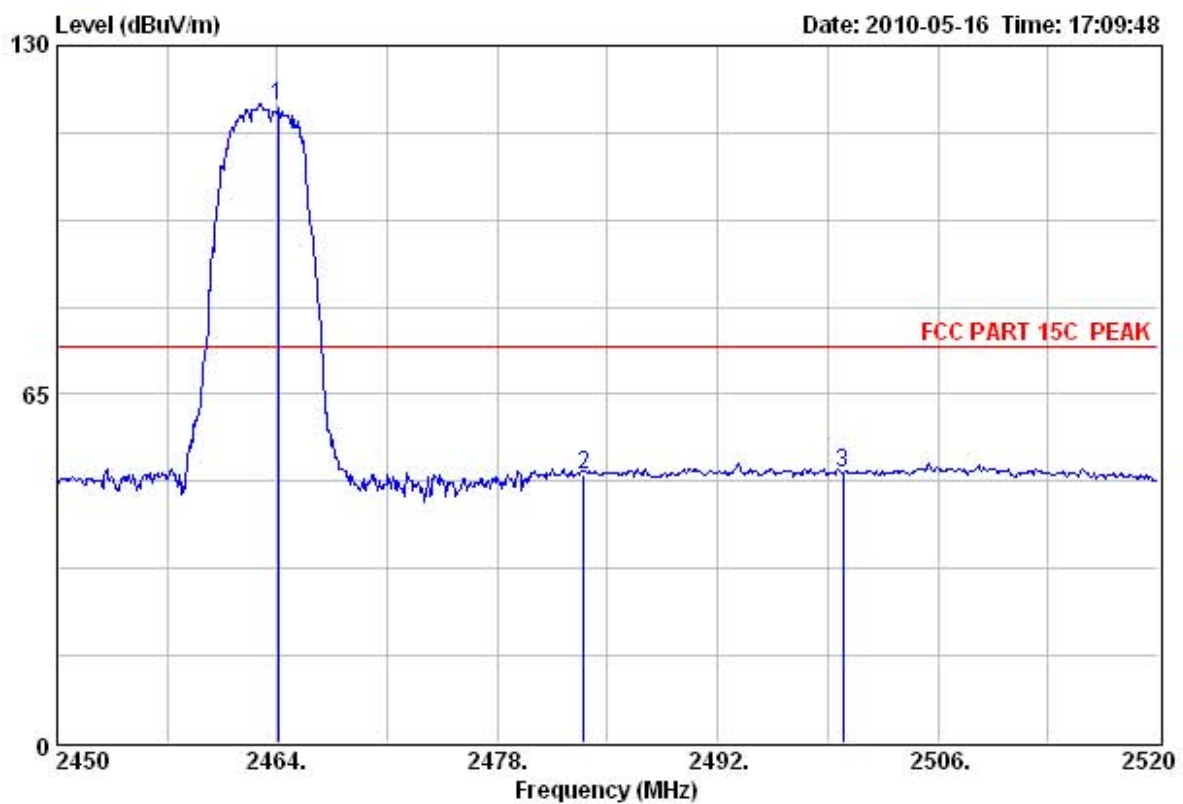
	Freq. (MHz)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Remark
1	2352.78	43.52	54.00	10.48	50.55	31.45	2.22	40.70	Average
2	2390.00	43.67	54.00	10.33	50.67	31.48	2.22	40.70	Average
3	2400.00	47.52	54.00	6.48	54.49	31.50	2.23	40.70	Average

7.3.9 Diagram 043



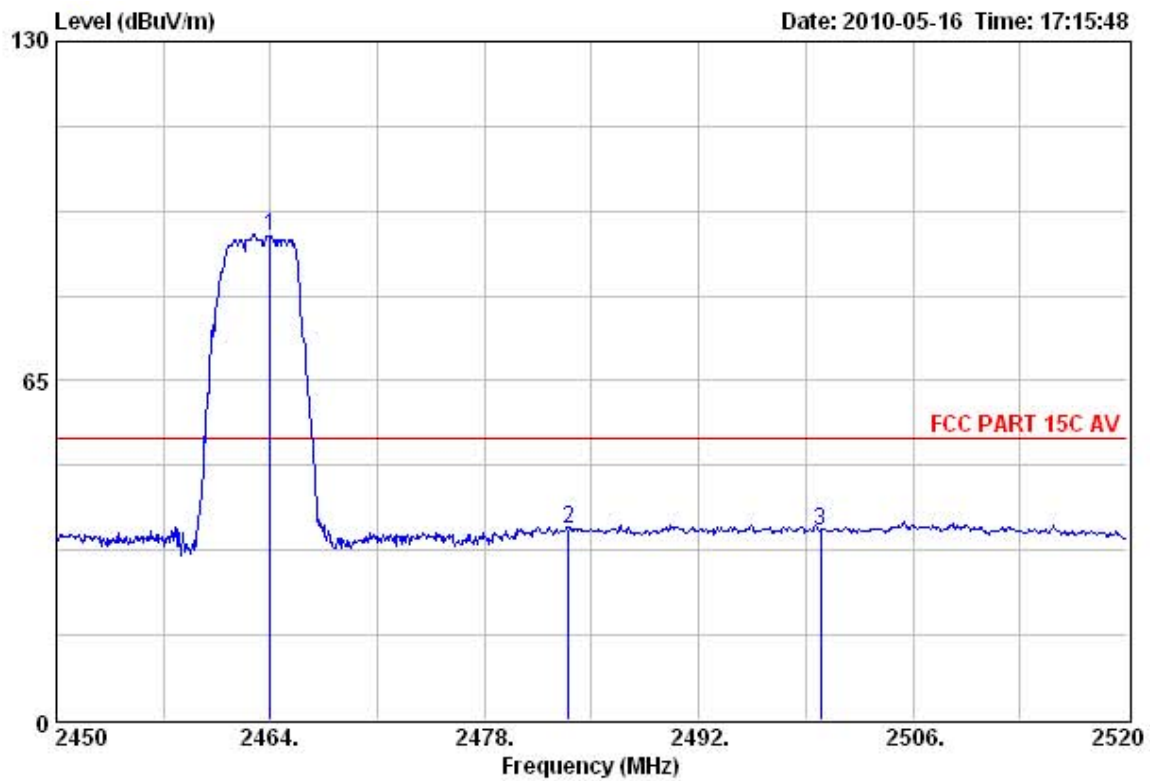
	Emission					Ant.	Cable	
	Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	Remark
1	2464.13	118.72			84.93	31.56	2.23	Peak
2	2483.50	50.84	74.00	23.16	17.03	31.58	2.23	Peak
3	2500.00	50.21	74.00	23.79	16.38	31.60	2.23	Peak

7.3.10 Diagram 044



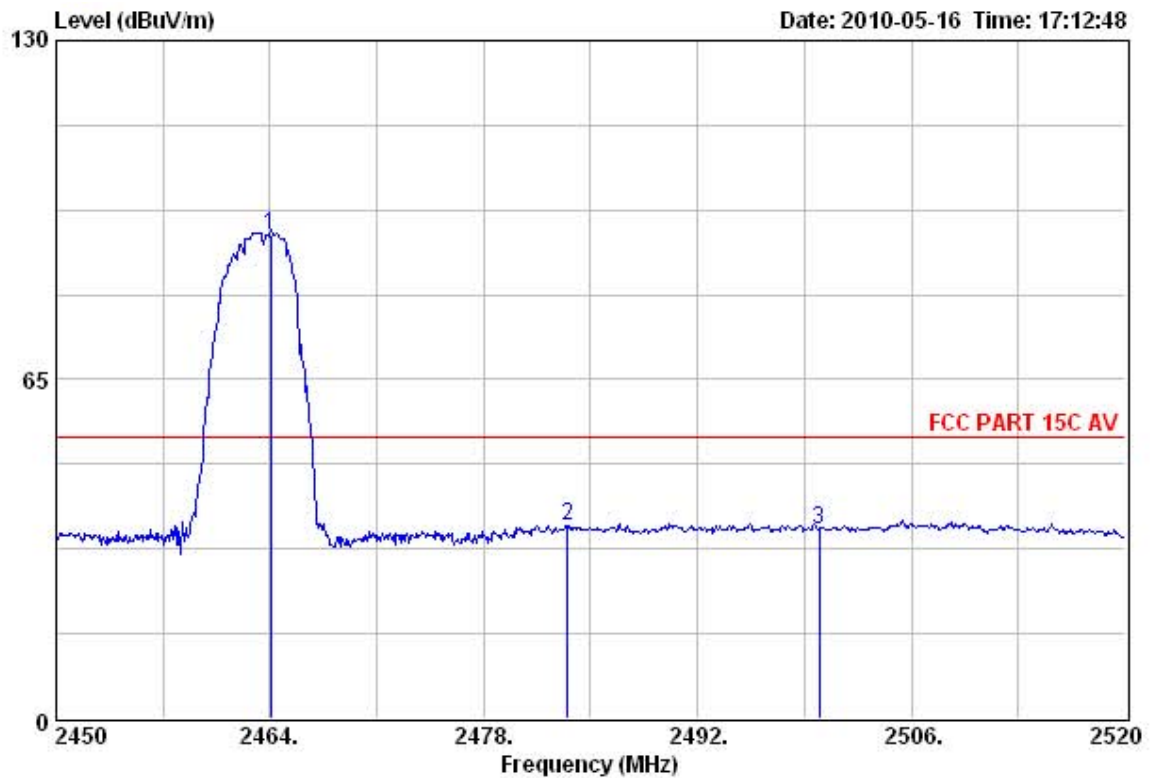
	Freq.	Emission				Ant.	Cable	
	(MHz)	Level	Limits	Margin	Reading	Factor	Loss	Remark
		(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
1	2464.02	118.63			84.84	31.56	2.23	Peak
2	2483.50	49.85	74.00	24.15	16.04	31.58	2.23	Peak
3	2500.00	50.37	74.00	23.63	16.54	31.60	2.23	Peak

7.3.11 Diagram 045



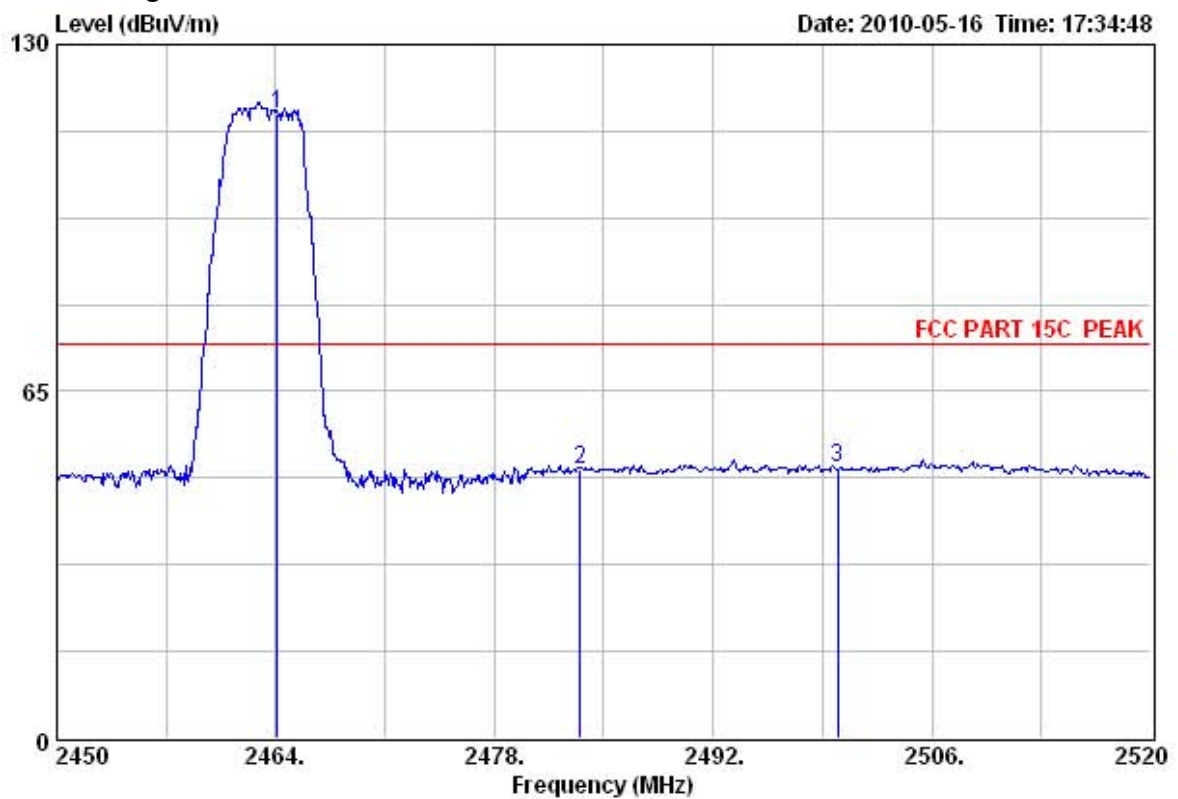
	Emission				Ant. Cable		
Freq.	Level	Limits	Margin	Reading	Factor	Loss	Remark
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	
2 2483.50	36.71	54.00	17.29	2.90	31.58	2.23	AV
3 2500.00	36.26	54.00	17.74	2.43	31.60	2.23	AV

7.3.12 Diagram 046



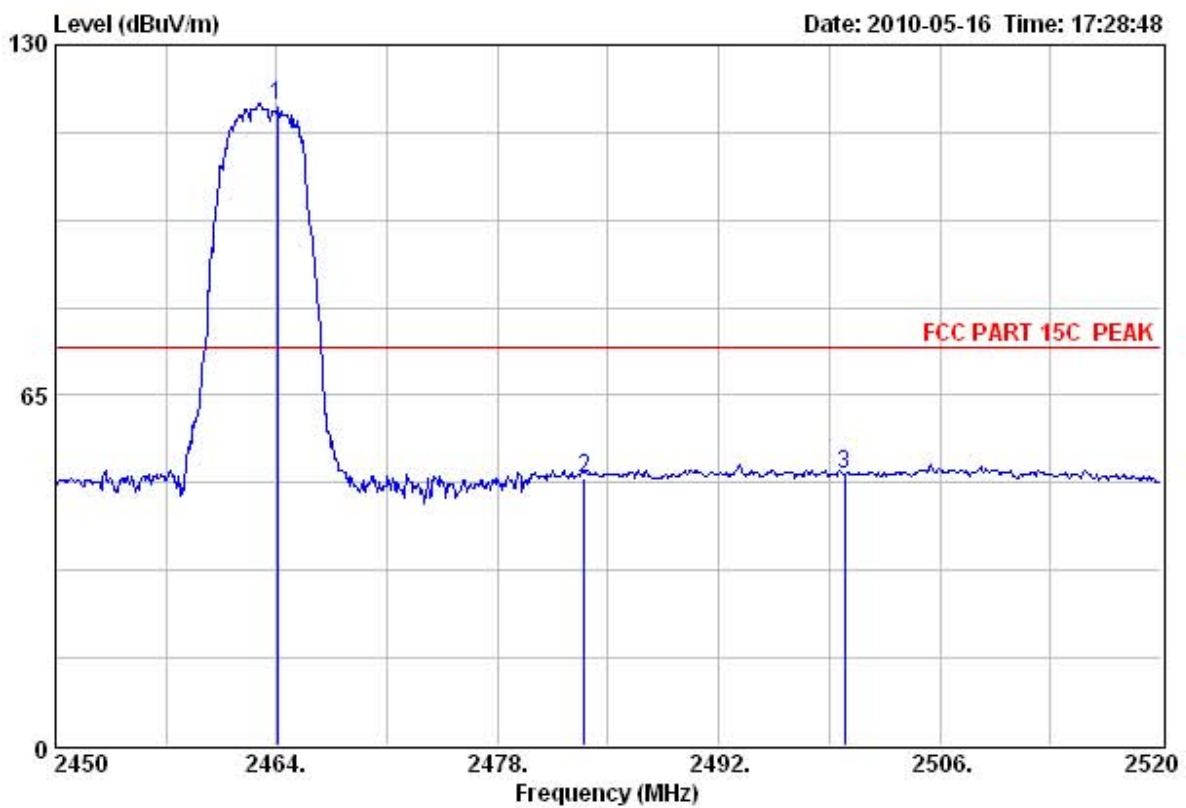
Freq. (MHz)	Emission		Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Ant. Cable		Remark
	Level (dBuV/m)					Factor (dB/m)	Loss (dB)	
2 2483.50	36.85		54.00	37.15	3.04	31.58	2.23	AV
3 2500.00	36.37		54.00	37.63	2.54	31.60	2.23	AV

7.3.13 Diagram 047



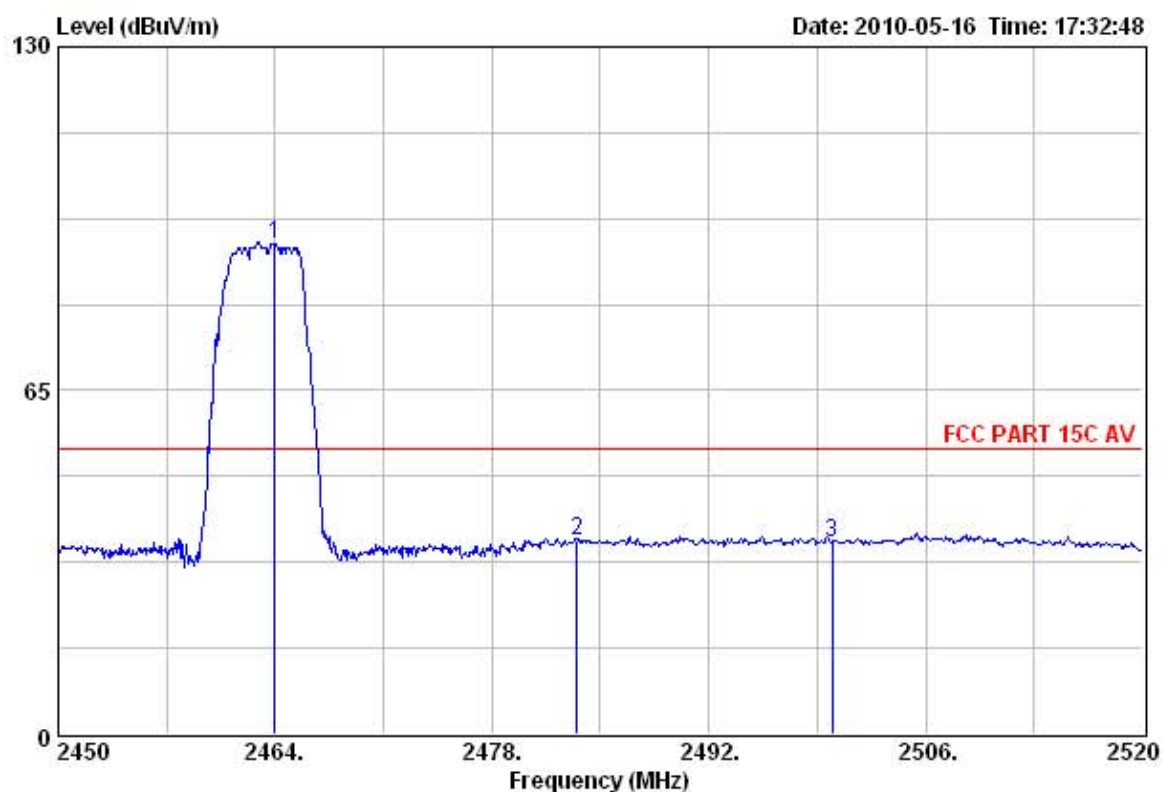
	Emission								
	Freq.	Level	Limits	Margin	Reading	Ant.	Cable	Amp	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	Factor	Loss	Factor	
						(dB/m)	(dB)	(dB)	
1	2464.13	117.12			124.03	31.56	2.23	40.70	Peak
2	2483.50	50.21	74.00	23.79	57.10	31.58	2.23	40.70	Peak
3	2500.00	50.53	74.00	23.47	57.39	31.60	2.23	40.69	Peak

7.3.14 Diagram 048



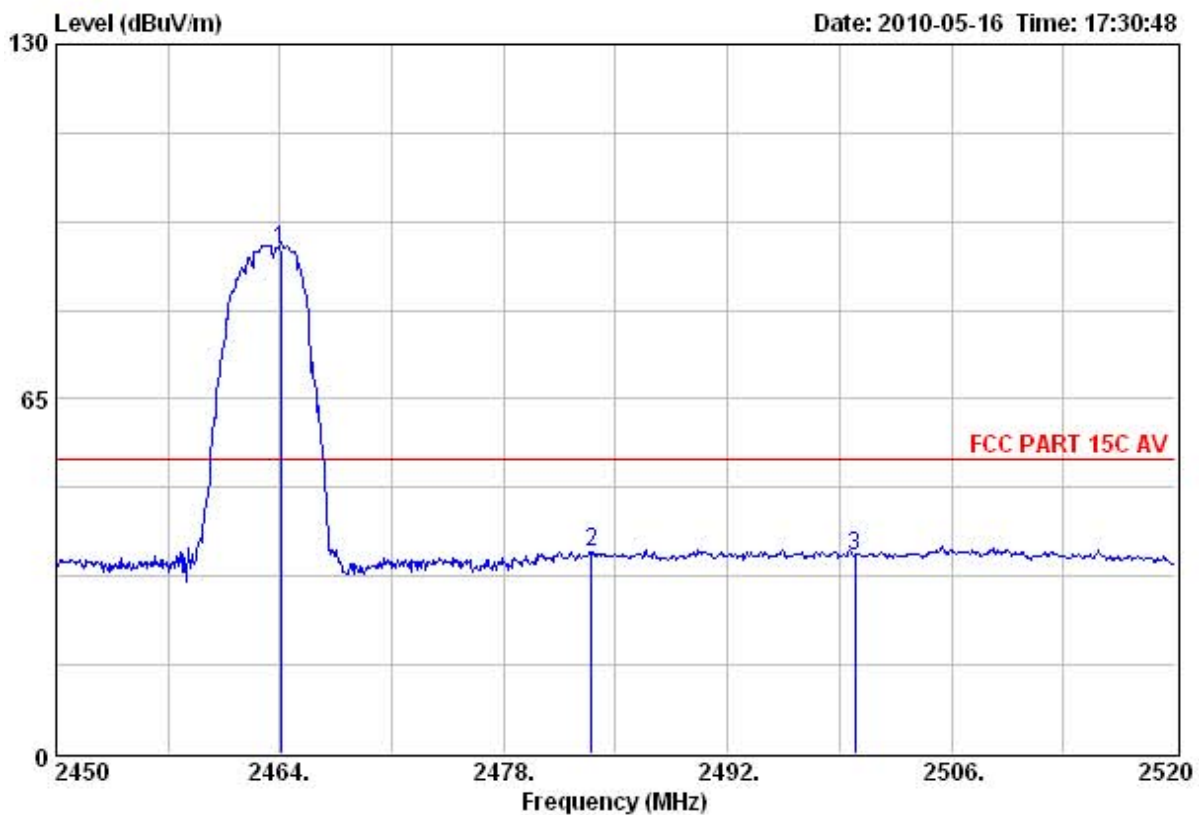
	Emission		Limits	Margin	Reading	Ant. Factor	Cable Loss	Amp Factor	Remark
	Freq. (MHz)	Level (dBuV/m)							
1	2464.02	118.61			125.52	31.56	2.23	40.70	Peak
2	2483.50	49.76	74.00	24.24	56.65	31.58	2.23	40.70	Peak
3	2500.00	50.27	74.00	23.73	57.13	31.60	2.23	40.69	Peak

7.3.15 Diagram 049



	Freq.	Emission Level	Limits	Margin	Reading	Ant. Factor	Cable Loss	Amp Factor	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(dB/m)	(dB)	(dB)	
1	2464.01	92.61			99.52	31.56	2.23	40.70	AV
2	2483.50	36.68	54.00	17.32	43.57	31.58	2.23	40.70	AV
3	2500.00	36.21	54.00	17.79	43.07	31.60	2.23	40.69	AV

7.3.16 Diagram 050



Emission		Ant.		Cable		Amp		Remark
Freq. (MHz)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading (dBuV)	Factor (dB/m)	Loss (dB)	Factor (dB)	
1 2464.02	92.49			99.40	31.56	2.23	40.70	AV
2 2483.50	36.78	54.00	17.22	43.67	31.58	2.23	40.70	AV
3 2500.00	36.29	54.00	17.71	43.15	31.60	2.23	40.69	AV

8. Power Spectral Density Test

8.1 Test Procedure

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

The transmitter output was connected to a spectrum analyzer. The maximum power density level was measured by spectrum analyzer with 3 kHz RBW and sweep time=span/3kHz, Detector: PK

8.2 Measurement Equipment

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Spectrum Analyzer	Jul.31,09	FSL3	101507	Rohde&Schwarz
☒	Attenuator	Jan 13,10	8491B	MY39264940	Agilent

8.3 Test Result

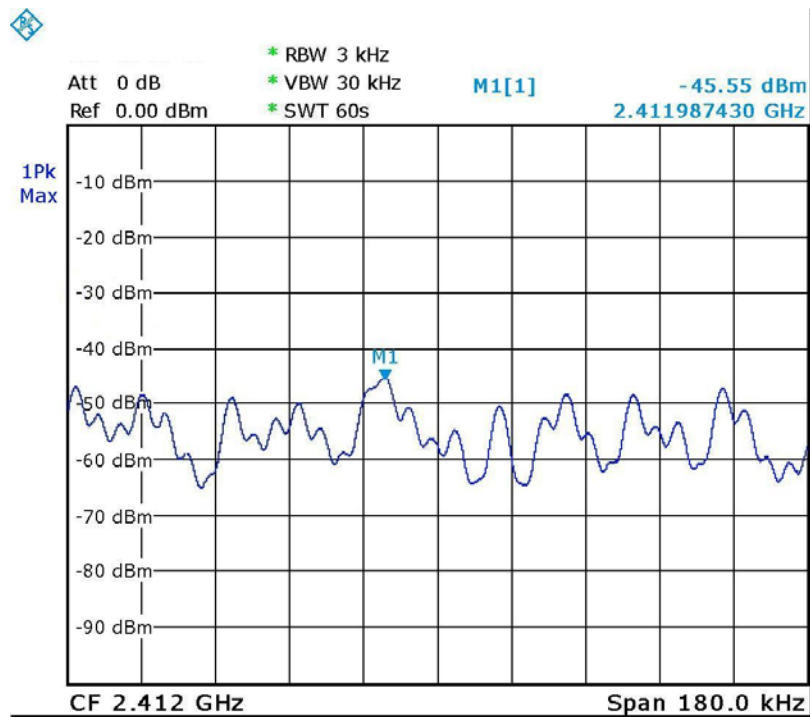
TM1:

Channel	Diagram	Read (dBm)	Attenuator (dB)	Cable Loss (dB)	Result (dBm)	Limit dBm	Result
1	051	-45.55	20	1	-24.55	8	Pass
2	052	-47.90	20	1	-26.90	8	Pass
3	053	-48.84	20	1	-27.84	8	Pass

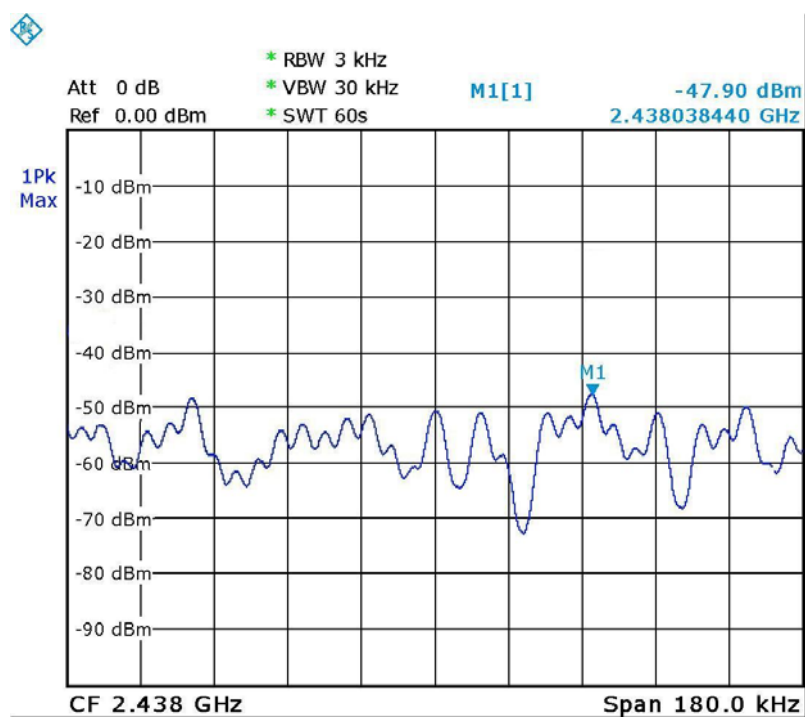
TM2

Channel	Diagram	Read (dBm)	Attenuator (dB)	Cable Loss (dB)	Result (dBm)	Limit dBm	Result
1	054	-46.29	20	1	-25.29	8	Pass
2	055	-48.84	20	1	-27.84	8	Pass
3	056	-49.77	20	1	-28.77	8	Pass

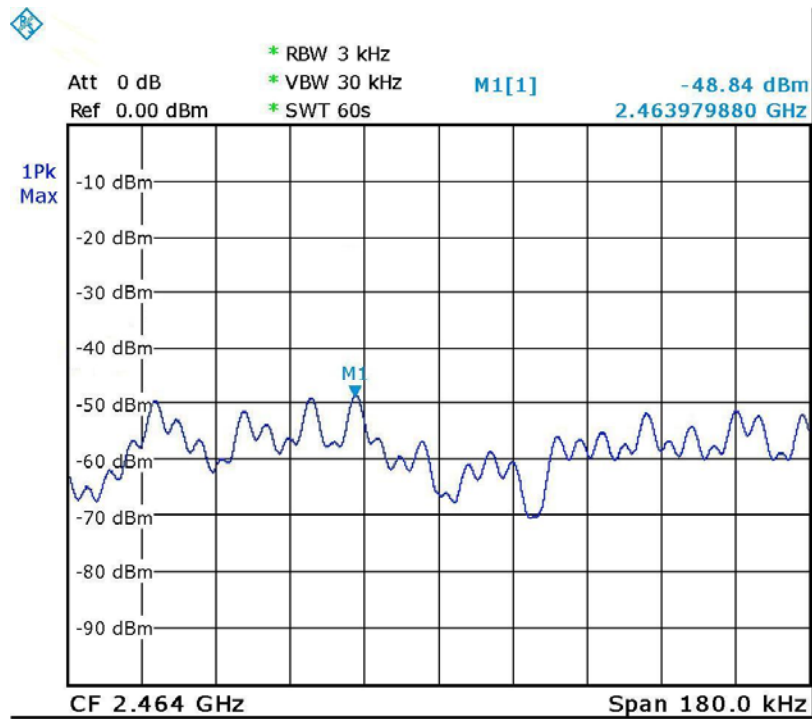
8.3.1 Diagram 051



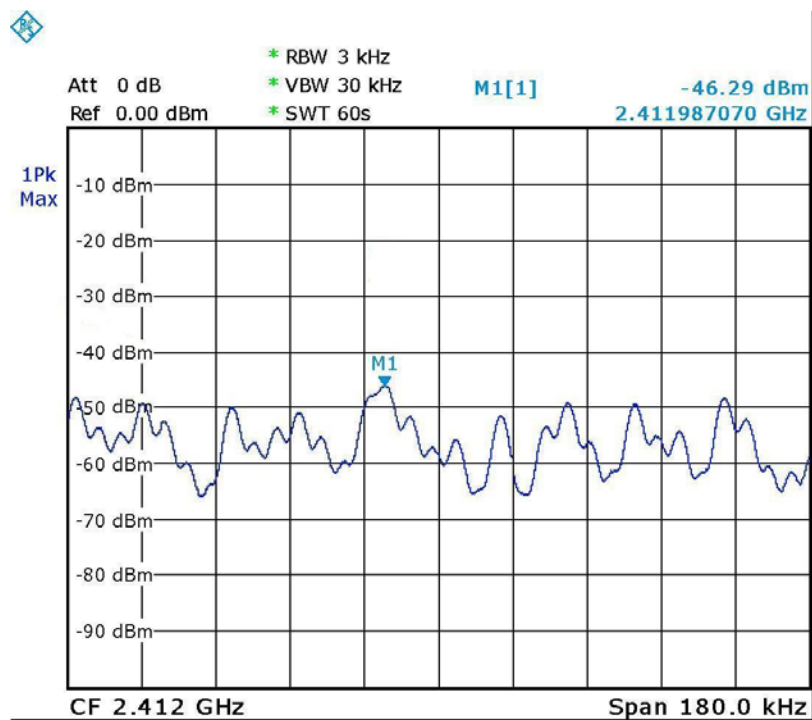
8.3.2 Diagram 052



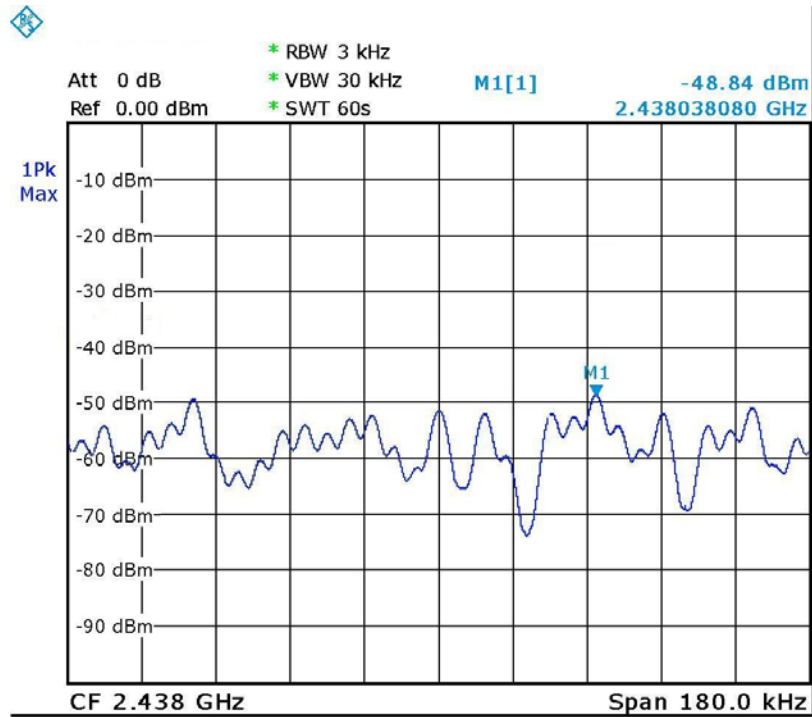
8.3.3 Diagram 053



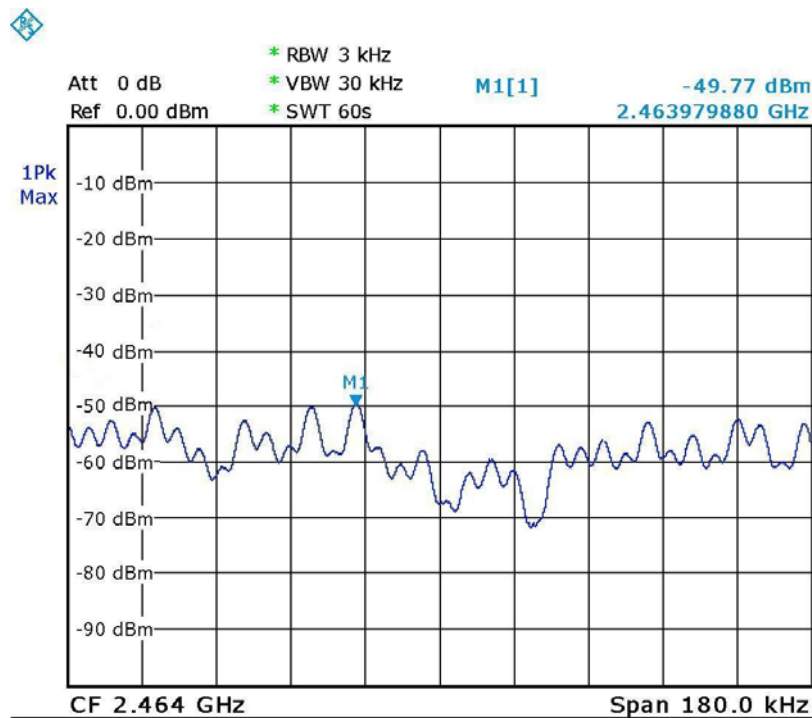
8.3.4 Diagram 054



8.3.5 Diagram 055



8.3.6 Diagram 056



9. Output Power Test

9.1 Test Procedure

For systems using digital modulation in the 2400—2483.5MHz, The Peak out put power shall not exceed 1W(30dBm)

The transmitter output was connected to a power meter, and read out the PK output power.

Cable loss: 0.5 dB; Antenna Gain: 5.5dBi

Test channel for Antenna 1 and Antenna 2

CH1:2412MHz CH2:2438MHz CH3:2464MHz

The Level = Read+Cable loss+Attenuator loss

9.2 Measurement Equipment

	Equipment	Last Calibration	Type	Serial No.	Manufacturer
☒	Attenuator	May 2,10	8491B	MY39264940	Agilent
☒	Power meter	May 2,10	E4416A	MY45100656	Agilent
☒	Power sensor	May 2,10	E9327A	MY44420694	Agilent

9.3 Test Result

TM1:

Channel	Read (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Level (dBm)	Limit dBm	Margin (dB)	Result
1	-10.64	1	20	10.36	30	19.64	Pass
2	-11.48	1	20	9.52	30	20.48	Pass
3	-11.53	1	20	9.47	30	20.53	Pass

TM2

Channel	Read (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Level (dBm)	Limit dBm	Margin (dB)	Result
1	-10.56	1	20	10.44	30	19.56	Pass
2	-11.44	1	20	9.56	30	20.44	Pass
3	-11.66	1	20	9.34	30	20.66	Pass



10. Antenna requirement

10.1 Requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2 Result

The antenna used for this product is Internal Patch antenna that no antenna other than that furnished by the responsible party shall be used with the device, The maximum peak gain of this antenna is 5.5dBi.

11.MPE**Prediction of MPE limit at a given distance**

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: (10.44) dBm

Maximum peak output power at antenna input terminal: (11.0662) mW

Antenna gain (typical): 5.5 (dBi)

Maximum antenna gain: (3.548) numeric

Time Averaging: 100 (%)

Prediction distance: 20 (cm)

Prediction frequency: (2412) MHz

MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm²)

Power density at prediction frequency: (0.0078) mW/cm²

Margin of compliance: (21.08) dB



FCCID: IBAAVPSB1280

Reference No.: 151403

Appendix A Sample Label

Labelling Requirements

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

*** The following paragraph specified in the user manual.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

END OF REPORT