

FCC Radio Test Report

FCC ID: RWO-RZ090288

This report concerns (check one): ☒ Original Grant ☐ Class I Change ☐ Class II Change

Project No. : 1810C079
Equipment : Notebook
Test Model : RZ09-0288
Series Model : RZ09-02886
Applicant : Razer Inc.
Address : 201 3rd Street, Suite 900, San Francisco, CA 94103
USA

Date of Receipt : Nov. 13, 2018
Date of Test : Nov. 15, 2018 ~ Dec. 10, 2018
Issued Date : Jan. 08, 2019
Tested by : BTL Inc.

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Certificate #5123.02

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The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Jan. 02, 2019
R01	Updated the description of model difference, which does not affect the test results.	Jan. 08, 2019

1. GENERAL SUMMARY

Equipment : Notebook
Brand Name : RAZER
Test Model : RZ09-0288
Series Model : RZ09-02886
Applicant : Razer Inc.
Manufacturer : Razer Inc.
Address : 201 3rd Street, Suite 900, San Francisco, CA 94103 USA
Factory : BYD Precision Manufacture Co.,Ltd.
Address : No.3001, Baohe Road, Baolong industrial, Longgang Street, Longgang Zone, Shenzhen
Date of Test : Nov. 15, 2018 ~ Dec. 10, 2018
Test Sample : Engineering Sample No.: D181110293 for conducted, D181110290 for radiated.
Standard(s) : FCC Part15, Subpart C (15.247)
ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1810C079) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the Bluetooth LE part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15 (15.247) , Subpart C			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	6 dB Bandwidth	PASS	
15.247(b)(3)	Maximum Output Power	PASS	
15.247(e)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
15.247(d)/ 15.205/ 15.209	Transmitter Radiated Emissions	PASS	

Note:

(1) "N/A" denotes test is not applicable to this device.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty figures shall be calculated according the methods described in the ETSI TR 100 028 and shall correspond to an expansion factor (coverage factor) $k=1.96$ or $k=2$ (which provide confidence levels of respectively 90% and 95.45% in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$.

The BTL measurement uncertainty as below table:

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 kHz ~ 30 MHz	2.32

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9 kHz ~ 30 MHz	V	3.79
		9 kHz ~ 30 MHz	H	3.57
		30 MHz ~ 200 MHz	V	3.82
		30 MHz ~ 200 MHz	H	3.78
		200 MHz ~ 1,000 MHz	V	4.10
		200 MHz ~ 1,000 MHz	H	4.06
		1 GHz ~ 18 GHz	V	3.12
		1 GHz ~ 18 GHz	H	3.68
		18 GHz ~ 40 GHz	V	4.15
		18 GHz ~ 40 GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Notebook	
Brand Name	RAZER	
Test Model	RZ09-0288	
Series Model	RZ09-02886	
Model Difference(s)	The only difference between the two models is the graphics card. The two graphics cards are with identical electrical characteristics (pin compatible) and only differ in the model name of GPU with identical hardware/software. GPU used for model RZ09-0288 are N18E-G3-A1 and N18E-G2-A1, GPU used for model RZ09-02886 is N18E-G1-A1.	
Software Version	C2_MB	
Hardware Version	Windows 10	
Product Description	Operation Frequency	2402 MHz ~ 2480 MHz
	Modulation Technology	GFSK(1Mbps)
	Bit Rate of Transmitter	GFSK(2Mbps)
	Output Power (Max.)	3.96 dBm (1Mbps) 3.96 dBm (2Mbps)
Power Source	1# DC Voltage supplied from AC/DC adapter. Model1: RC30-0238(200W) Model2: RC30-024801(230W) 2# Supplied from Li-ion battery Model: RC30-0248	
Power Rating	1# Model1: I/P: AC100-240V, 2.5A, 50/60Hz O/P: 19.5V --- 10.26A Model2: I/P:100-240V~3.6A 50/60Hz O/P:19.5V --- 11.8A 2# DC15.4V,5209mAh,80Wh	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

3. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
2	molex	2065720001	PIFA	N/A	3.06

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode NOTE (1)

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 1	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode NOTE (1)

Note:

(1) The measurements are performed at the high, middle, low available channels.

3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of BT LE

Test Software Version	DRTU		
Frequency (MHz)	2402	2440	2480
BT LE (1Mbps)	0	0	0
BT LE (2Mbps)	1	0	1

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	2m	DC Cable
2	NO	NO	1m	AC Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150 kHz-30 MHz)

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note:

- (1) The limit of " * " decreases with the logarithm of the frequency
- (2) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

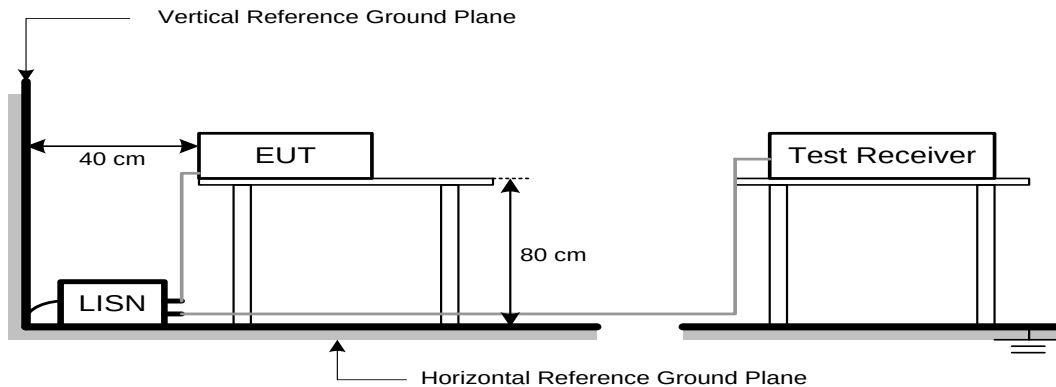
4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 53% Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Appendix A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “*” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150 kHz to 30 MHz.
- (3) “N/A” denotes test is not applicable to this device.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
960 ~ 1000	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
 Margin Level = Measurement Value - Limit Value

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	RBW 1 MHz VBW 3 MHz peak detector for Pk value RMS detector for AV value

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector

4.2.2 TEST PROCEDURE

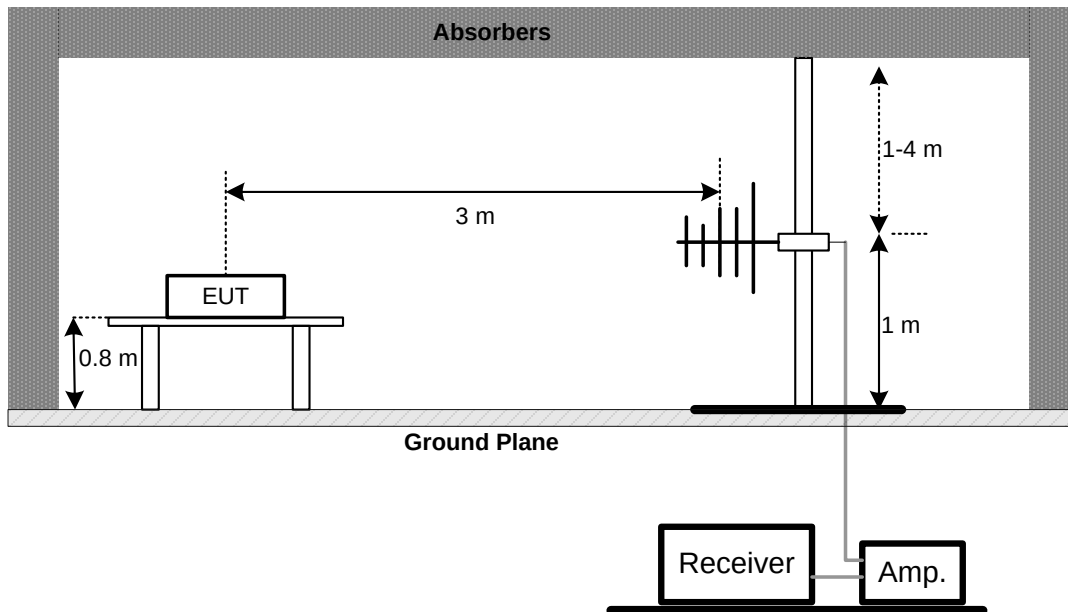
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
- The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 DEVIATION FROM TEST STANDARD

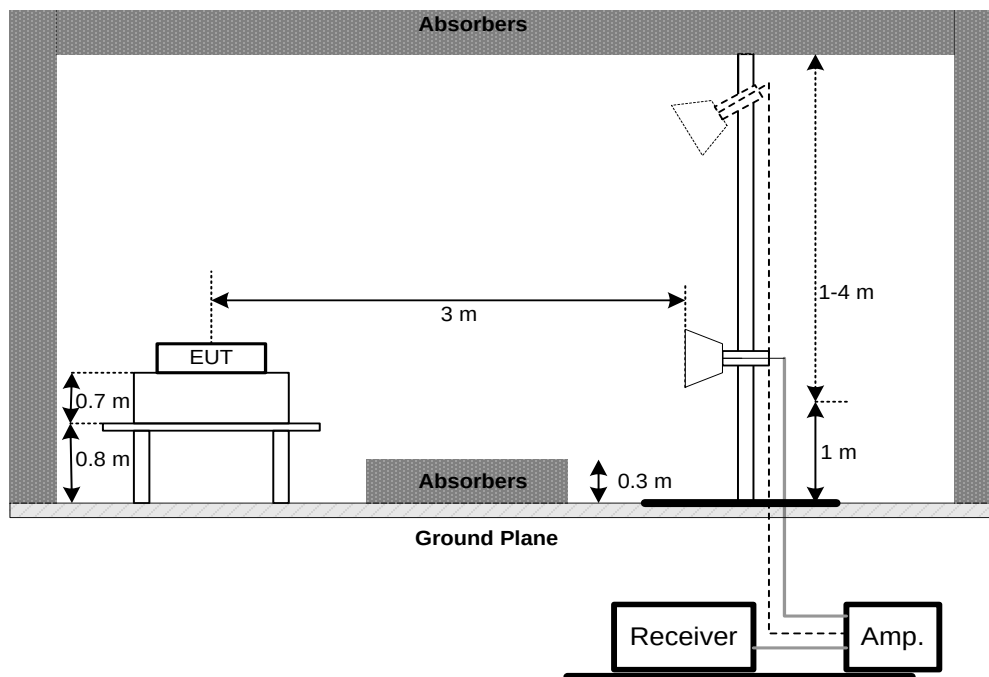
No deviation

4.2.4 TEST SETUP

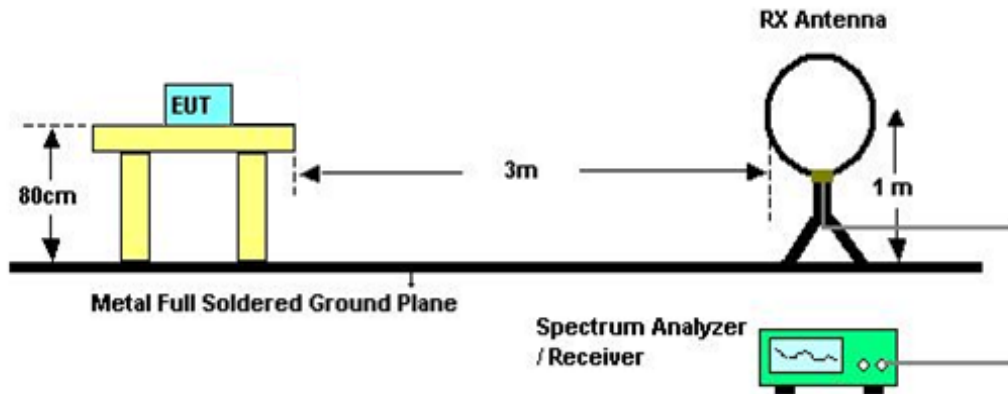
(A) Radiated Emission Test Set-Up Frequency 30 MHz-1000 MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions 9 kHz-30 MHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 60% Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULT (9 kHz TO 30 MHz)

Please refer to the Appendix B

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.2.8 TEST RESULT (30 MHz TO 1000 MHz)

Please refer to the Appendix C.

4.2.9 TEST RESULT (ABOVE 1000 MHz)

Please refer to the Appendix D.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	≥ 500 kHz (6 dB bandwidth)	2400-2483.5	PASS

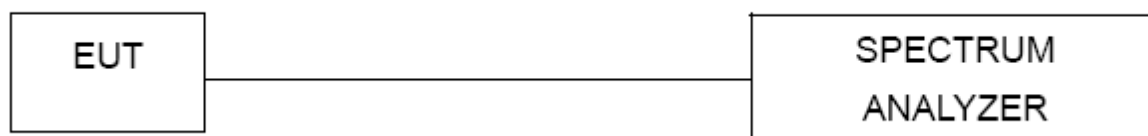
5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting : RBW= 100 kHz, VBW=300 kHz, Sweep time = 2.5 ms.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 56% Test Voltage: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Appendix E.

6. MAXIMUM OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 watt or 30 dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- The maximum output power was performed in accordance with method 11.9.2.3 of ANSI C63.10.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 56% Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Appendix F.

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

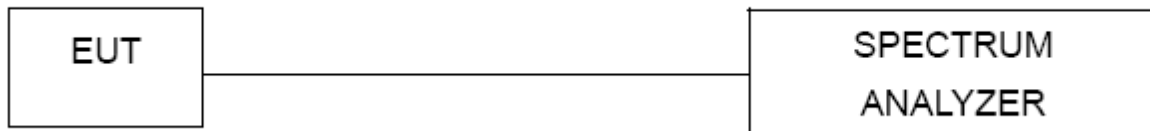
7.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting : RBW= 100 kHz, VBW=300 kHz, Sweep time = 10 ms.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 EUT OPERATION CONDITIONS

Temperature: 25°C Relative Humidity: 56% Test Voltage: AC 120V/60Hz

7.1.6 TEST RESULTS

Please refer to the Appendix G.

8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)	2400-2483.5	PASS

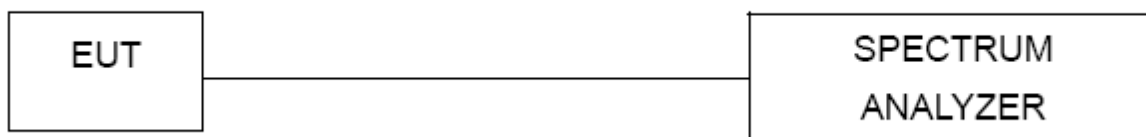
8.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = auto.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 56% Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Appendix H.

9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 11, 2019
2	LISN	EMCO	3816/2	52765	Mar. 11, 2019
3	50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 11, 2019
4	TWO-LINE V-NETWORK	R&S	ENV216	101447	Mar. 11, 2019
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 23, 2019

Radiated Emission Measurement - 9kHz TO 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EM	EM-6876-1	230	Feb. 07, 2019
2	Cable	N/A	RG 213/U	C-102	Jun. 01, 2019
3	EMI Test Receiver	R&S	ESCI	100382	Mar. 11, 2019
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement – 30 MHz TO 1000 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 11, 2019
2	Amplifier	HP	8447D	2944A09673	Aug. 11, 2019
3	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 25, 2019
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement - Above 1 GHz

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 11, 2019
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2019
3	Amplifier	Agilent	8449B	3008A02274	Mar. 11, 2019
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 11, 2019
5	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	mitron	B10-01-01-12M	18072744	Jul. 30, 2019
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

6 dB Bandwidth Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019

Maximum output power Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	ANRITSU	ML2495A	1128009	Mar. 11, 2019
2	Pulse Power Sensor	ANRITSU	MA 2411B	1027500	Mar. 11, 2019

Antenna Conducted Spurious Emission Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019

Power Spectral Density Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019

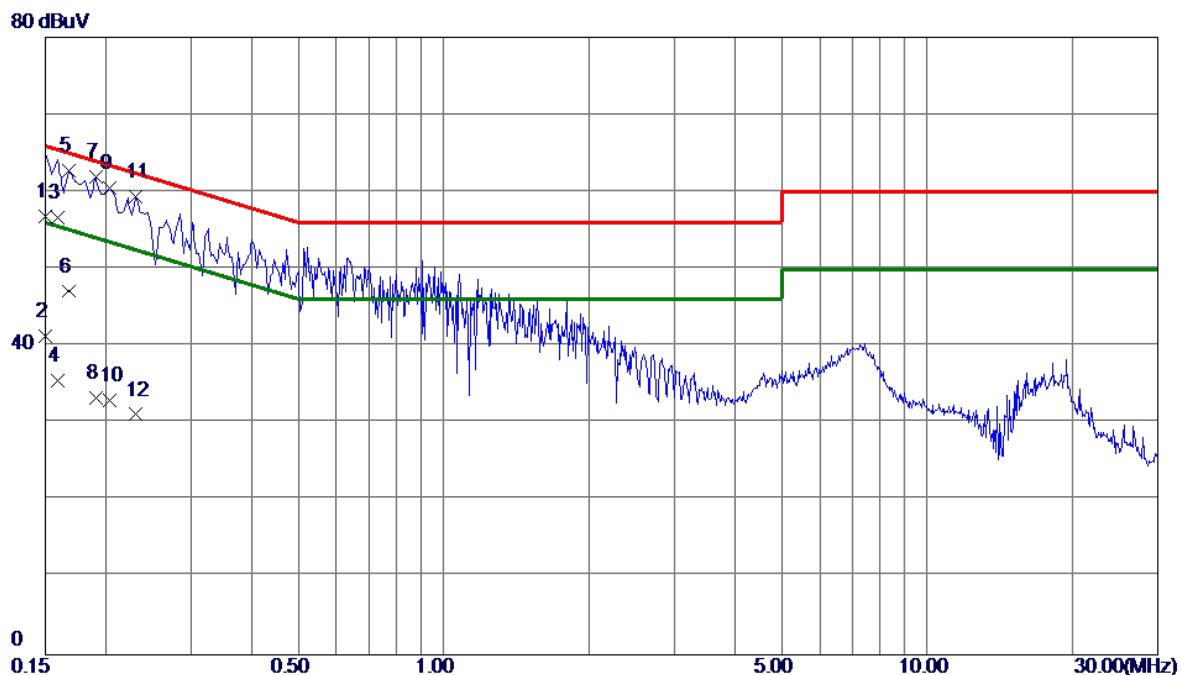
Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

APPENDIX A - CONDUCTED EMISSION

Test Mode: TX Mode(Adapter: RC30-024801)

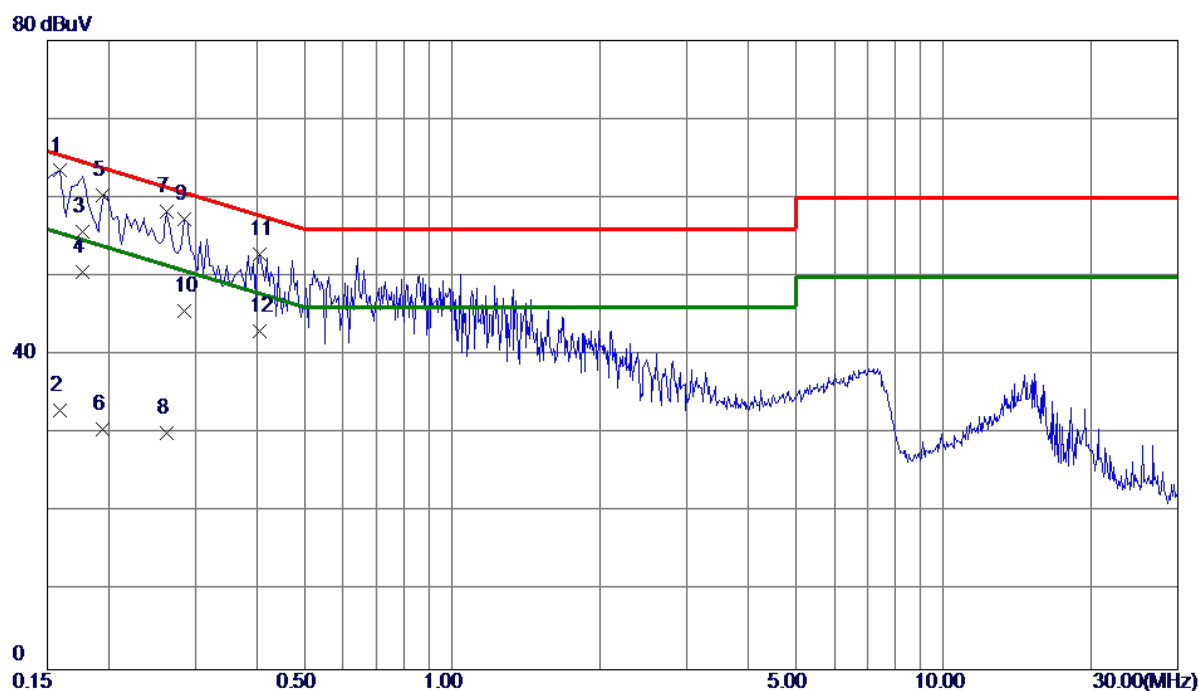
Line



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	47.00	9.82	56.82	66.00	-9.18	QP	
2	0.1500	31.50	9.82	41.32	56.00	-14.68	AVG	
3	0.1590	46.80	9.82	56.62	65.52	-8.90	QP	
4	0.1590	25.70	9.82	35.52	55.52	-20.00	AVG	
5	0.1680	52.92	9.82	62.74	65.06	-2.32	Peak	
6	0.1680	37.30	9.82	47.12	55.06	-7.94	AVG	
7 *	0.1905	52.04	9.82	61.86	64.01	-2.15	Peak	
8	0.1905	23.50	9.82	33.32	54.01	-20.69	AVG	
9	0.2040	50.66	9.82	60.48	63.45	-2.97	Peak	
10	0.2040	23.20	9.82	33.02	53.45	-20.43	AVG	
11	0.2310	49.53	9.82	59.35	62.41	-3.06	Peak	
12	0.2310	21.30	9.82	31.12	52.41	-21.29	AVG	

Test Mode: TX Mode(Adapter: RC30-024801)

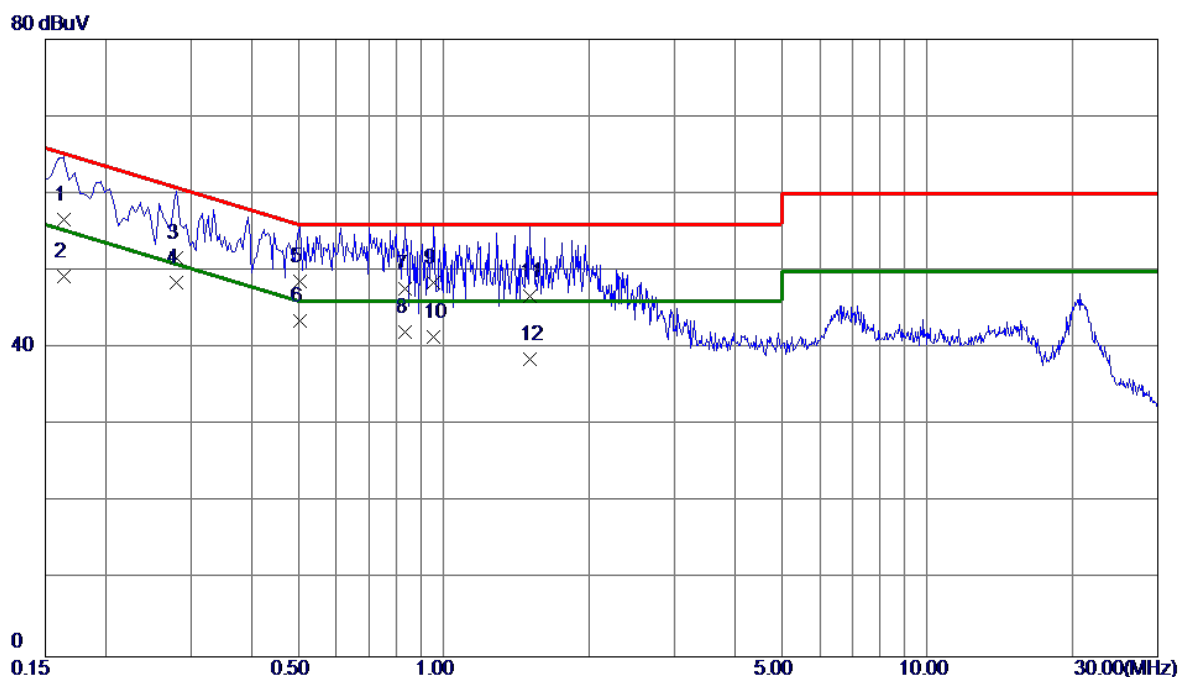
Neutral



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1 *	0.1590	53.53	9.91	63.44	65.52	-2.08	Peak	
2	0.1590	23.10	9.91	33.01	55.52	-22.51	AVG	
3	0.1770	45.81	9.91	55.72	64.63	-8.91	QP	
4	0.1770	40.61	9.91	50.52	54.63	-4.11	AVG	
5	0.1949	50.34	9.91	60.25	63.83	-3.58	Peak	
6	0.1949	20.60	9.91	30.51	53.83	-23.32	AVG	
7	0.2625	48.28	9.92	58.20	61.35	-3.15	Peak	
8	0.2625	20.11	9.92	30.03	51.35	-21.32	AVG	
9	0.2850	47.33	9.93	57.26	60.67	-3.41	Peak	
10	0.2850	35.59	9.93	45.52	50.67	-5.15	AVG	
11	0.4065	42.80	9.95	52.75	57.72	-4.97	Peak	
12	0.4065	33.10	9.95	43.05	47.72	-4.67	AVG	

Test Mode: TX Mode (Adapter: RC30-0238)

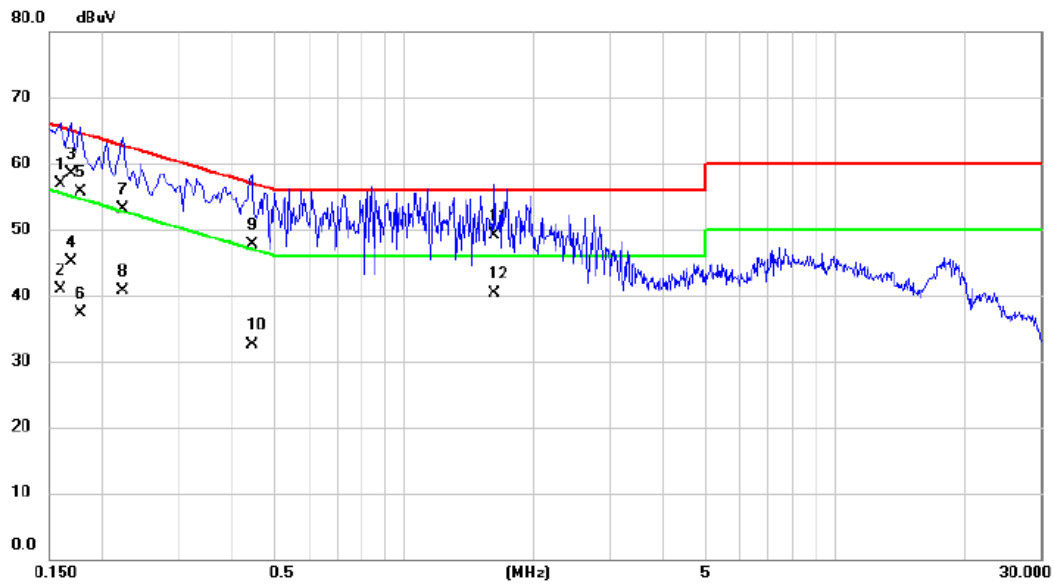
Line



No.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1635	46.80	9.82	56.62	65.28	-8.66	QP	
2	0.1635	39.40	9.82	49.22	55.28	-6.06	AVG	
3	0.2805	41.80	9.82	51.62	60.80	-9.18	QP	
4 *	0.2805	38.60	9.82	48.42	50.80	-2.38	AVG	
5	0.5055	38.90	9.79	48.69	56.00	-7.31	QP	
6	0.5055	33.70	9.79	43.49	46.00	-2.51	AVG	
7	0.8340	37.70	9.91	47.61	56.00	-8.39	QP	
8	0.8340	32.20	9.91	42.11	46.00	-3.89	AVG	
9	0.9510	38.50	9.92	48.42	56.00	-7.58	QP	
10	0.9510	31.50	9.92	41.42	46.00	-4.58	AVG	
11	1.5045	36.80	9.96	46.76	56.00	-9.24	QP	
12	1.5045	28.60	9.96	38.56	46.00	-7.44	AVG	

Test Mode: TX Mode (Adapter: RC30-0238)

Neutral

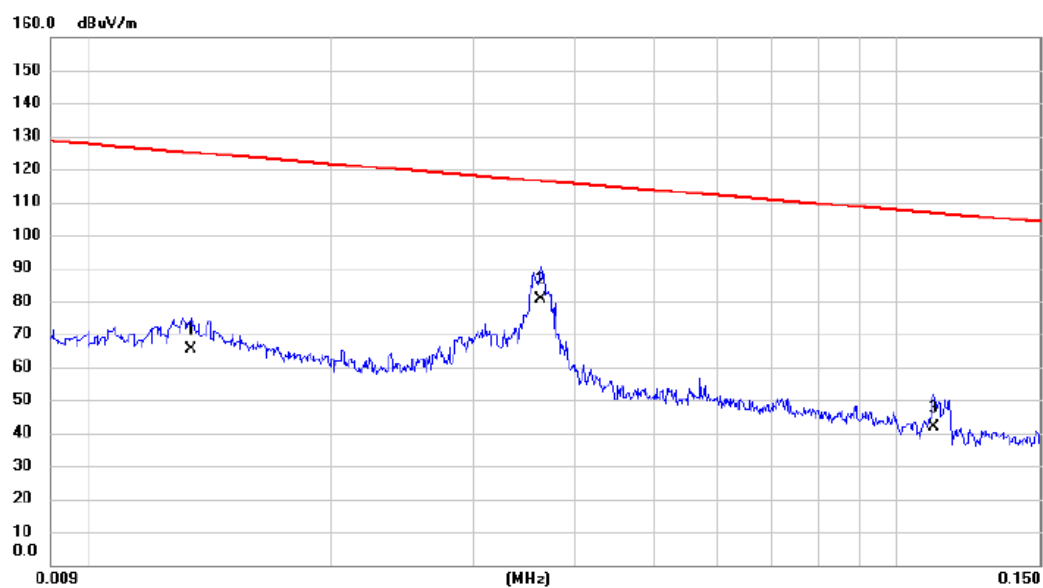


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1590	46.90	9.91	56.81	65.52	-8.71	QP	
2		0.1590	31.00	9.91	40.91	55.52	-14.61	AVG	
3		0.1680	48.50	9.91	58.41	65.06	-6.65	QP	
4		0.1680	35.27	9.91	45.18	55.06	-9.88	AVG	
5		0.1770	45.80	9.92	55.72	64.63	-8.91	QP	
6		0.1770	27.40	9.92	37.32	54.63	-17.31	AVG	
7		0.2220	43.10	9.92	53.02	62.74	-9.72	QP	
8		0.2220	30.70	9.92	40.62	52.74	-12.12	AVG	
9		0.4425	37.80	9.94	47.74	57.01	-9.27	QP	
10		0.4425	22.60	9.94	32.54	47.01	-14.47	AVG	
11		1.6215	38.90	10.16	49.06	56.00	-6.94	QP	
12	*	1.6215	30.10	10.16	40.26	46.00	-5.74	AVG	

APPENDIX B - RADIATED EMISSION (9 KHZ TO 30 MHZ)

Test Mode:	TX Mode(Adapter: RC30-024801)
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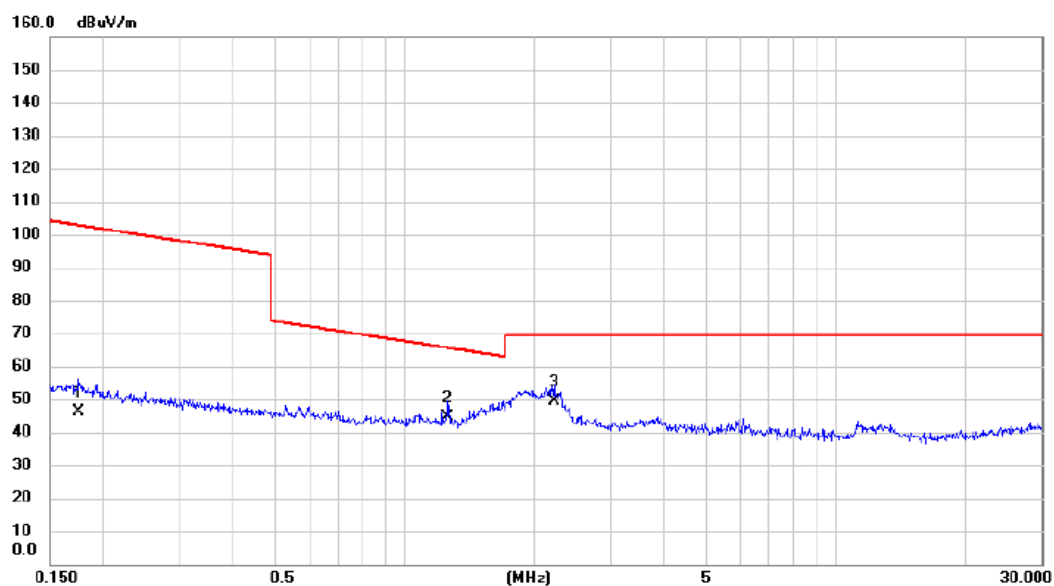
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0134	44.30	20.94	65.24	125.06	-59.82	AVG	
2	*	0.0363	60.70	19.76	80.46	116.41	-35.95	AVG	
3		0.1110	23.50	18.18	41.68	106.70	-65.02	AVG	

Test Mode: TX Mode(Adapter: RC30-024801)

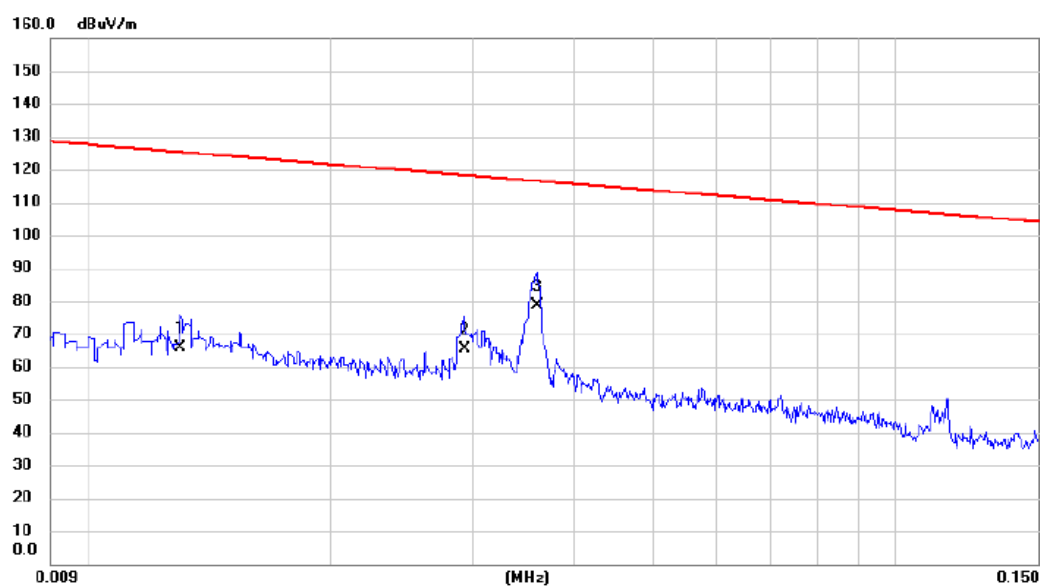
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.1750	28.80	17.21	46.01	102.75	-56.74	AVG	
2		1.2555	27.80	16.73	44.53	65.63	-21.10	QP	
3	*	2.2132	32.50	16.99	49.49	69.54	-20.05	QP	

Test Mode: TX Mode(Adapter: RC30-024801)

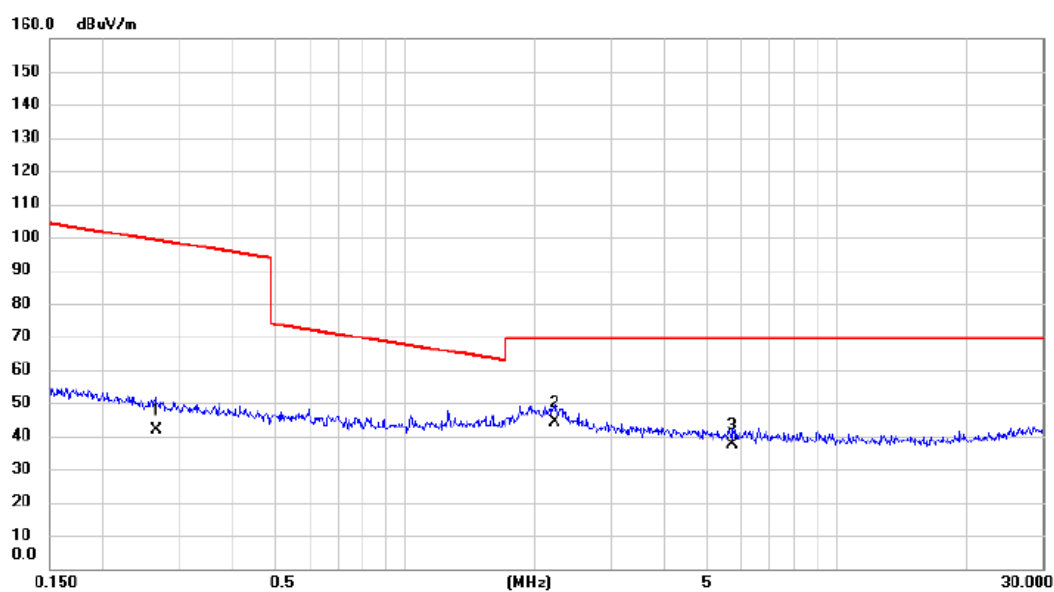
Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0130	44.70	21.00	65.70	125.33	-59.63	AVG	
2		0.0293	45.50	19.86	65.36	118.27	-52.91	AVG	
3	*	0.0360	58.70	19.76	78.46	116.48	-38.02	AVG	

Test Mode: TX Mode(Adapter: RC30-024801)

Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2644	24.80	17.05	41.85	99.16	-57.31	AVG	
2	*	2.2132	27.40	16.99	44.39	69.54	-25.15	QP	
3		5.7437	22.30	15.04	37.34	69.54	-32.20	QP	

Test Mode:	TX Mode (Adapter: RC30-0238)
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Ant 0°

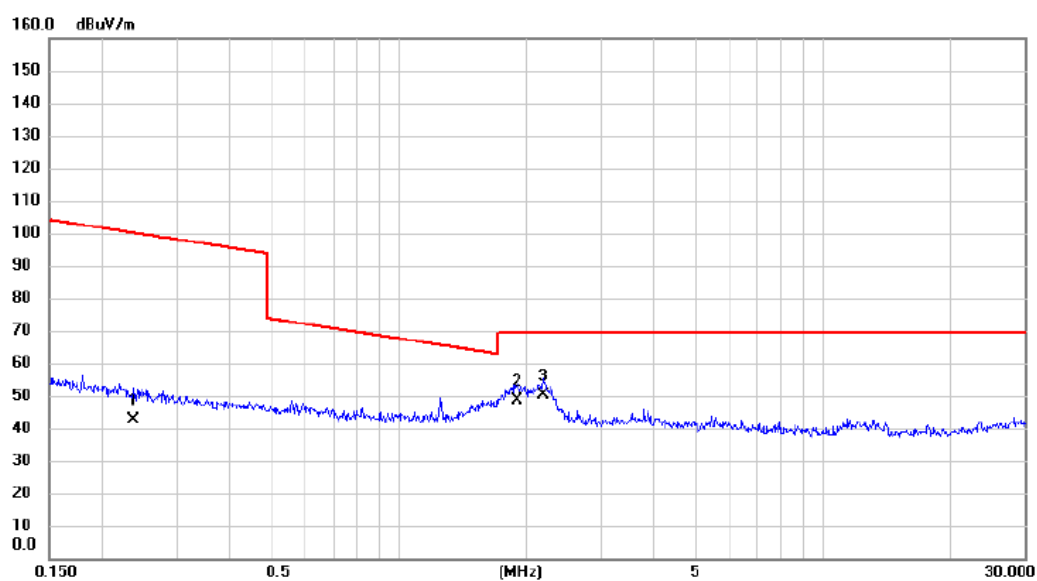


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0130	44.61	21.00	65.61	125.33	-59.72	AVG	
2		0.0317	47.10	19.82	66.92	117.58	-50.66	AVG	
3	*	0.0388	61.50	19.72	81.22	115.83	-34.61	AVG	

Test Mode:

TX Mode (Adapter: RC30-0238)

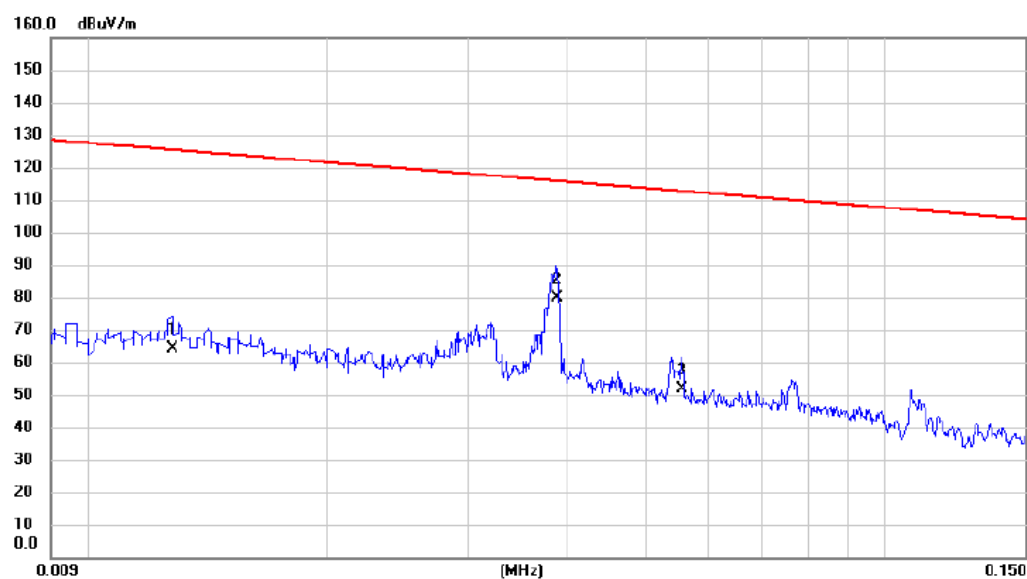
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.2366	25.40	17.09	42.49	100.13	-57.64	AVG	
2		1.9080	31.70	17.06	48.76	69.54	-20.78	QP	
3	*	2.1898	33.30	17.01	50.31	69.54	-19.23	QP	

Test Mode:	TX Mode (Adapter: RC30-0238)
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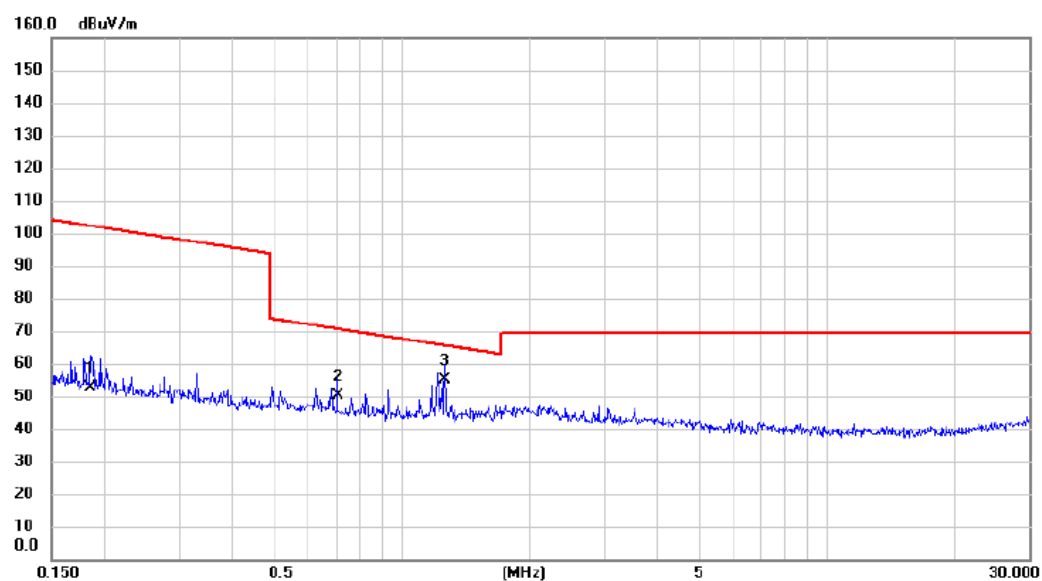
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0128	43.10	21.03	64.13	125.46	-61.33	AVG	
2	*	0.0388	60.20	19.72	79.92	115.83	-35.91	AVG	
3		0.0557	32.30	19.42	51.72	112.69	-60.97	AVG	

Test Mode: TX Mode (Adapter: RC30-0238)

Ant 90°

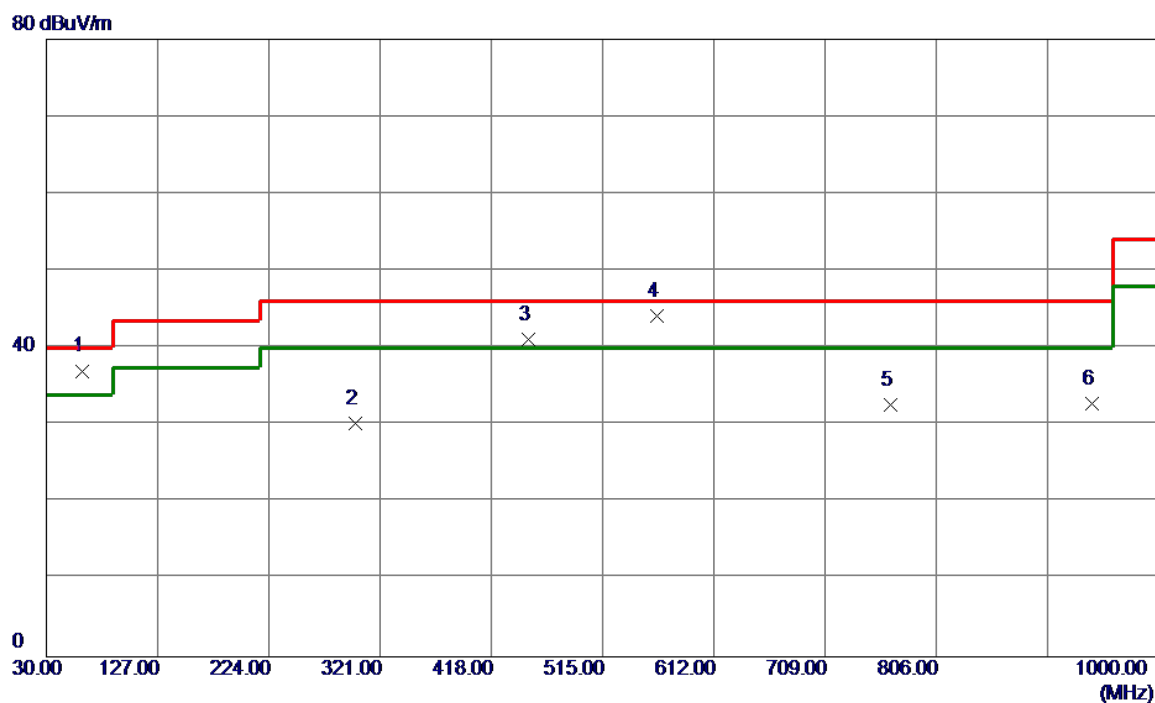


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.1853	35.40	17.19	52.59	102.25	-49.66	AVG	
2		0.7047	33.40	16.90	50.30	70.64	-20.34	QP	
3	*	1.2621	38.20	16.73	54.93	65.58	-10.65	QP	

APPENDIX C - RADIATED EMISSION (30 MHZ TO 1000 MHZ)

Test Mode: TX 2402 MHz _CH00_1Mbps(Adapter: RC30-024801)

Vertical

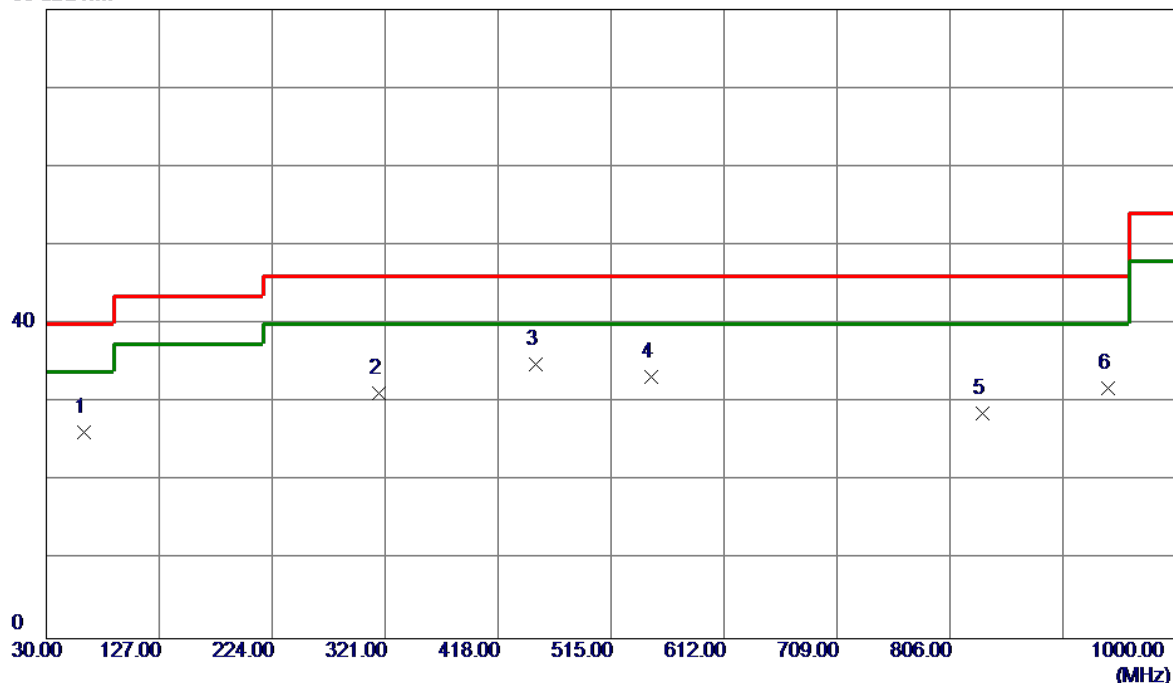


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	61.5250	52.98	-15.94	37.04	40.00	-2.96	QP	
2	299.6600	40.61	-10.39	30.22	46.00	-15.78	Peak	
3	450.0100	48.47	-7.41	41.06	46.00	-4.94	Peak	
4 *	562.5300	49.88	-5.67	44.21	46.00	-1.79	Peak	
5	765.7450	35.68	-3.10	32.58	46.00	-13.42	Peak	
6	941.8000	31.69	1.08	32.77	46.00	-13.23	Peak	

Test Mode: TX 2402 MHz _CH00_1Mbps(Adapter: RC30-024801)

Horizontal

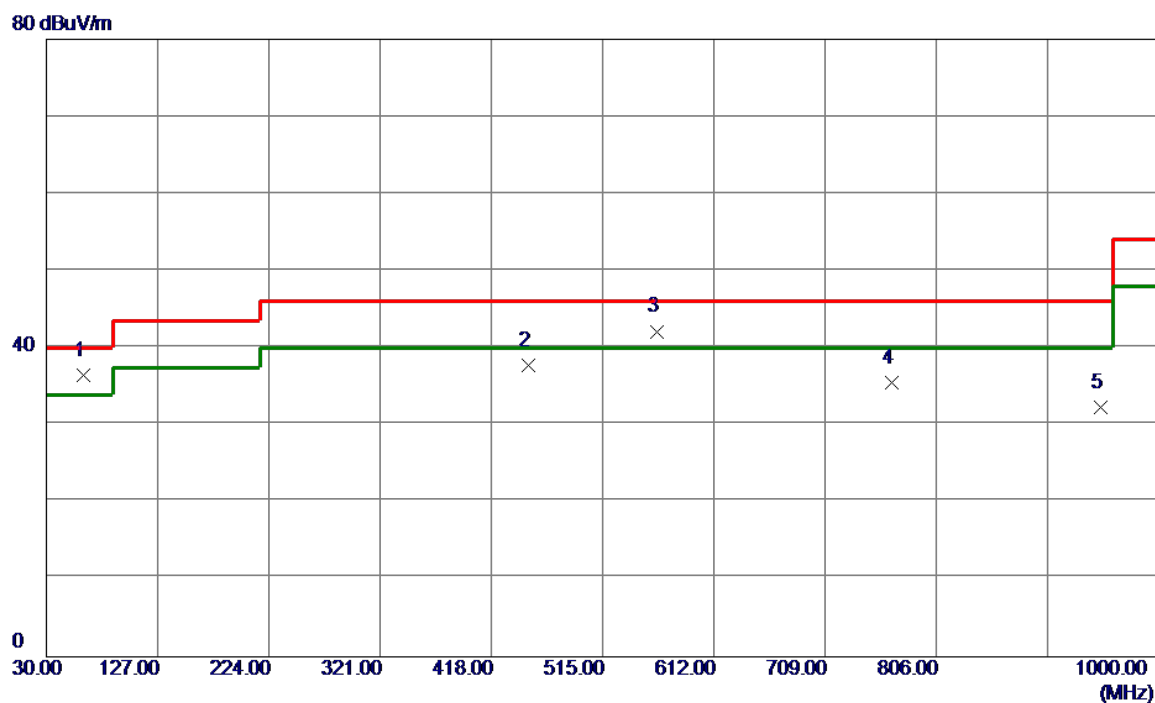
80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	62.0100	42.29	-16.02	26.27	40.00	-13.73	Peak	
2	315.1800	41.79	-10.58	31.21	46.00	-14.79	Peak	
3 *	450.0100	42.26	-7.41	34.85	46.00	-11.15	Peak	
4	549.4350	38.83	-5.50	33.33	46.00	-12.67	Peak	
5	833.6450	30.24	-1.56	28.68	46.00	-17.32	Peak	
6	941.8000	30.81	1.08	31.89	46.00	-14.11	Peak	

Test Mode: TX 2440 MHz _CH19_1Mbps(Adapter: RC30-024801)

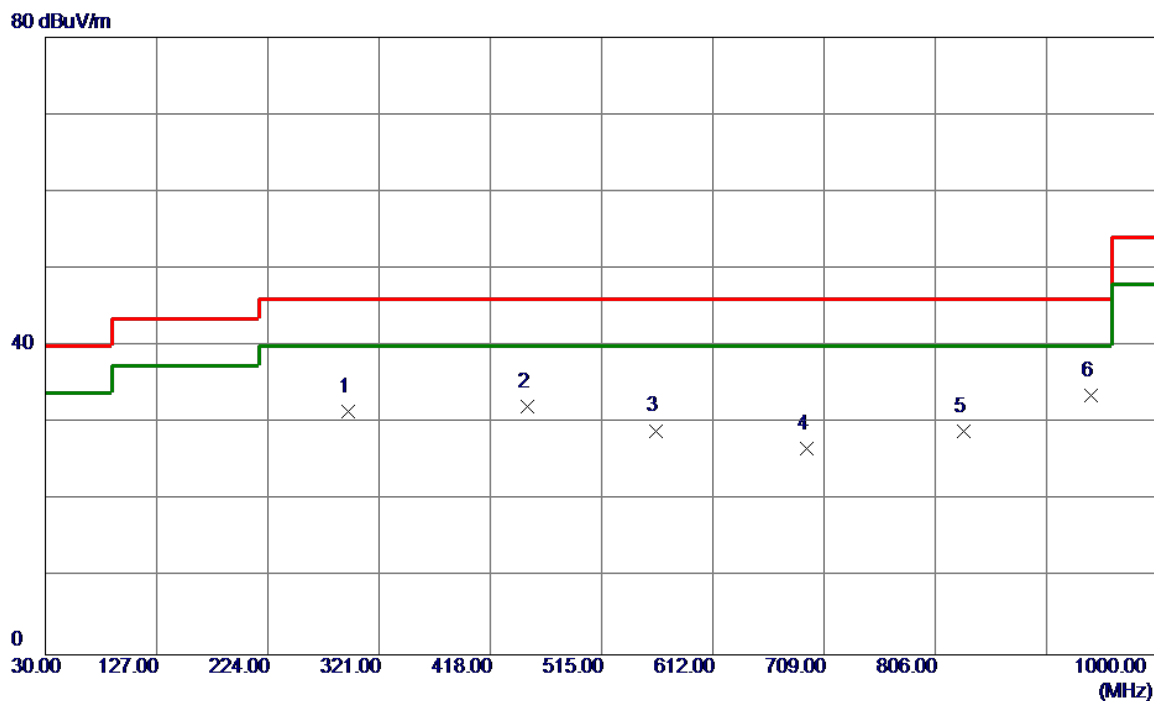
Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	62.0100	52.48	-16.02	36.46	40.00	-3.54	QP	
2	450.0100	45.24	-7.41	37.83	46.00	-8.17	Peak	
3	562.5300	47.83	-5.67	42.16	46.00	-3.84	Peak	
4	766.7150	38.59	-3.04	35.55	46.00	-10.45	Peak	
5	949.0750	30.88	1.37	32.25	46.00	-13.75	Peak	

Test Mode: TX 2440 MHz _CH19_1Mbps(Adapter: RC30-024801)

Horizontal

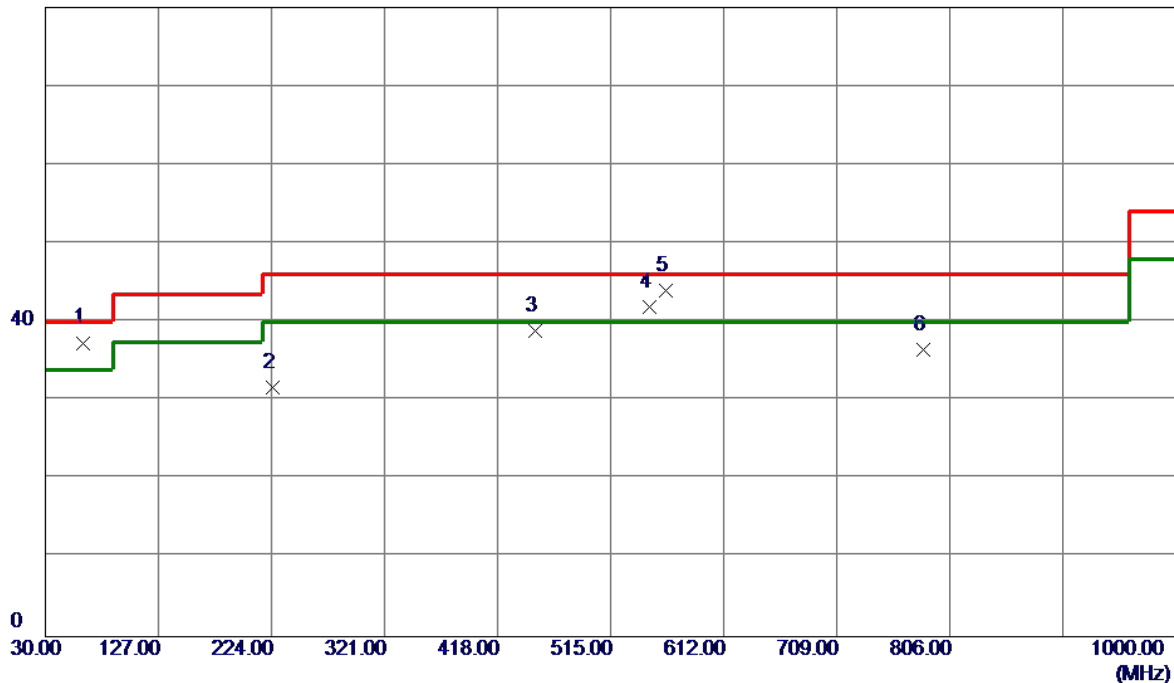


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	293.8400	42.30	-10.73	31.57	46.00	-14.43	Peak	
2	450.0100	39.60	-7.41	32.19	46.00	-13.81	Peak	
3	562.5300	34.71	-5.67	29.04	46.00	-16.96	Peak	
4	693.9650	29.81	-3.04	26.77	46.00	-19.23	Peak	
5	830.7350	30.43	-1.52	28.91	46.00	-17.09	Peak	
6 *	941.8000	32.58	1.08	33.66	46.00	-12.34	Peak	

Test Mode: TX 2480 MHz _CH39_1Mbps (Adapter: RC30-024801)

Vertical

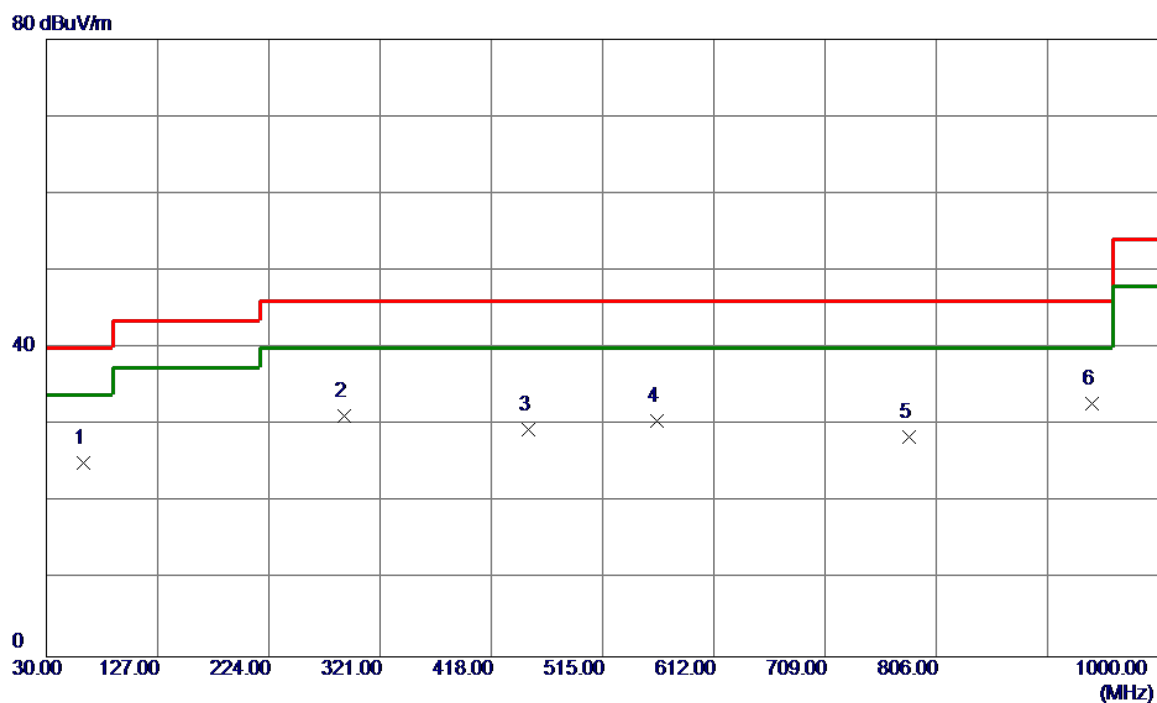
80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	62.4950	53.47	-16.11	37.36	40.00	-2.64	Peak	
2	224.9700	46.54	-14.90	31.64	46.00	-14.36	Peak	
3	450.0100	46.35	-7.41	38.94	46.00	-7.06	Peak	
4	547.9800	47.46	-5.59	41.87	46.00	-4.13	Peak	
5 *	562.5300	49.69	-5.67	44.02	46.00	-1.98	Peak	
6	783.2050	38.51	-2.05	36.46	46.00	-9.54	Peak	

Test Mode: TX 2480 MHz _CH39_1Mbps (Adapter: RC30-024801)

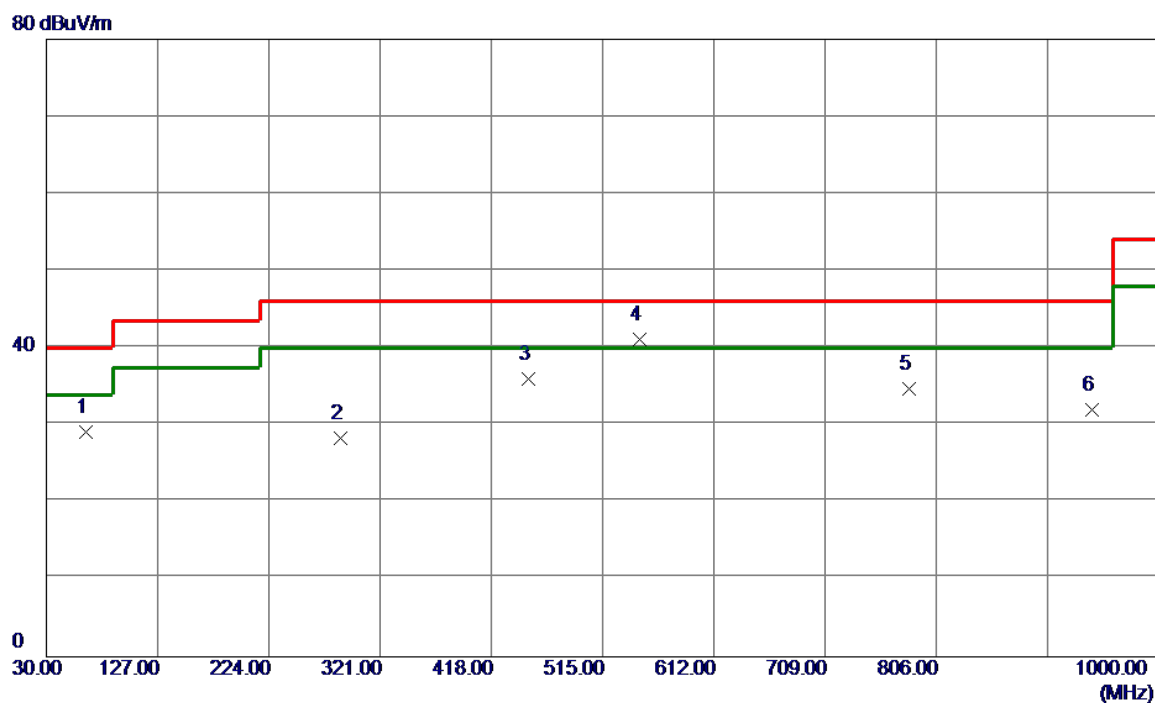
Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	62.0100	41.17	-16.02	25.15	40.00	-14.85	Peak	
2	289.9600	42.17	-10.96	31.21	46.00	-14.79	Peak	
3	450.0100	36.92	-7.41	29.51	46.00	-16.49	Peak	
4	562.5300	36.25	-5.67	30.58	46.00	-15.42	Peak	
5	782.7199	30.61	-2.08	28.53	46.00	-17.47	Peak	
6 *	941.8000	31.77	1.08	32.85	46.00	-13.15	Peak	

Test Mode: TX 2402 MHz_CH00_1Mbps (Adapter: RC30-0238)

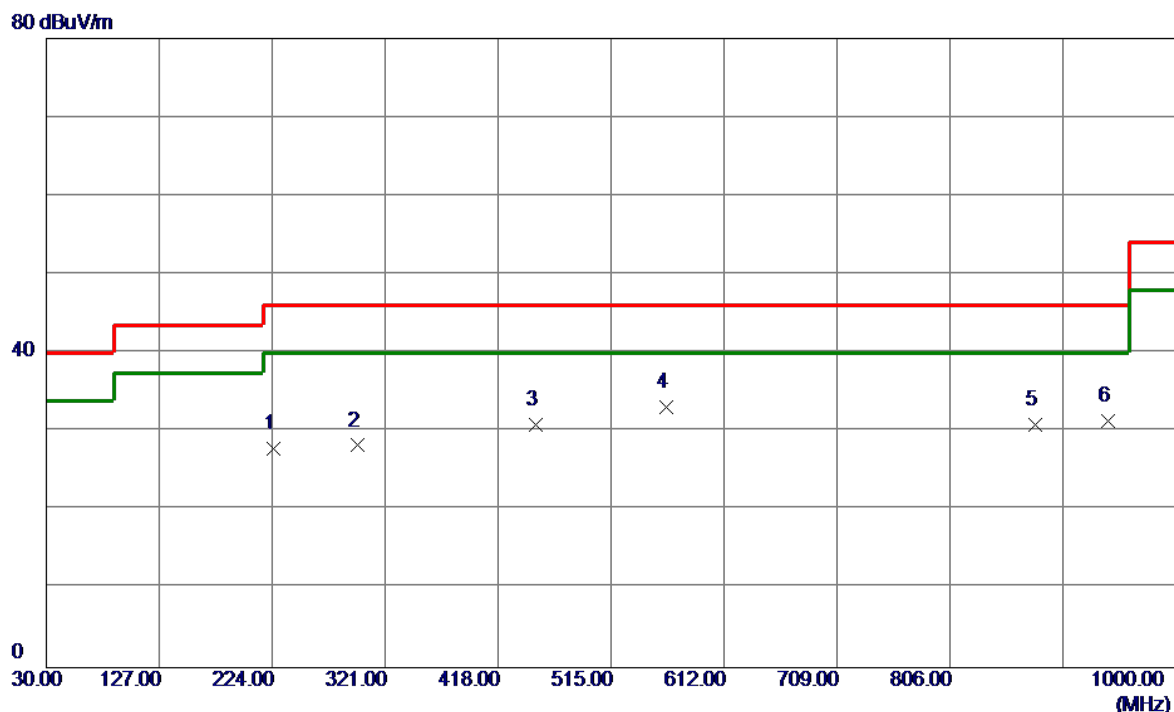
Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	64.4350	45.58	-16.44	29.14	40.00	-10.86	Peak	
2	286.5650	39.46	-11.09	28.37	46.00	-17.63	Peak	
3	450.0100	43.39	-7.41	35.98	46.00	-10.02	Peak	
4 *	547.0100	46.83	-5.65	41.18	46.00	-4.82	Peak	
5	782.7199	36.86	-2.08	34.78	46.00	-11.22	Peak	
6	941.8000	30.90	1.08	31.98	46.00	-14.02	Peak	

Test Mode: TX 2402 MHz_CH00_1Mbps (Adapter: RC30-0238)

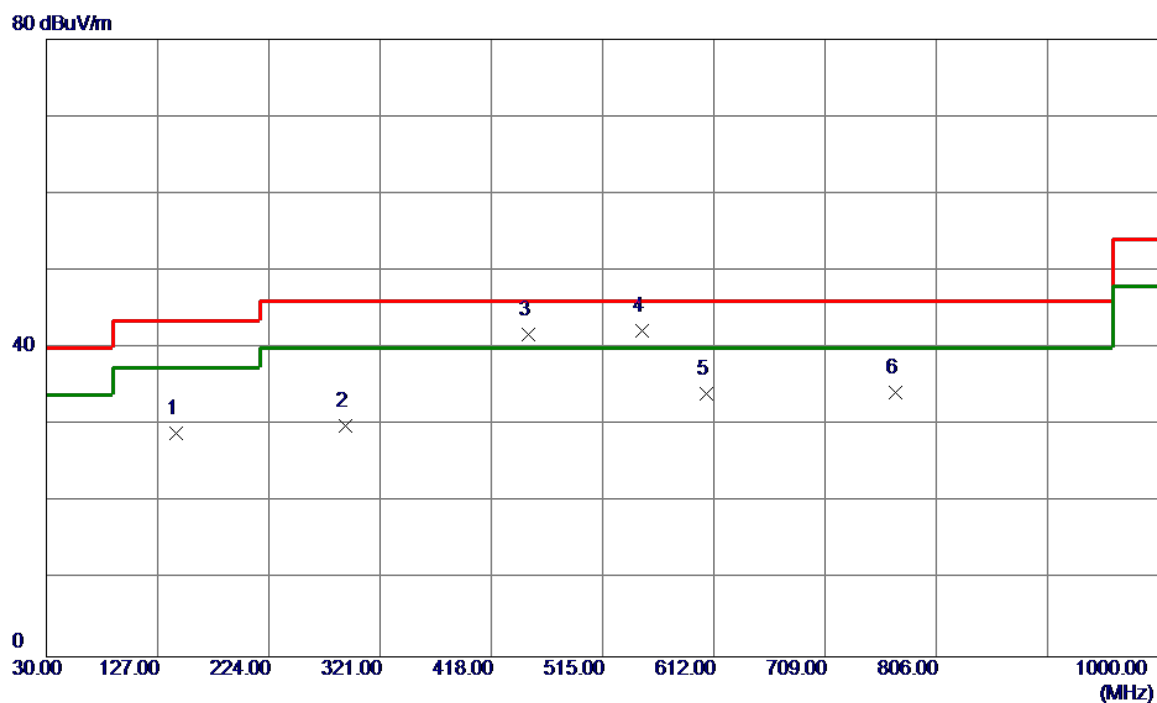
Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	224.9700	42.67	-14.90	27.77	46.00	-18.23	Peak	
2	297.2349	38.77	-10.53	28.24	46.00	-17.76	Peak	
3	450.0100	38.28	-7.41	30.87	46.00	-15.13	Peak	
4 *	562.5300	38.78	-5.67	33.11	46.00	-12.89	Peak	
5	879.7200	31.95	-1.09	30.86	46.00	-15.14	Peak	
6	941.8000	30.34	1.08	31.42	46.00	-14.58	Peak	

Test Mode: TX 2440 MHz_CH19_1Mbps (Adapter: RC30-0238)

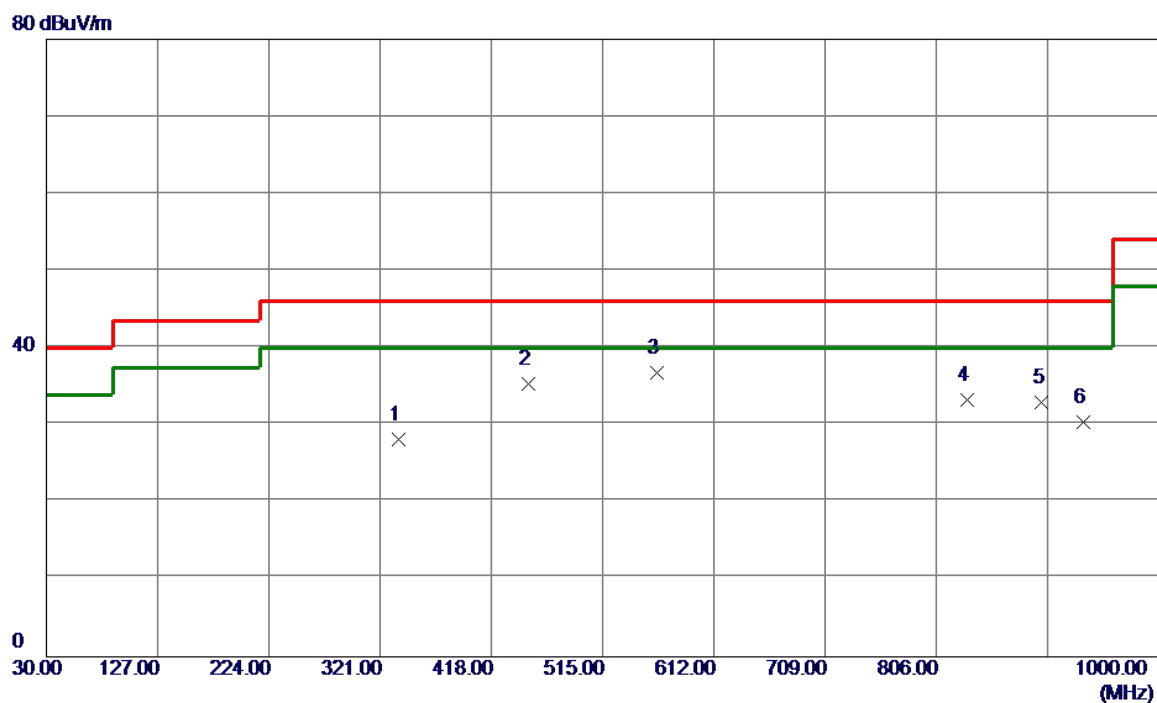
Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	143.0050	40.92	-11.91	29.01	43.50	-14.49	Peak	
2	290.9300	40.89	-10.90	29.99	46.00	-16.01	Peak	
3	450.0100	49.20	-7.41	41.79	46.00	-4.21	Peak	
4 *	549.9200	47.72	-5.47	42.25	46.00	-3.75	Peak	
5	605.2100	40.22	-6.18	34.04	46.00	-11.96	Peak	
6	770.1100	37.01	-2.83	34.18	46.00	-11.82	Peak	

Test Mode: TX 2440 MHz_CH19_1Mbps (Adapter: RC30-0238)

Horizontal

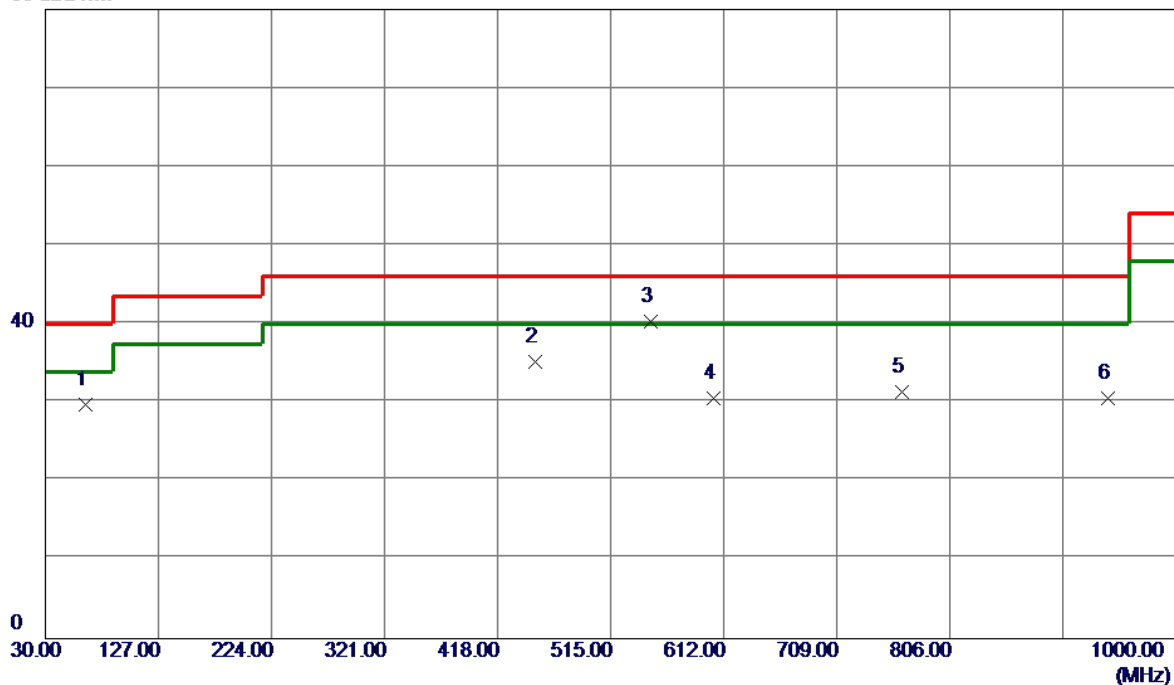


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	337.4900	39.07	-10.90	28.17	46.00	-17.83	Peak	
2	450.0100	42.75	-7.41	35.34	46.00	-10.66	Peak	
3 *	562.5300	42.43	-5.67	36.76	46.00	-9.24	Peak	
4	833.1599	34.88	-1.56	33.32	46.00	-12.68	Peak	
5	898.1500	33.67	-0.65	33.02	46.00	-12.98	Peak	
6	934.5250	29.64	0.79	30.43	46.00	-15.57	Peak	

Test Mode: TX 2480 MHz_CH39_1Mbps (Adapter: RC30-0238)

Vertical

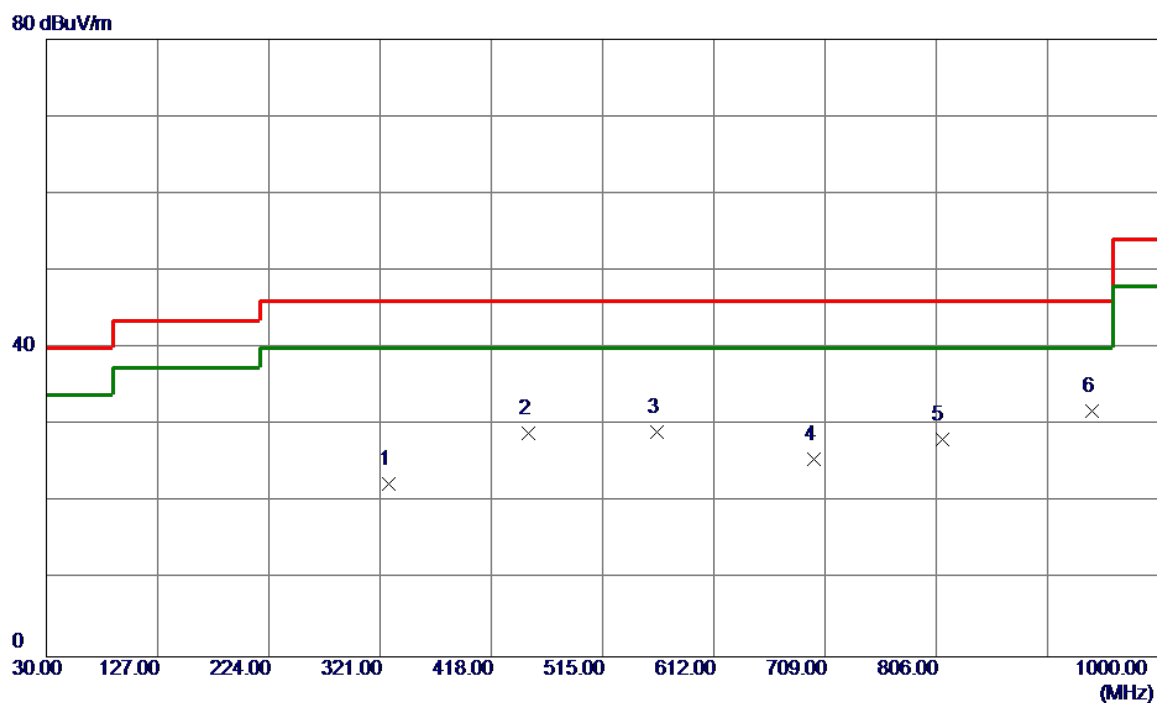
80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	64.4350	46.24	-16.44	29.80	40.00	-10.20	Peak	
2	450.0100	42.63	-7.41	35.22	46.00	-10.78	Peak	
3 *	549.9200	45.81	-5.47	40.34	46.00	-5.66	Peak	
4	603.7550	36.77	-6.22	30.55	46.00	-15.45	Peak	
5	764.7750	34.54	-3.16	31.38	46.00	-14.62	Peak	
6	941.3150	29.46	1.06	30.52	46.00	-15.48	Peak	

Test Mode: TX 2480 MHz_CH39_1Mbps (Adapter: RC30-0238)

Horizontal



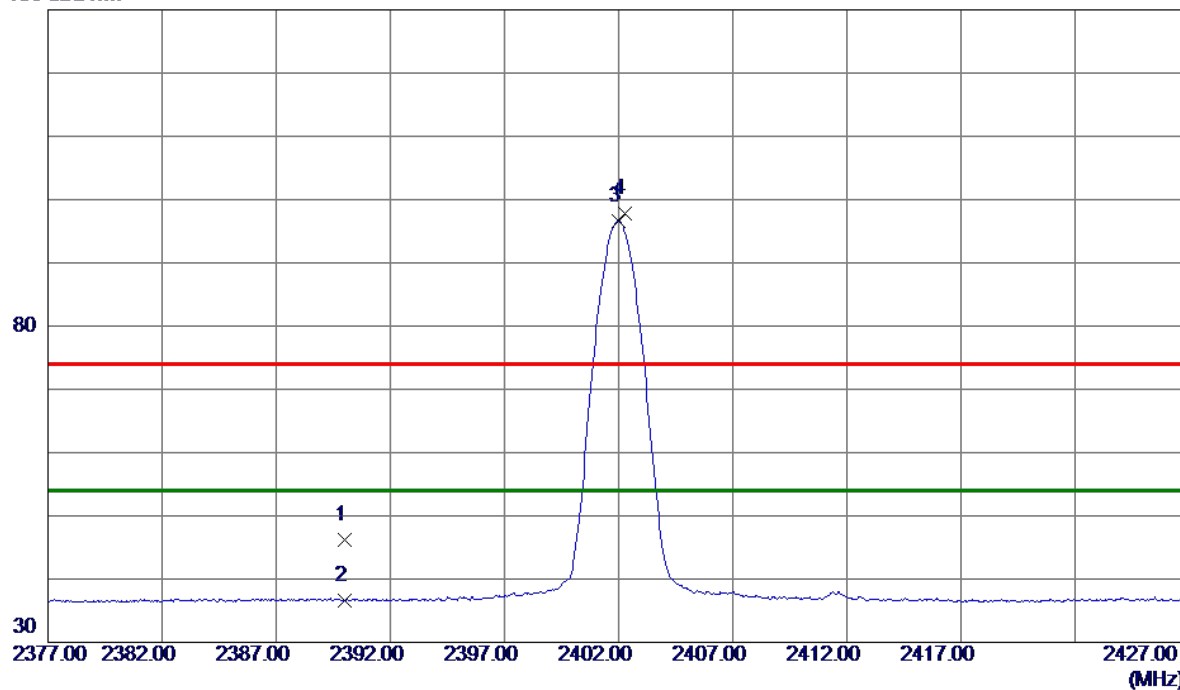
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	328.7600	33.13	-10.78	22.35	46.00	-23.65	Peak	
2	450.0100	36.31	-7.41	28.90	46.00	-17.10	Peak	
3	562.5300	34.74	-5.67	29.07	46.00	-16.93	Peak	
4	698.8150	28.39	-2.80	25.59	46.00	-20.41	Peak	
5	810.8500	29.32	-1.21	28.11	46.00	-17.89	Peak	
6 *	941.8000	30.74	1.08	31.82	46.00	-14.18	Peak	

APPENDIX D - RADIATED EMISSION (ABOVE 1000 MHZ)

Test Mode : TX 2402 MHz _CH00_1Mbps

Vertical

130 dBuV/m

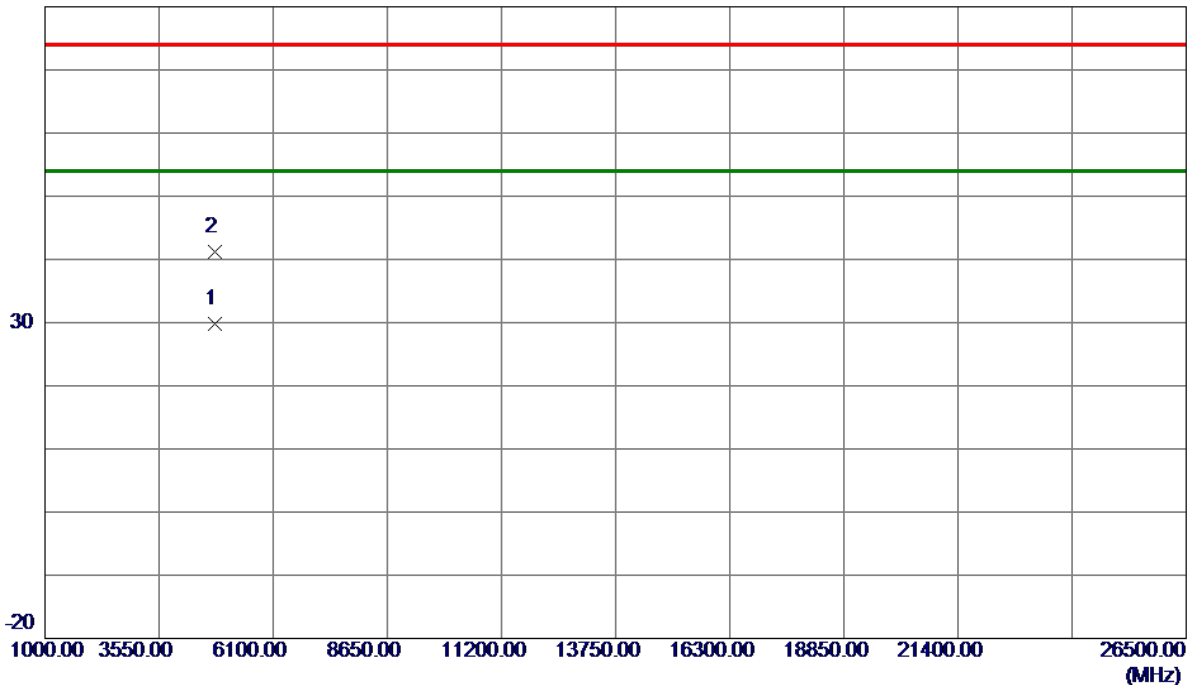


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	39.49	6.62	46.11	74.00	-27.89	Peak	
2	2390.0000	30.01	6.62	36.63	54.00	-17.37	AVG	
3 *	2401.9750	89.96	6.62	96.58	54.00	42.58	AVG	No Limit
4	2402.2500	91.22	6.62	97.84	74.00	23.84	Peak	No Limit

Test Mode :	TX 2402 MHz _CH00_1Mbps
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Vertical

80 dBuV/m

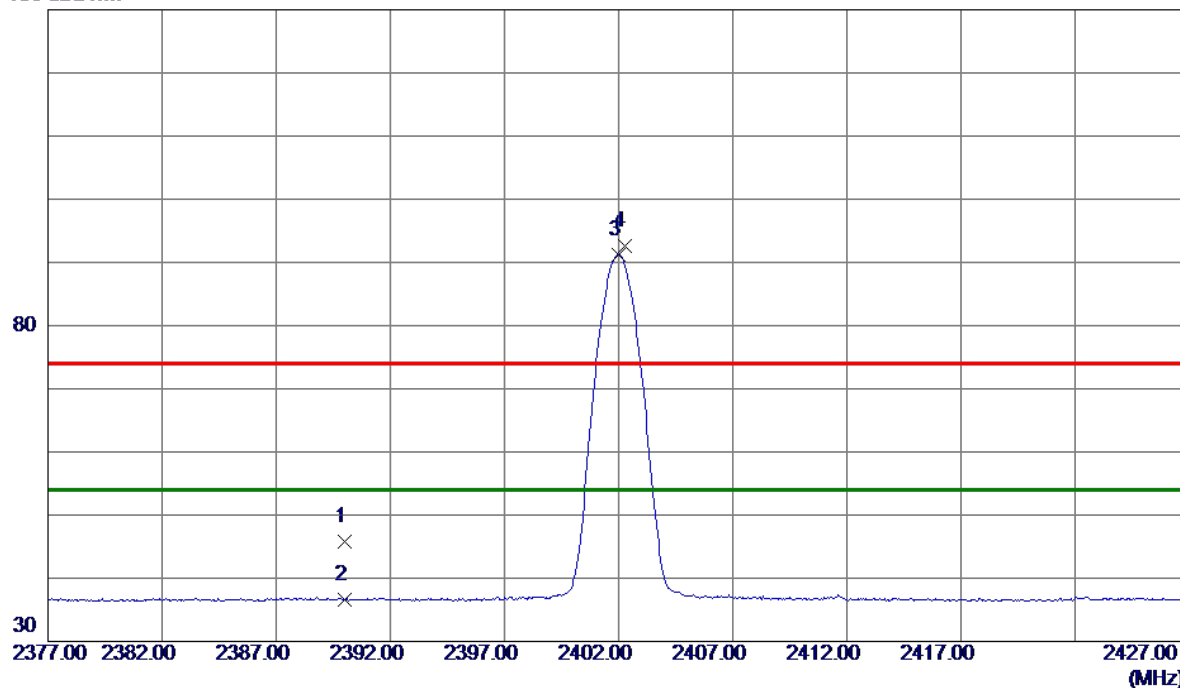


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4801.4000	26.35	3.52	29.87	54.00	-24.13	AVG	
2	4806.8400	37.71	3.53	41.24	74.00	-32.76	Peak	

Test Mode : TX 2402 MHz _CH00_1Mbps

Horizontal

130 dBuV/m

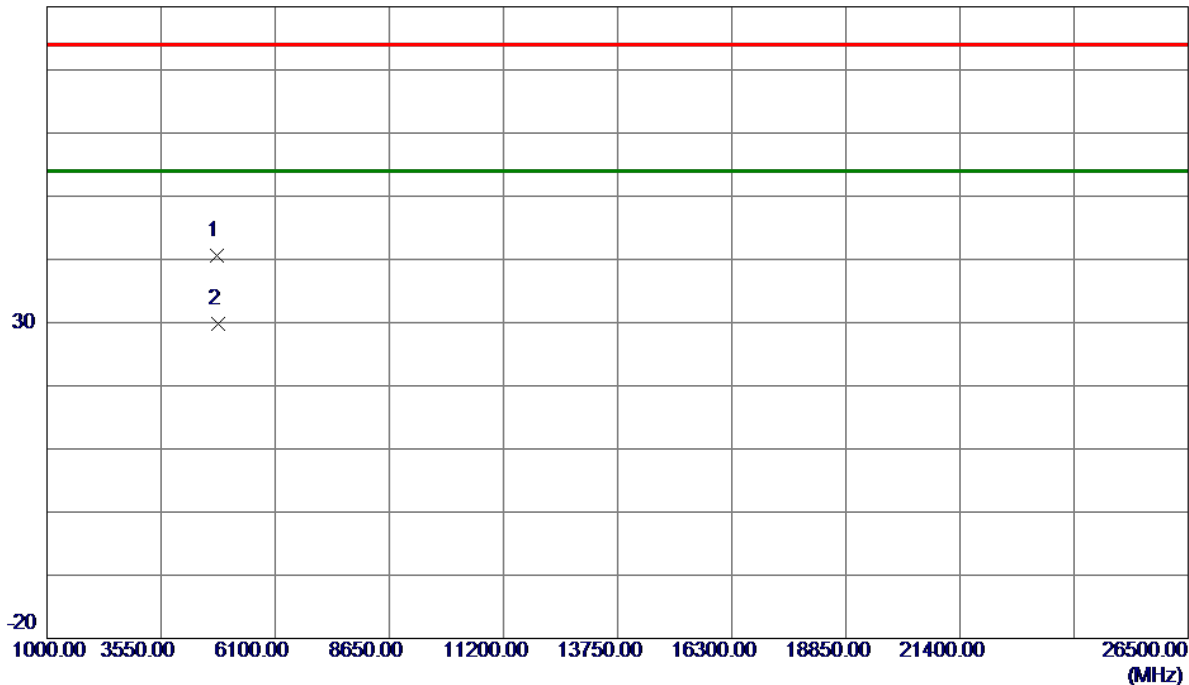


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	39.11	6.62	45.73	74.00	-28.27	Peak	
2	2390.0000	30.00	6.62	36.62	54.00	-17.38	AVG	
3 *	2401.9750	84.64	6.62	91.26	54.00	37.26	AVG	No Limit
4	2402.2500	85.91	6.62	92.53	74.00	18.53	Peak	No Limit

Test Mode :	TX 2402 MHz _CH00_1Mbps
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Horizontal

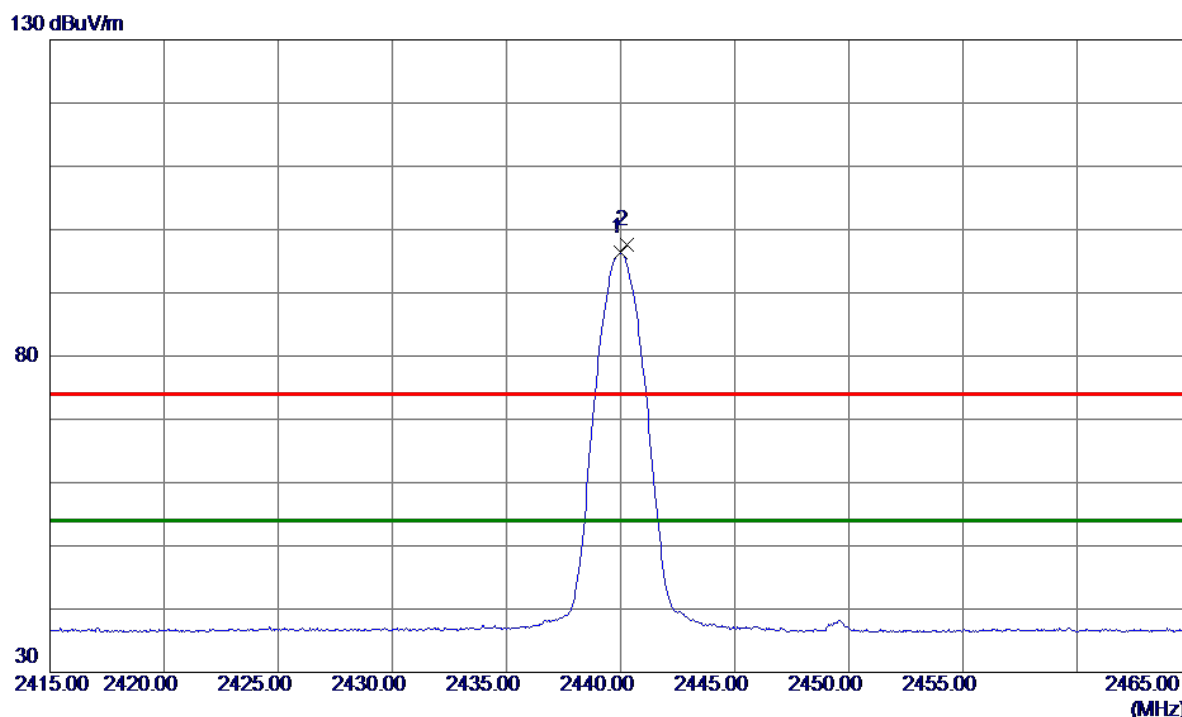
80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4810.5900	37.07	3.54	40.61	74.00	-33.39	Peak	
2 *	4811.6400	26.19	3.54	29.73	54.00	-24.27	AVG	

Test Mode : TX 2440 MHz _CH19_1Mbps

Vertical

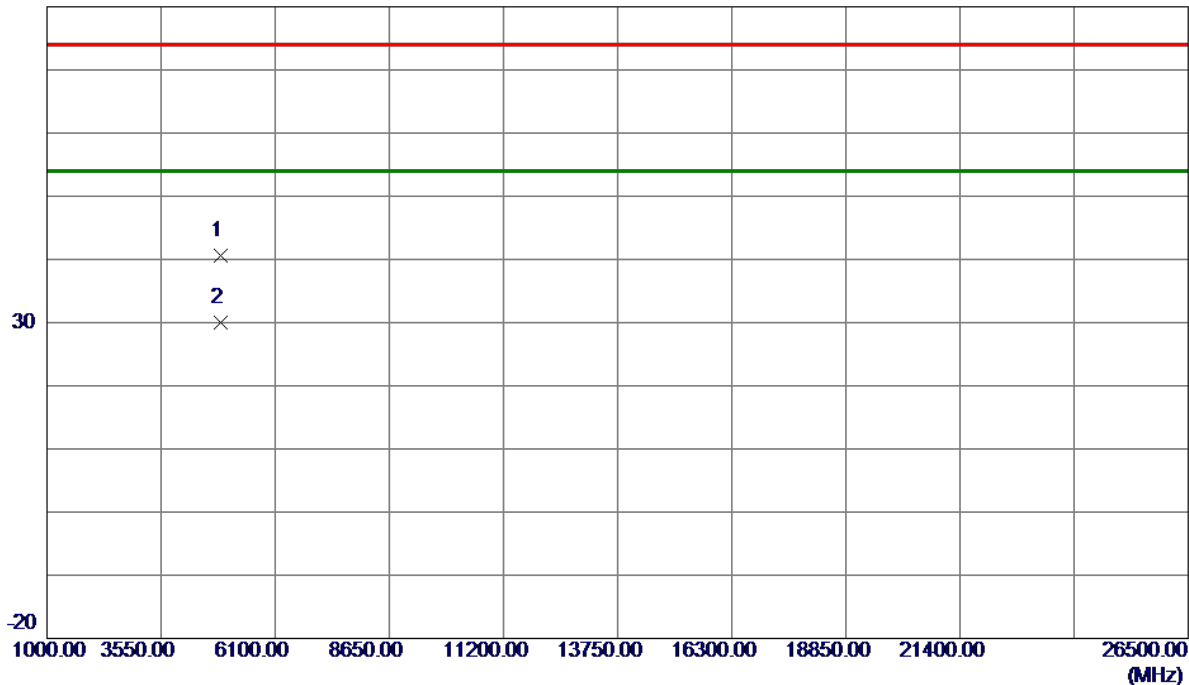


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	2439.9750	89.70	6.61	96.31	54.00	42.31	AVG	No Limit
2	2440.2500	91.01	6.61	97.62	74.00	23.62	Peak	No Limit

Test Mode :	TX 2440 MHz _CH19_1Mbps
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Vertical

80 dBuV/m

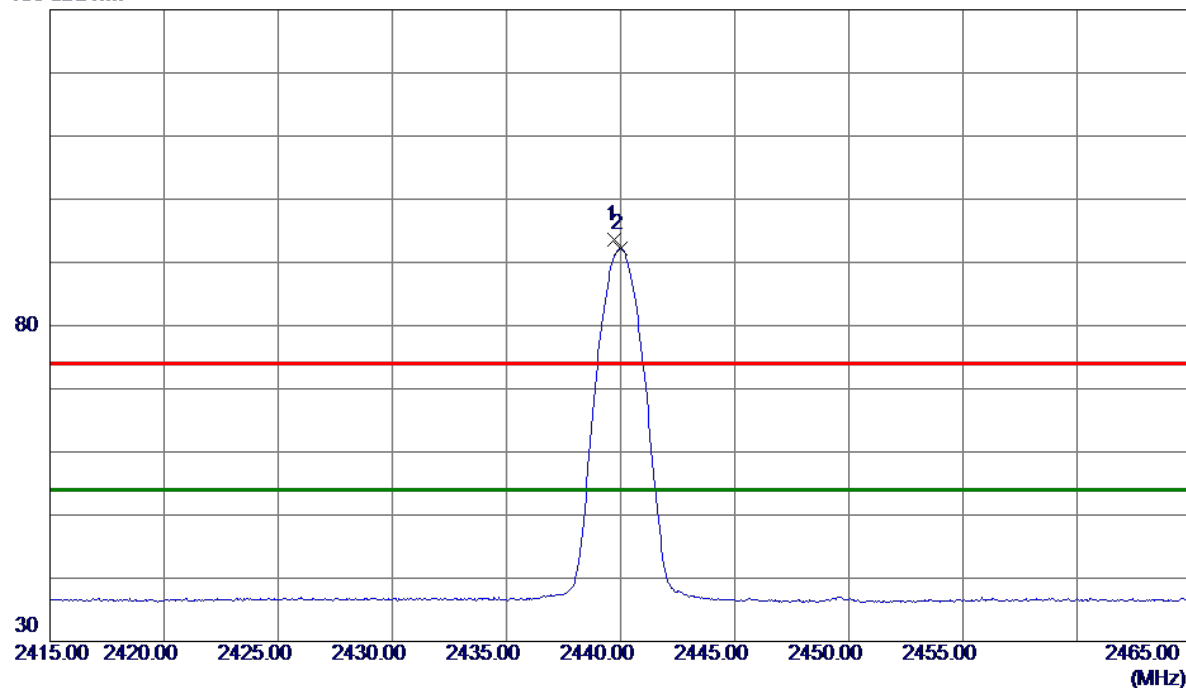


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4884.4000	36.92	3.70	40.62	74.00	-33.38	Peak	
2 *	4888.3700	26.35	3.71	30.06	54.00	-23.94	AVG	

Test Mode :	TX 2440 MHz _CH19_ 1Mbps
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Horizontal

130 dBuV/m

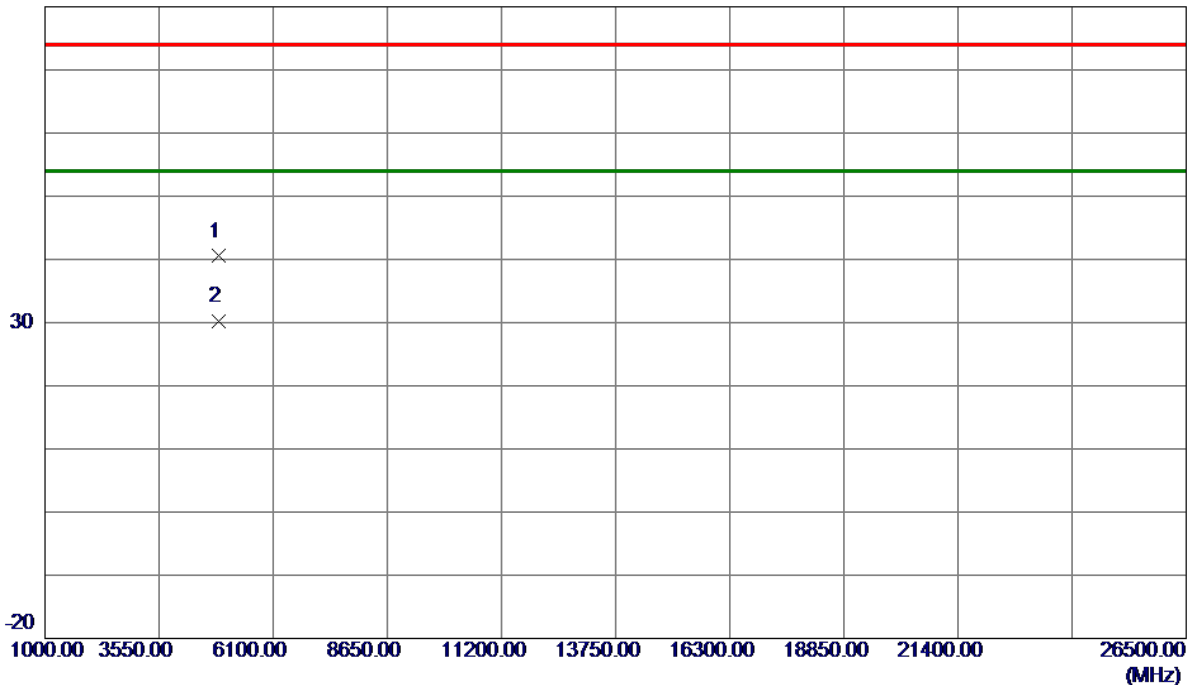


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2439.7500	86.91	6.61	93.52	74.00	19.52	Peak	No Limit
2 *	2440.0000	85.60	6.61	92.21	54.00	38.21	AVG	No Limit

Test Mode :	TX 2440 MHz _CH19_1Mbps
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Horizontal

80 dBuV/m

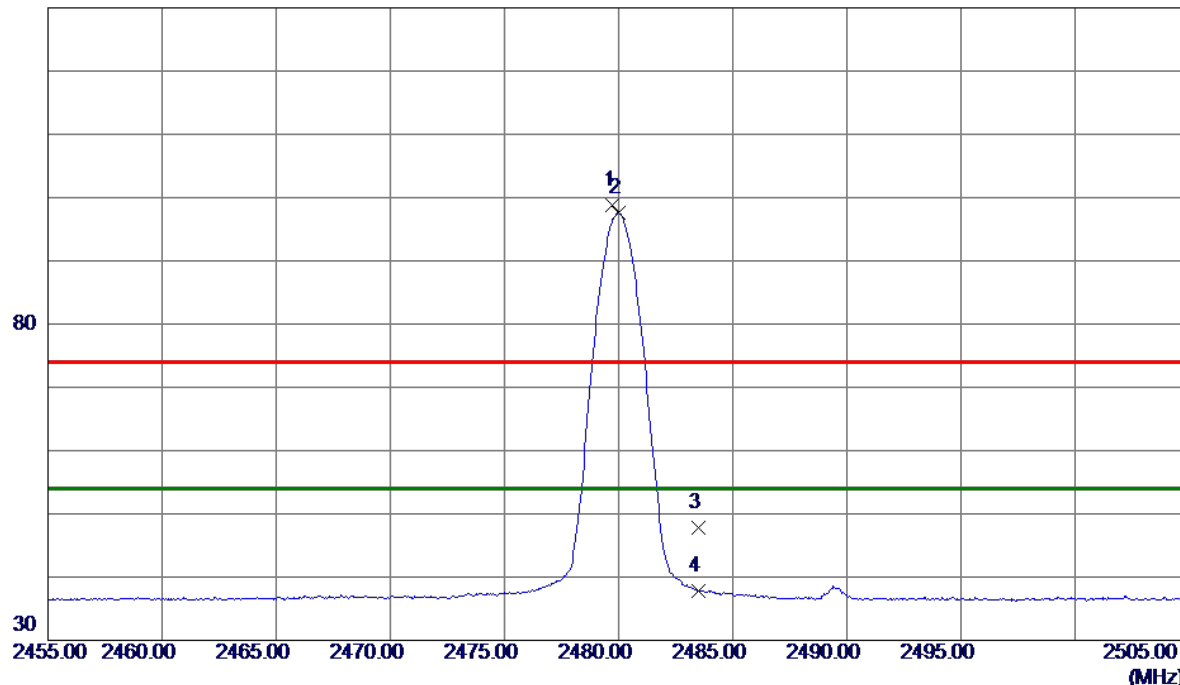


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4878.3500	36.81	3.69	40.50	74.00	-33.50	Peak	
2 *	4887.9100	26.44	3.71	30.15	54.00	-23.85	AVG	

Test Mode : TX 2480 MHz _CH39_1Mbps

Vertical

130 dBuV/m

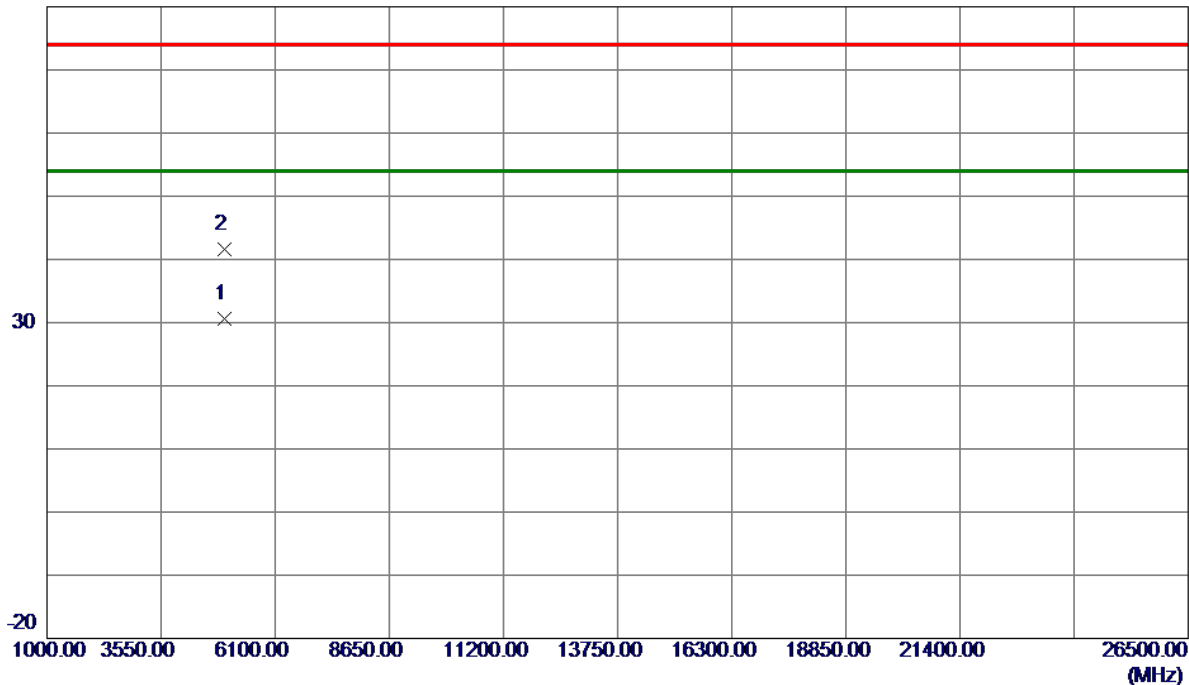


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2479.7500	92.21	6.61	98.82	74.00	24.82	Peak	No Limit
2 *	2479.9750	90.94	6.61	97.55	54.00	43.55	AVG	No Limit
3	2483.5000	41.11	6.61	47.72	74.00	-26.28	Peak	
4	2483.5000	31.23	6.61	37.84	54.00	-16.16	AVG	

Test Mode :	TX 2480 MHz _CH39_1Mbps
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Vertical

80 dBuV/m

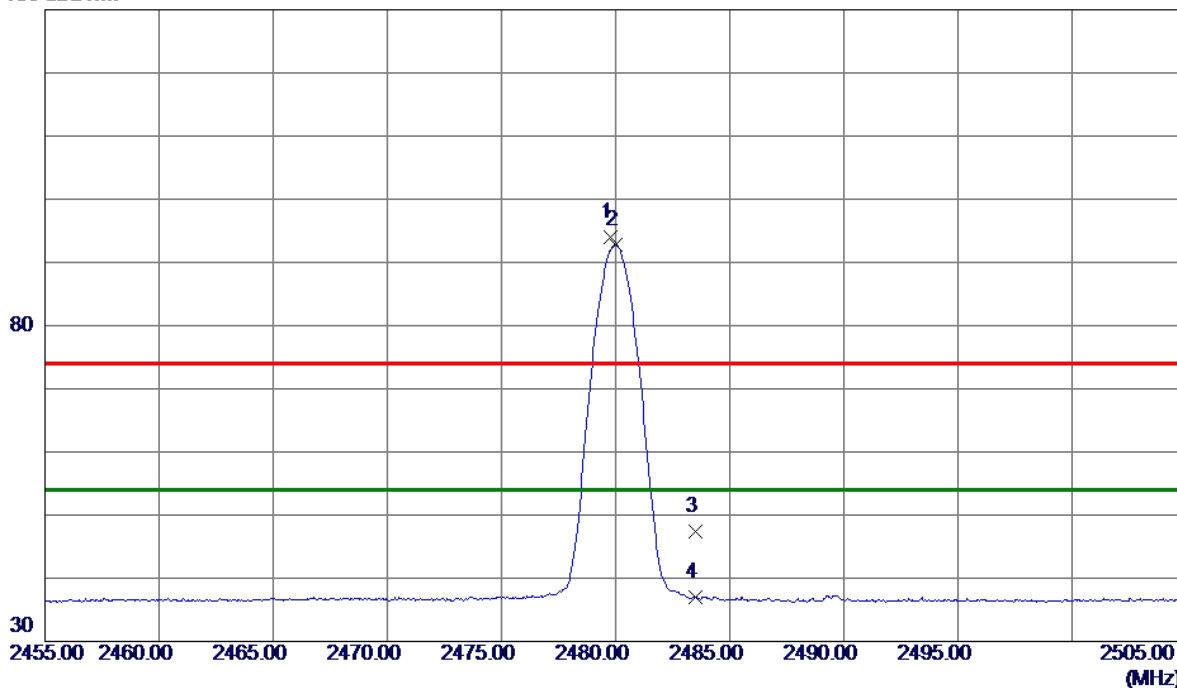


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	4959.9200	26.71	3.87	30.58	54.00	-23.42	AVG	
2	4968.0900	37.62	3.89	41.51	74.00	-32.49	Peak	

Test Mode : TX 2480 MHz _CH39_1Mbps

Horizontal

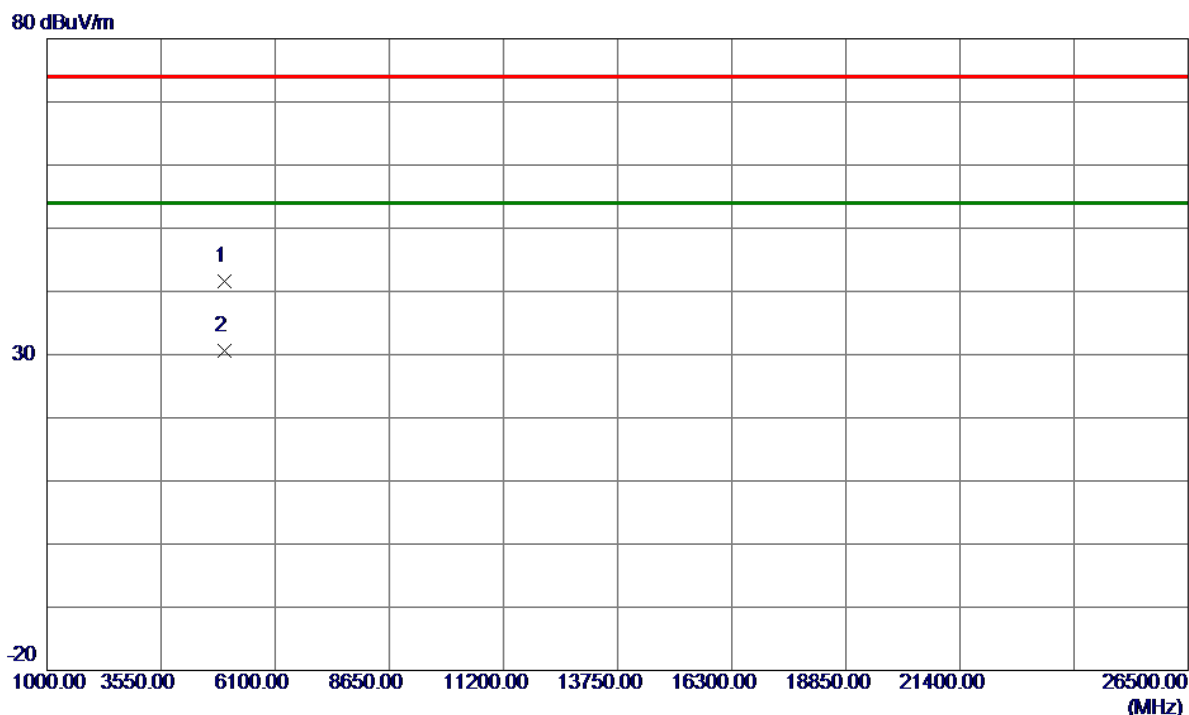
130 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2479.7750	87.49	6.61	94.10	74.00	20.10	Peak	No Limit
2 *	2480.0000	86.20	6.61	92.81	54.00	38.81	AVG	No Limit
3	2483.5000	40.86	6.61	47.47	74.00	-26.53	Peak	
4	2483.5000	30.41	6.61	37.02	54.00	-16.98	AVG	

Test Mode :	TX 2480 MHz _CH39_1Mbps
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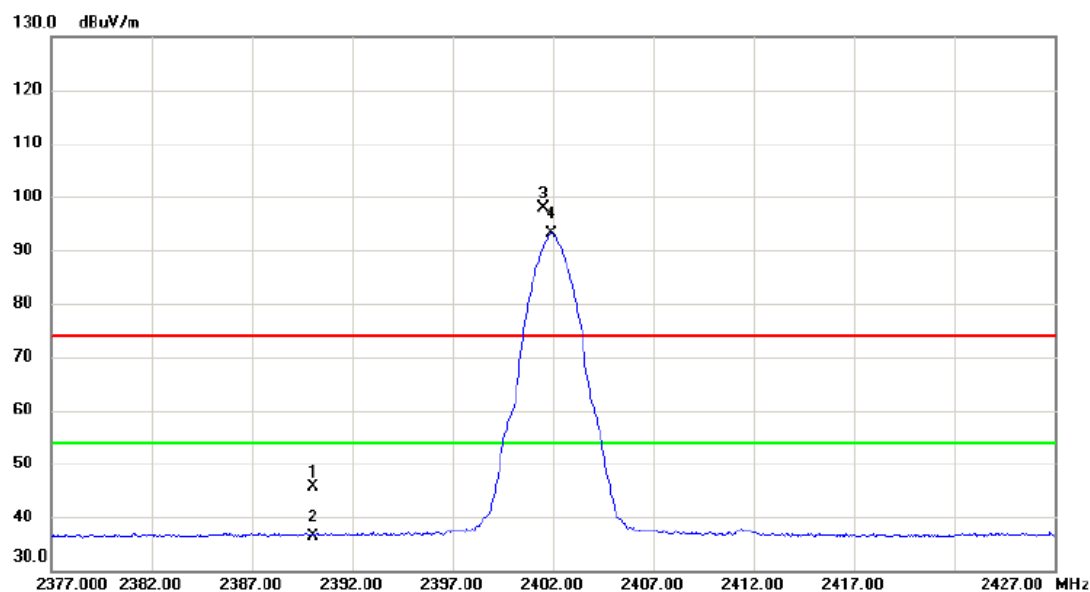
Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4952.8400	37.82	3.86	41.68	74.00	-32.32	Peak	
2 *	4961.4100	26.75	3.87	30.62	54.00	-23.38	AVG	

Test Mode : TX 2402 MHz _CH00_2Mbps

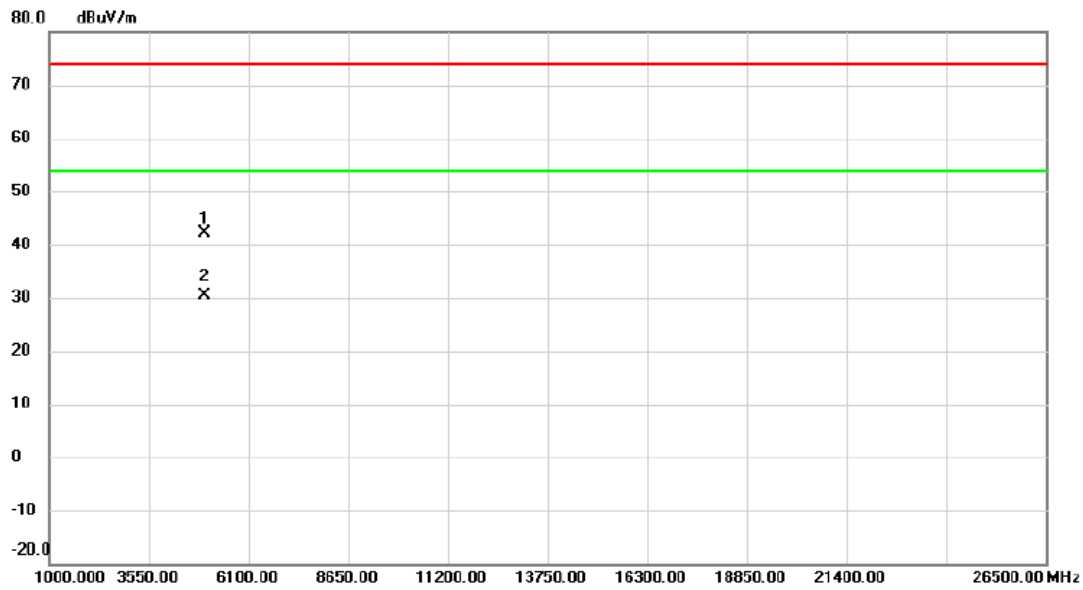
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2390.000	38.97	6.62	45.59	74.00	-28.41	peak	
2		2390.000	29.88	6.62	36.50	54.00	-17.50	AVG	
3	X	2401.525	91.20	6.62	97.82	74.00	23.82	peak	No Limit
4	*	2401.900	86.42	6.62	93.04	54.00	39.04	AVG	No Limit

Test Mode :	TX 2402 MHz _CH00_2Mbps
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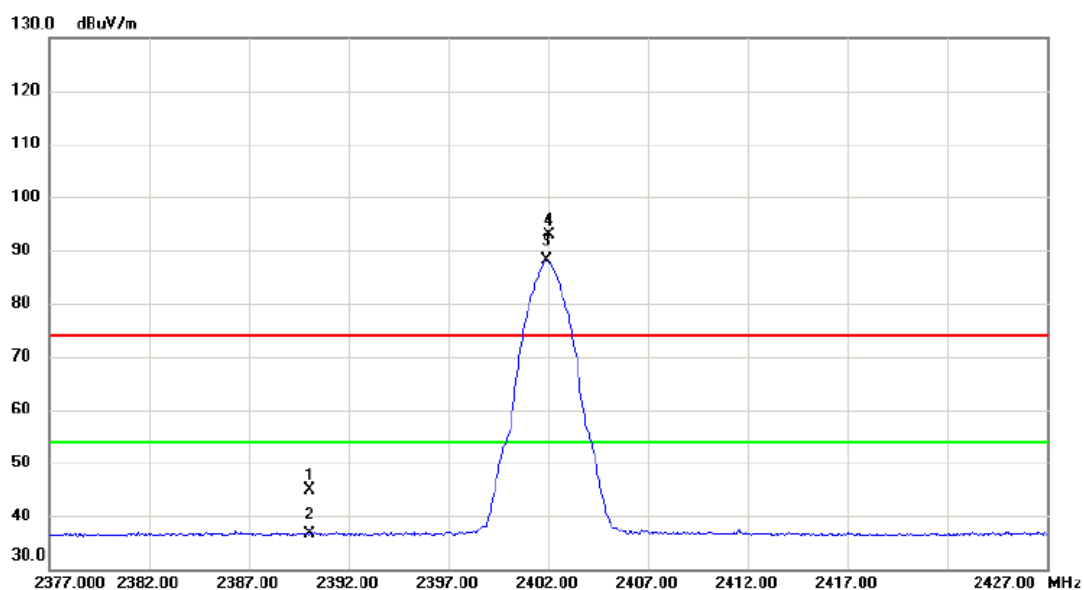
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4951.190	38.16	3.85	42.01	74.00	-31.99	peak	
2	*	4951.610	26.62	3.85	30.47	54.00	-23.53	AVG	

Test Mode : TX 2402 MHz _CH00_2Mbps

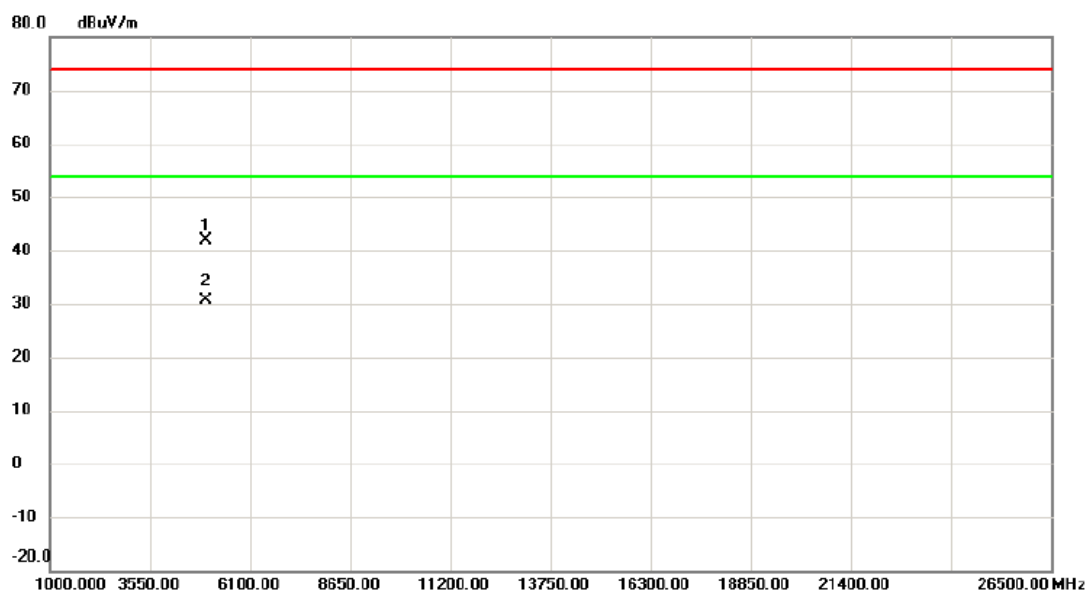
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2390.000	38.33	6.62	44.95	74.00	-29.05	peak	
2		2390.000	29.89	6.62	36.51	54.00	-17.49	AVG	
3	*	2401.925	81.42	6.62	88.04	54.00	34.04	AVG	No Limit
4	X	2402.000	86.16	6.62	92.78	74.00	18.78	peak	No Limit

Test Mode : TX 2402 MHz _CH00_2Mbps

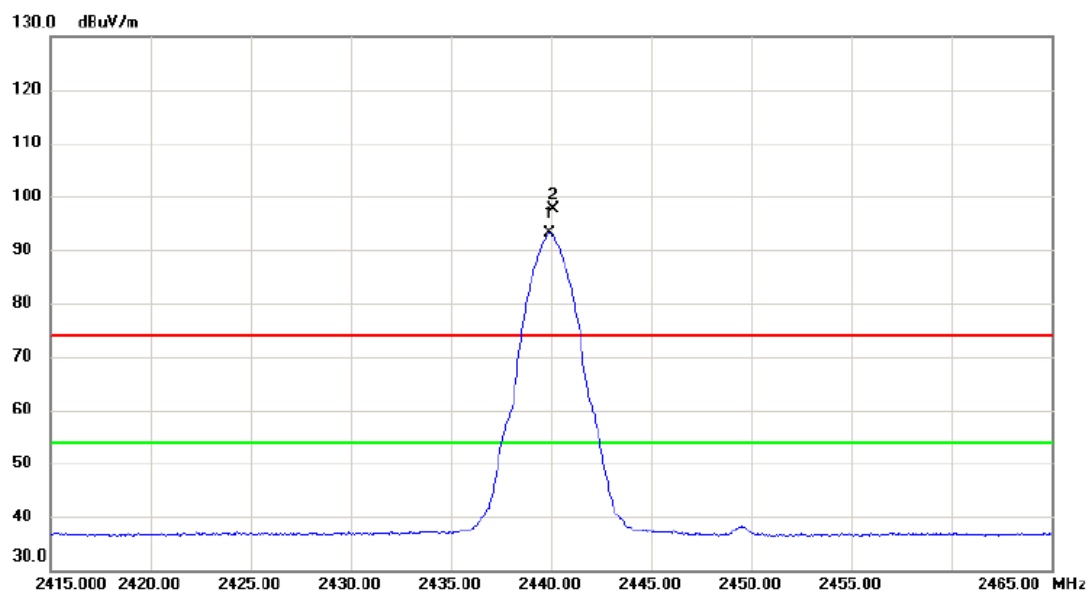
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4956.460	38.03	3.86	41.89	74.00	-32.11	peak	
2	*	4961.580	26.72	3.87	30.59	54.00	-23.41	AVG	

Test Mode : TX 2440 MHz _CH19_2Mbps

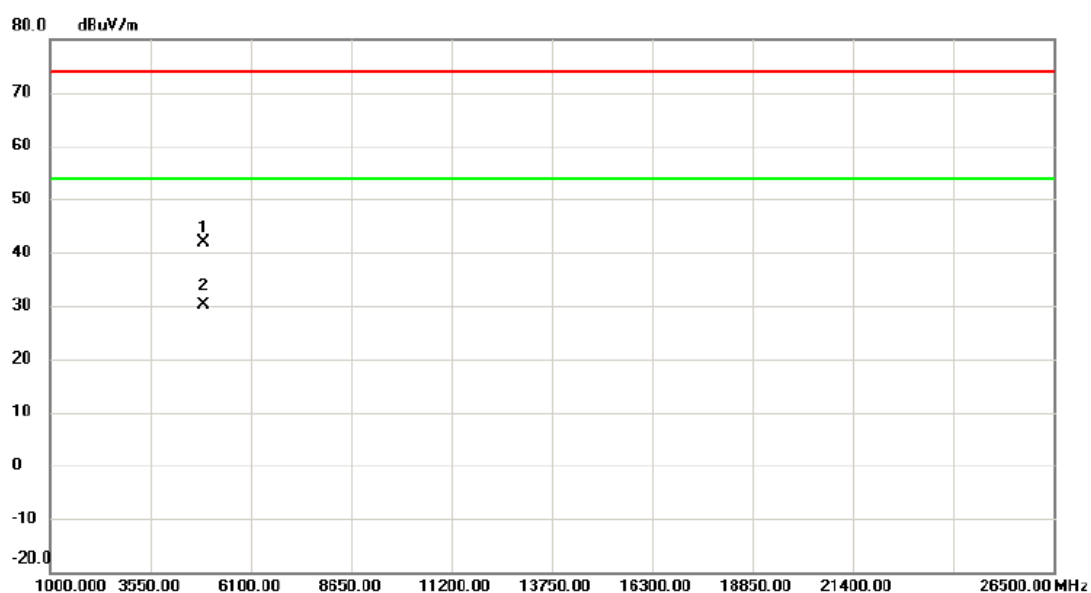
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2439.900	86.44	6.61	93.05	54.00	39.05	AVG	No Limit
2	X	2440.125	90.98	6.61	97.59	74.00	23.59	peak	No Limit

Test Mode :	TX 2440 MHz _CH19_ 2Mbps
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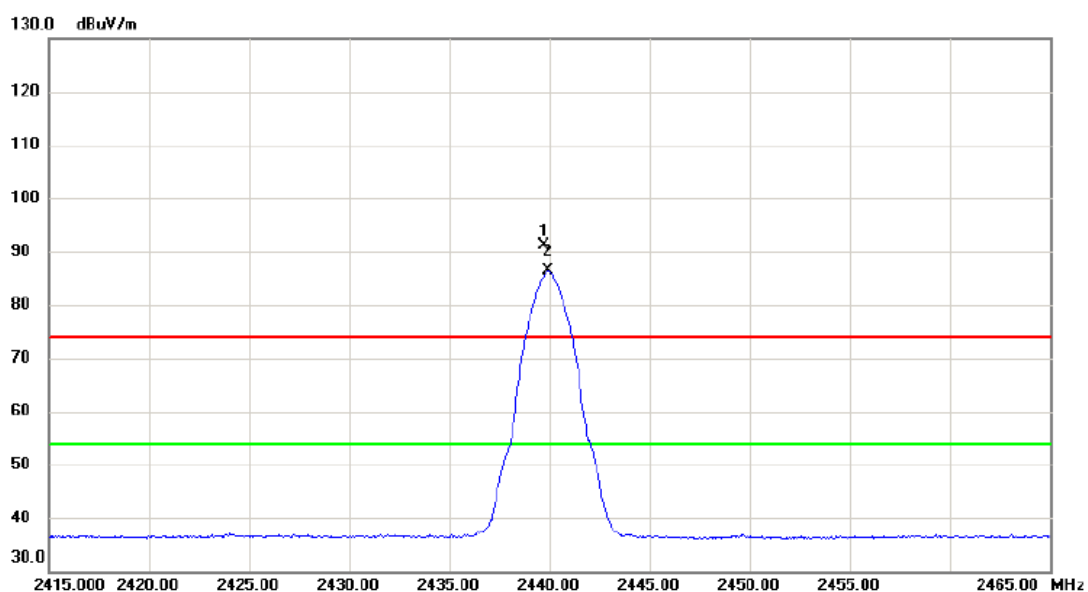
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4885.650	38.24	3.71	41.95	74.00	-32.05	peak	
2	*	4887.090	26.44	3.72	30.16	54.00	-23.84	AVG	

Test Mode : TX 2440 MHz _CH19_2Mbps

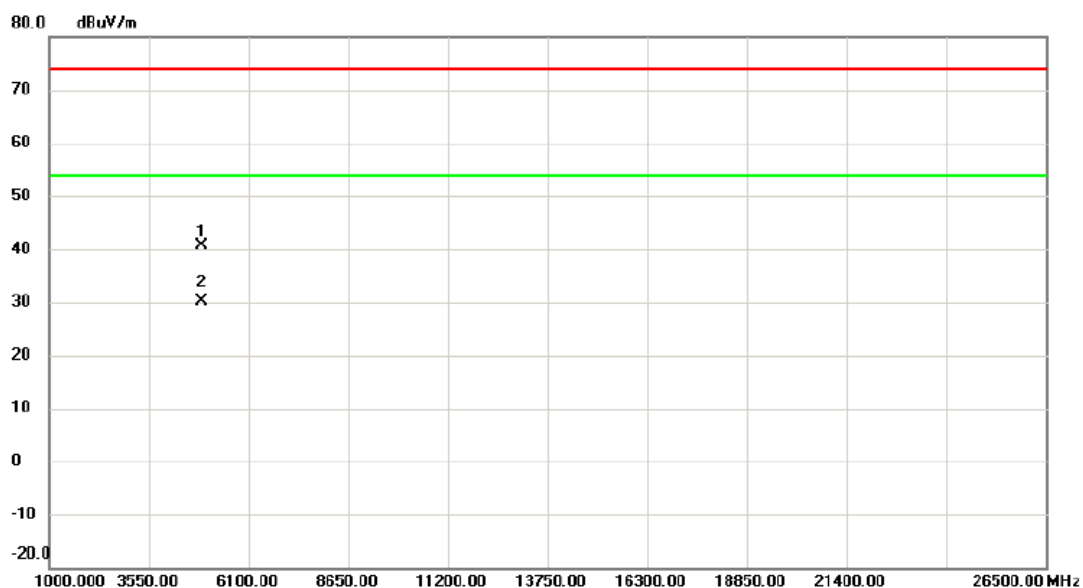
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2439.700	84.57	6.61	91.18	74.00	17.18	peak	No Limit
2	*	2439.925	79.70	6.61	86.31	54.00	32.31	AVG	No Limit

Test Mode :	TX 2440 MHz _CH19_ 2Mbps
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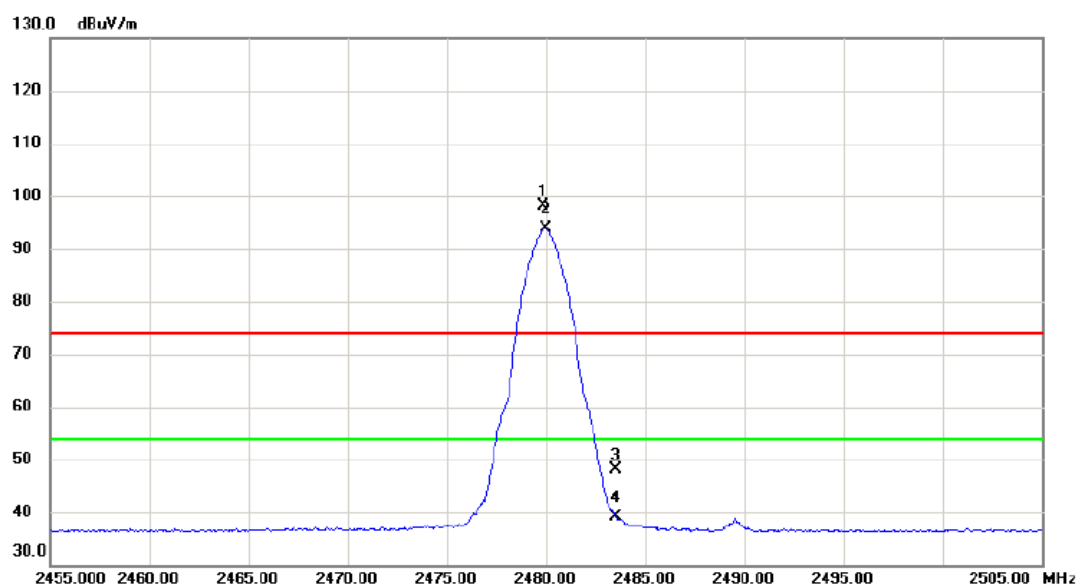
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4888.670	36.99	3.72	40.71	74.00	-33.29	peak	
2	*	4889.190	26.53	3.72	30.25	54.00	-23.75	AVG	

Test Mode : TX 2480 MHz _CH39_2Mbps

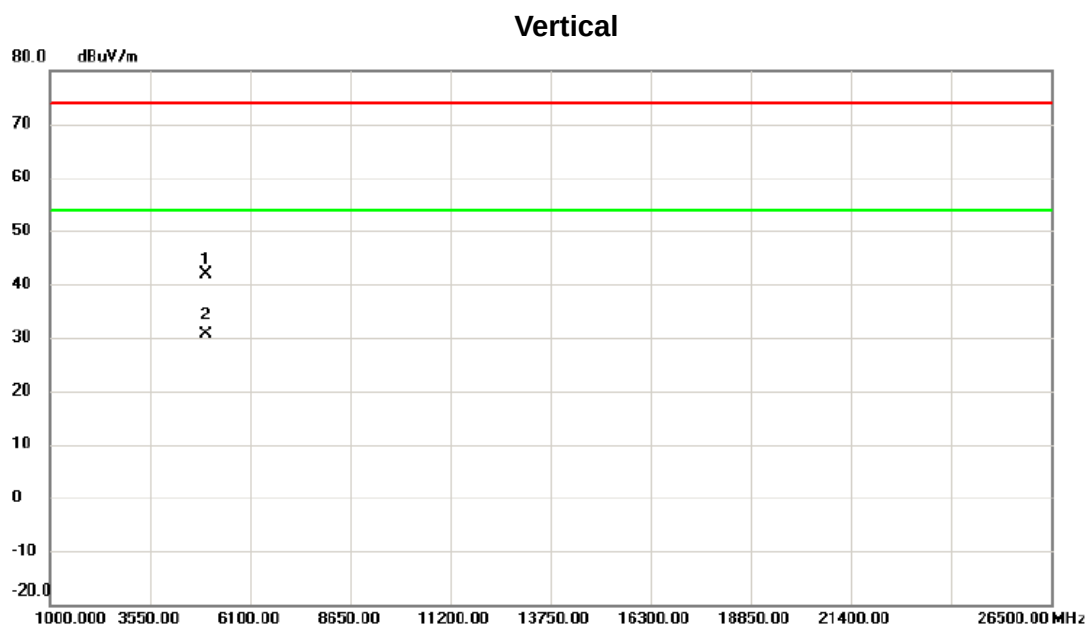
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	X	2479.825	91.43	6.61	98.04	74.00	24.04	peak	No Limit
2	*	2479.950	87.17	6.61	93.78	54.00	39.78	AVG	No Limit
3		2483.500	41.57	6.61	48.18	74.00	-25.82	peak	
4		2483.500	32.45	6.61	39.06	54.00	-14.94	AVG	

Test Mode :

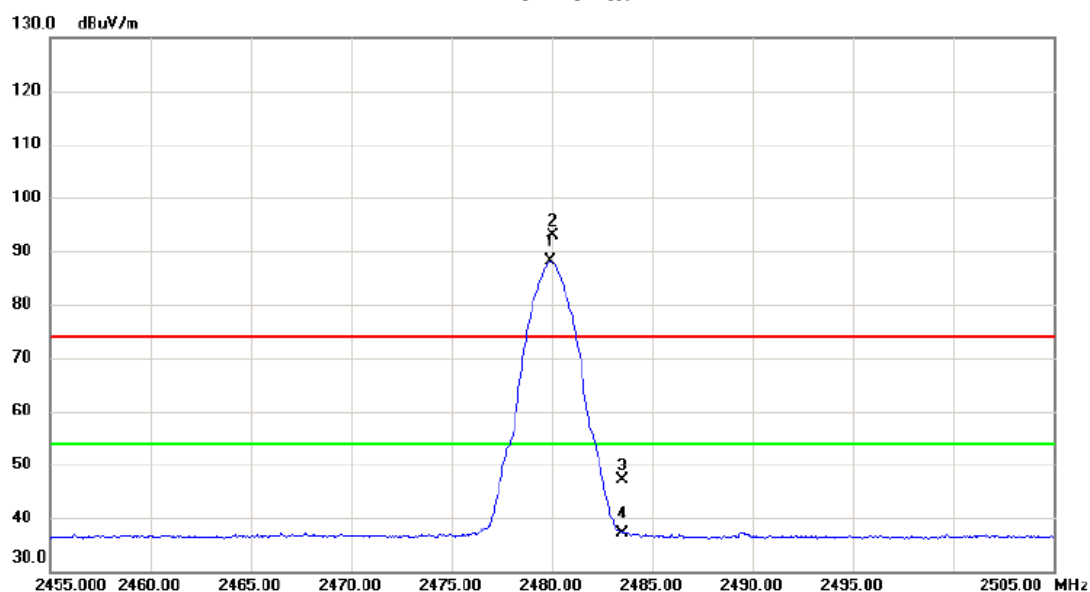
TX 2480 MHz _CH39_2Mbps



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.750	38.10	3.87	41.97	74.00	-32.03	peak	
2	*	4962.070	26.77	3.87	30.64	54.00	-23.36	AVG	

Test Mode : TX 2480 MHz _CH39_2Mbps

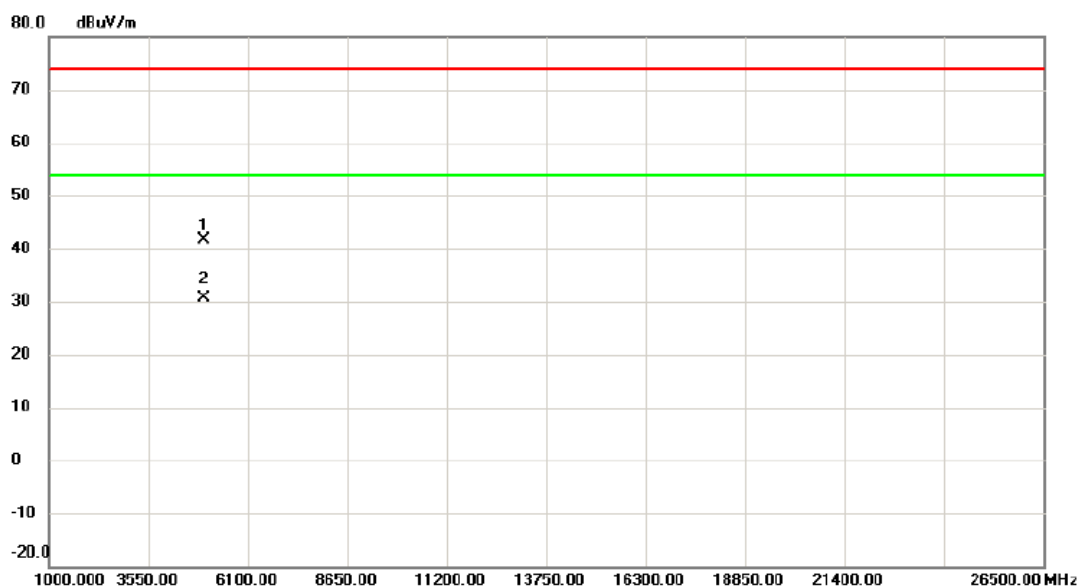
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2479.925	81.44	6.61	88.05	54.00	34.05	AVG	No Limit
2	X	2480.025	86.19	6.61	92.80	74.00	18.80	peak	No Limit
3		2483.500	40.53	6.61	47.14	74.00	-26.86	peak	
4		2483.500	30.64	6.61	37.25	54.00	-16.75	AVG	

Test Mode :	TX 2480 MHz _CH39_2Mbps
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Horizontal

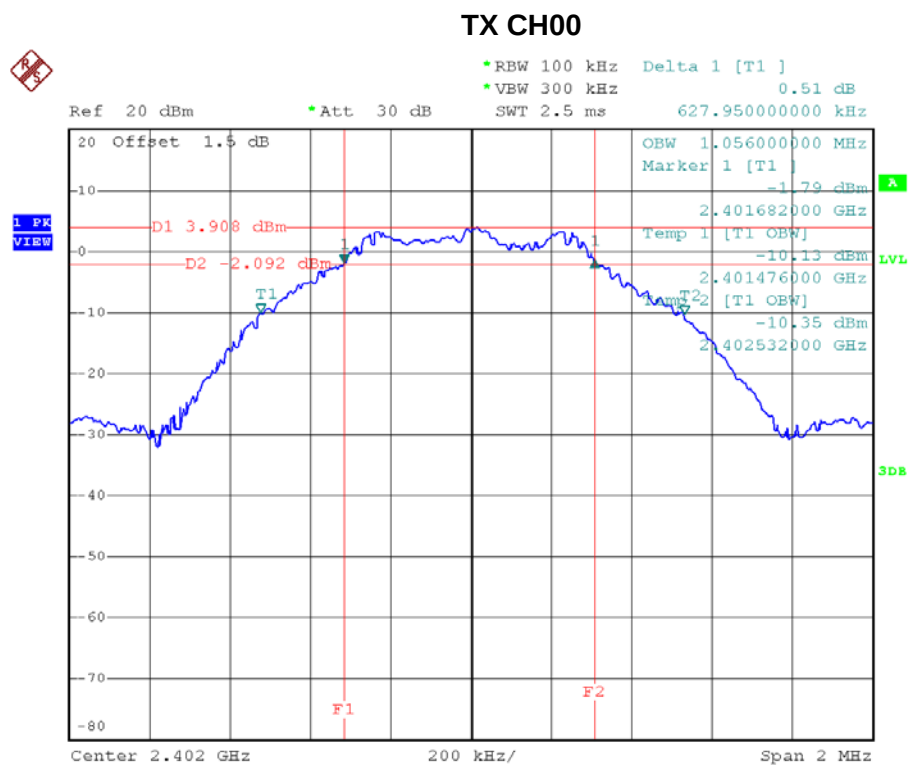


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4951.640	37.89	3.85	41.74	74.00	-32.26	peak	
2	*	4963.640	26.70	3.87	30.57	54.00	-23.43	AVG	

APPENDIX E - BANDWIDTH

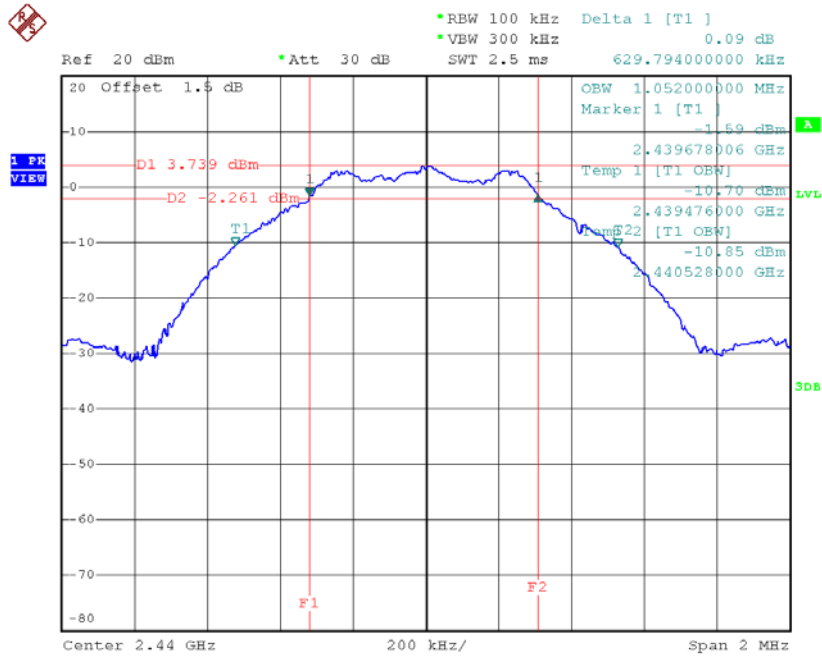
Test Mode:	TX Mode_1Mbps
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Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2402	0.628	1.056	500	Pass
2440	0.630	1.052	500	Pass
2480	0.648	1.052	500	Pass



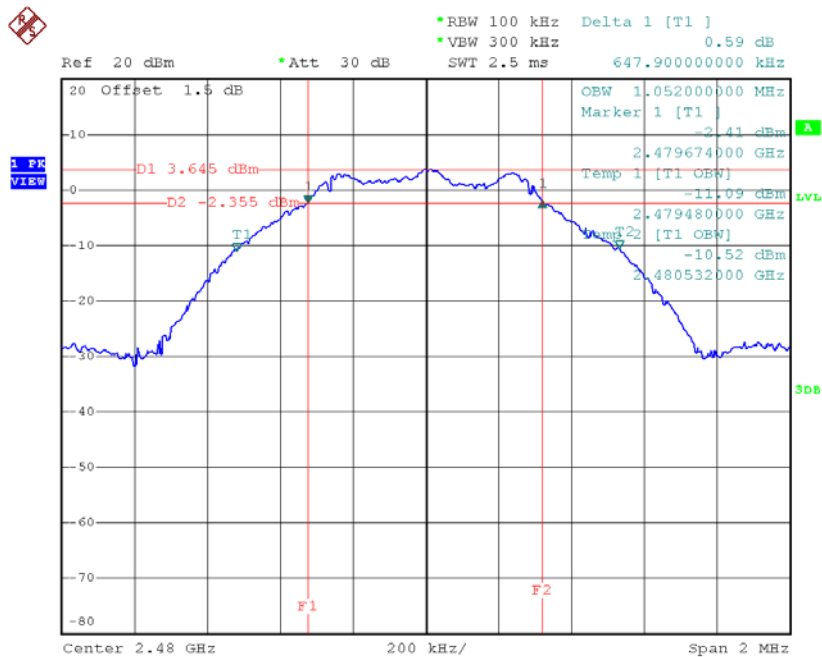
Date: 24.NOV.2018 16:41:27

TX CH19



Date: 24.NOV.2018 16:43:52

TX CH39

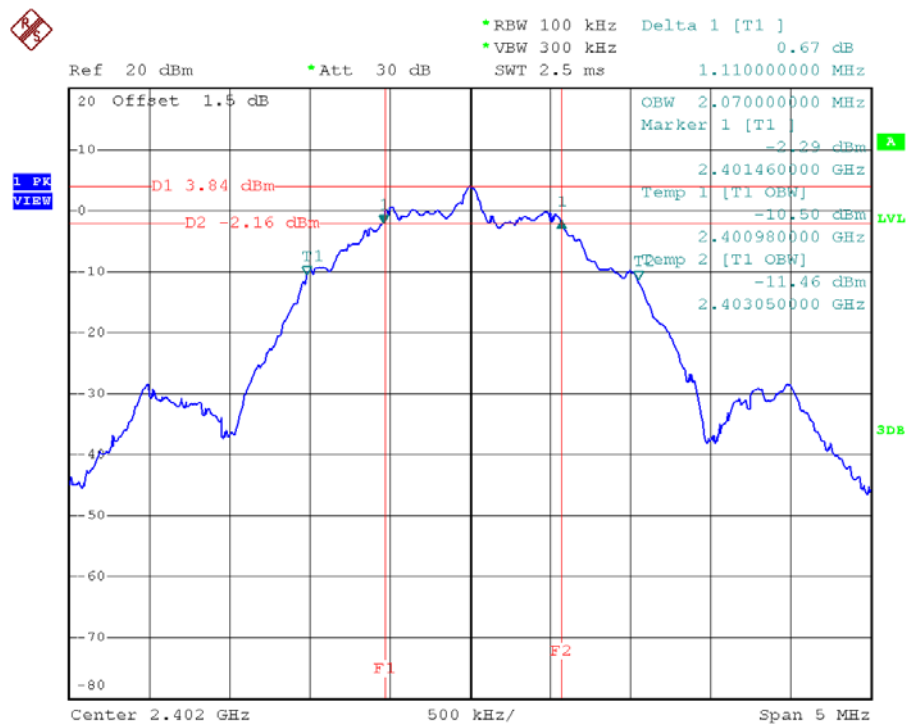


Date: 24.NOV.2018 16:45:47

Test Mode:	TX Mode_2Mbps
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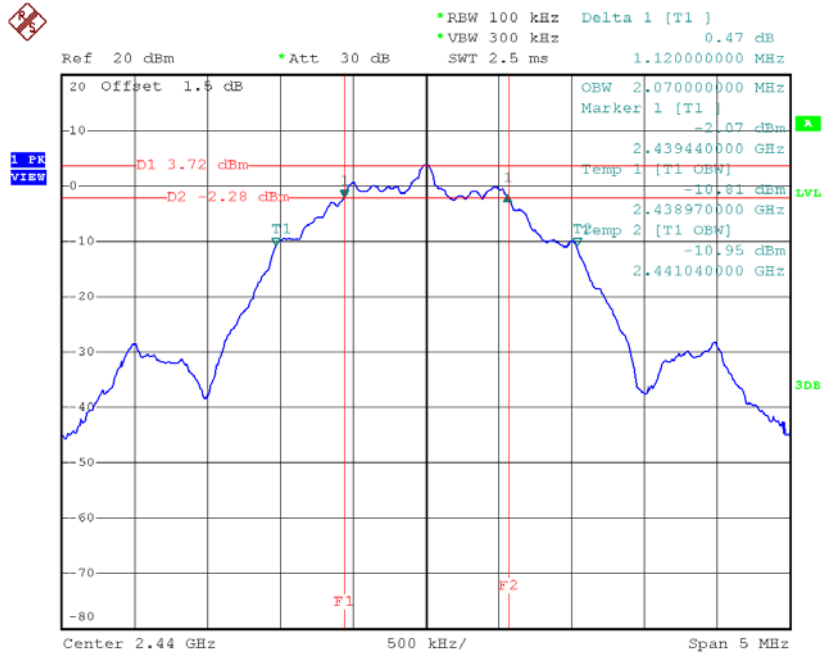
Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2402	1.110	2.070	500	Pass
2440	1.120	2.070	500	Pass
2480	1.140	2.070	500	Pass

TX CH00



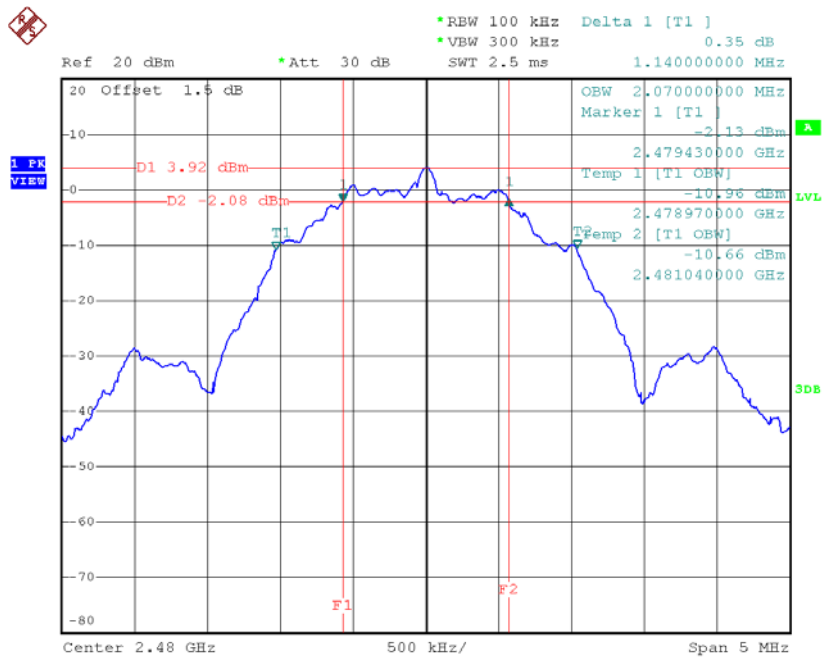
Date: 26.NOV.2018 13:24:29

TX CH19



Date: 26.NOV.2018 13:21:12

TX CH39



Date: 26.NOV.2018 13:22:43

APPENDIX F - MAXIMUM OUTPUT POWER TEST

Test Mode :	CH00, CH19 , CH39 - 1Mbps
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Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	3.96	0.0025	30.00	1.00	Pass
2440	3.89	0.0024	30.00	1.00	Pass
2480	3.81	0.0024	30.00	1.00	Pass

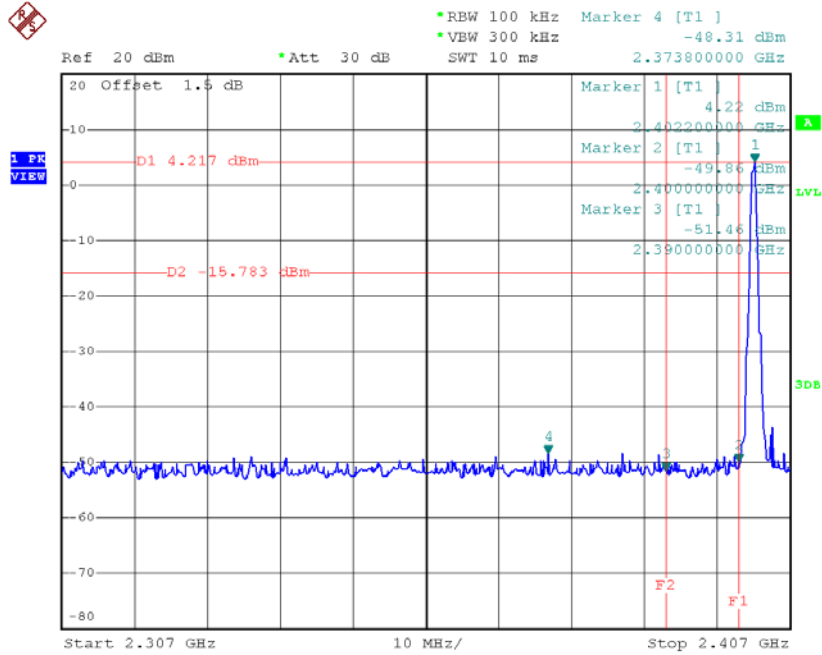
Test Mode :	CH00, CH19 , CH39 - 2Mbps
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Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	3.92	0.0025	30.00	1.00	Pass
2440	3.80	0.0023	30.00	1.00	Pass
2480	3.96	0.0025	30.00	1.00	Pass

APPENDIX G - ANTENNA CONDUCTED SPURIOUS EMISSION

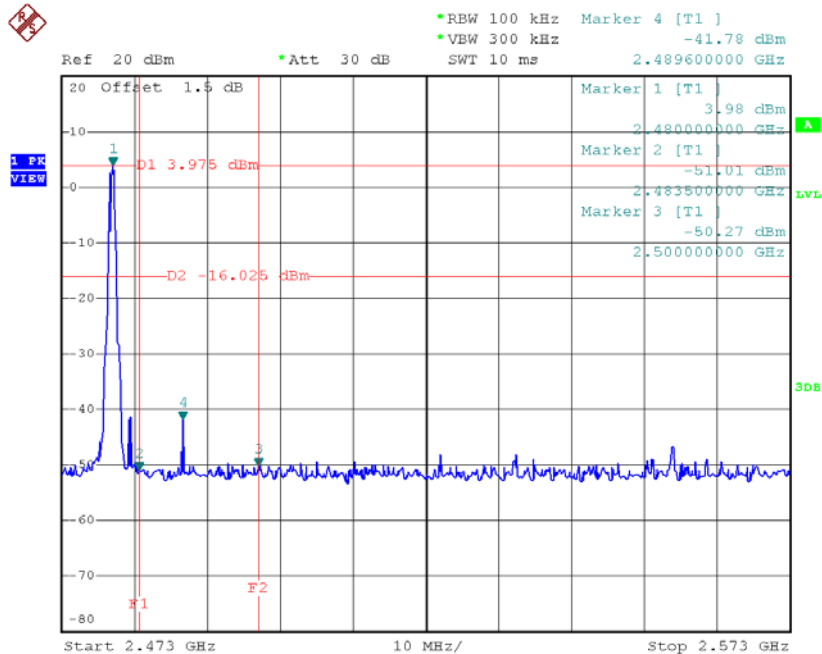
Test Mode : CH00, CH19 , CH39 - 1Mbps

CH00 (Lower) - 1Mbps



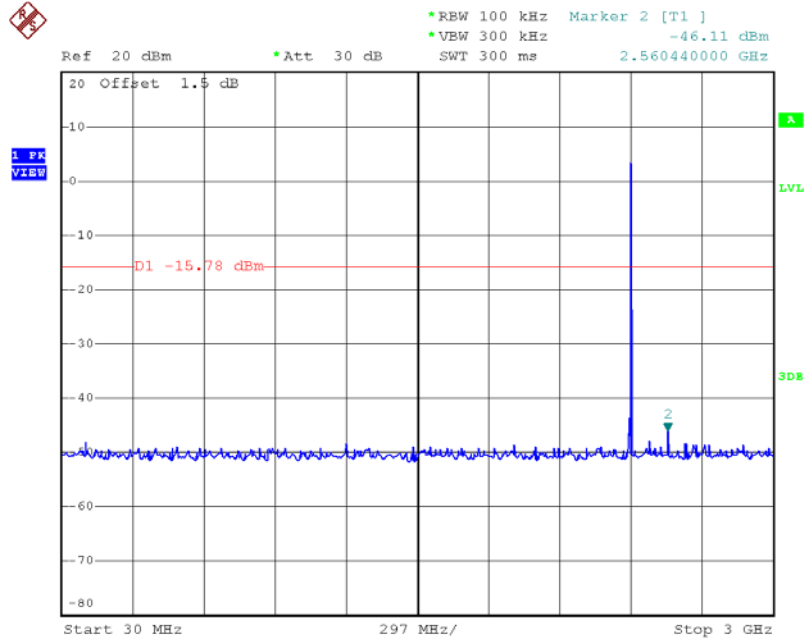
Date: 24.NOV.2018 16:42:18

CH39 (upper) - 1Mbps



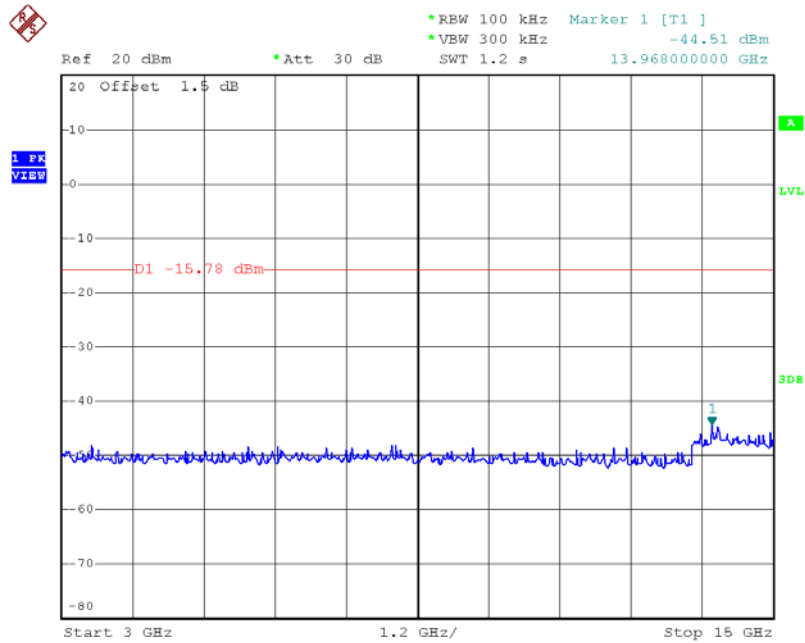
Date: 24.NOV.2018 16:45:55

CH00 (10 Harmonic of the frequency) 1



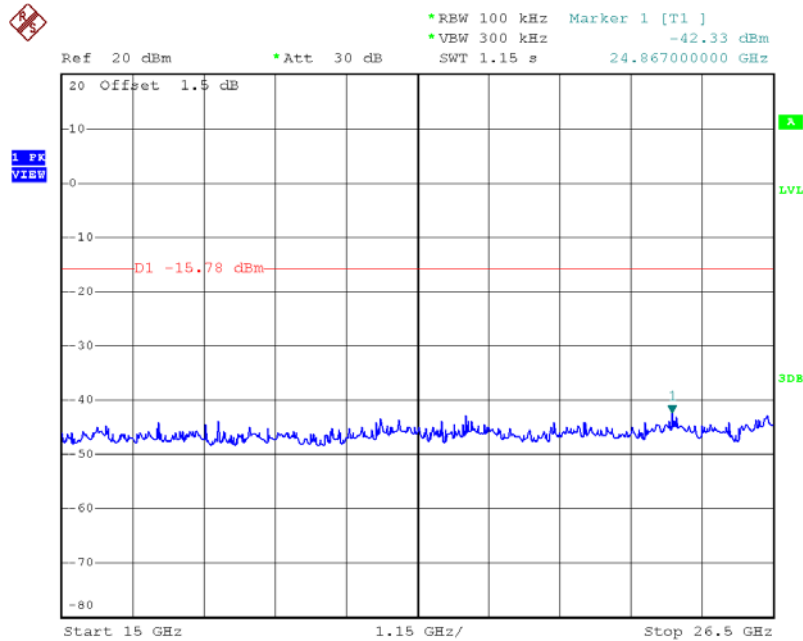
Date: 24.NOV.2018 16:42:33

CH00 (10 Harmonic of the frequency) 2



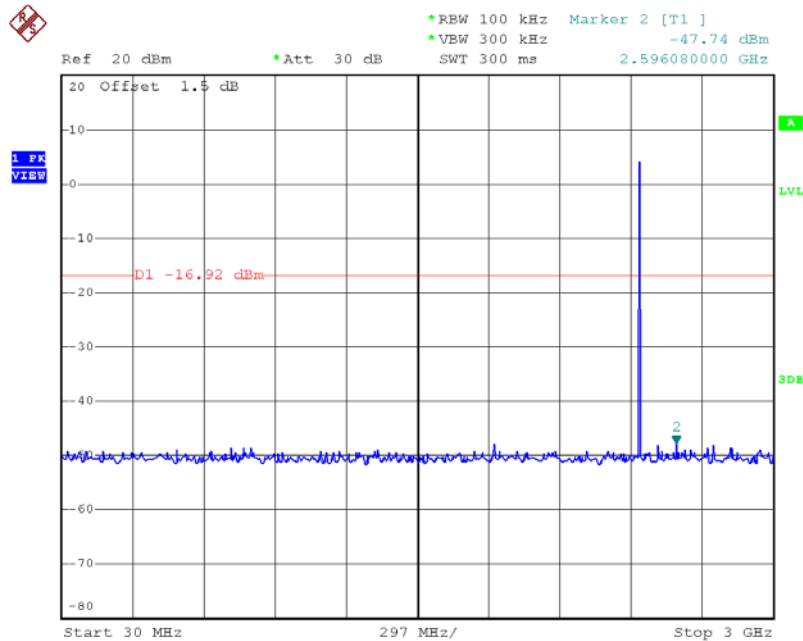
Date: 24.NOV.2018 16:42:42

CH00 (10 Harmonic of the frequency) 3



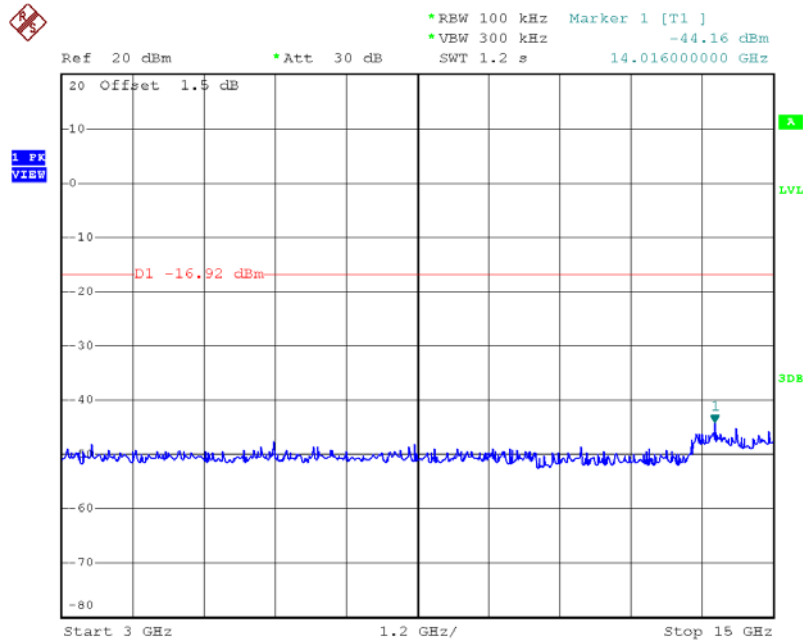
Date: 24.NOV.2018 16:42:51

CH19 (10 Harmonic of the frequency) 1



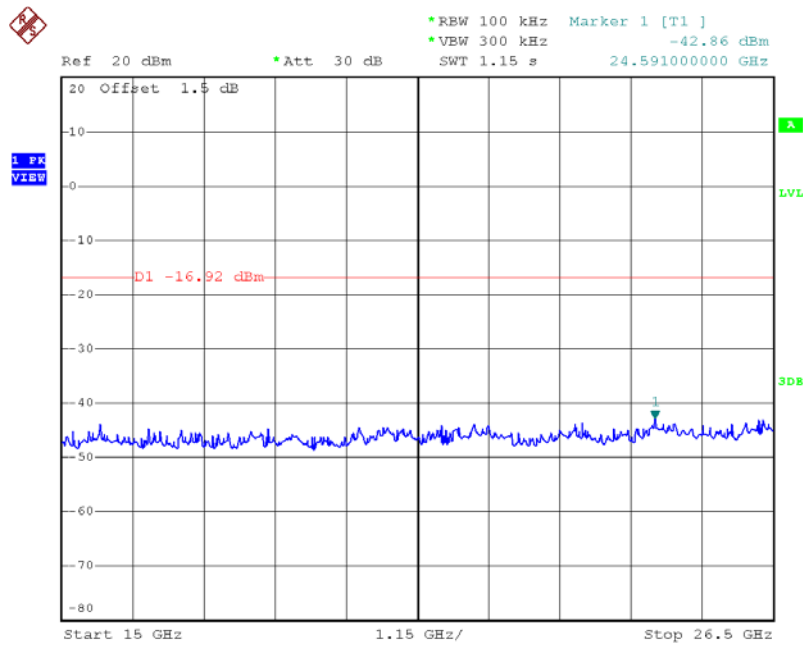
Date: 24.NOV.2018 16:44:15

CH19 (10 Harmonic of the frequency) 2



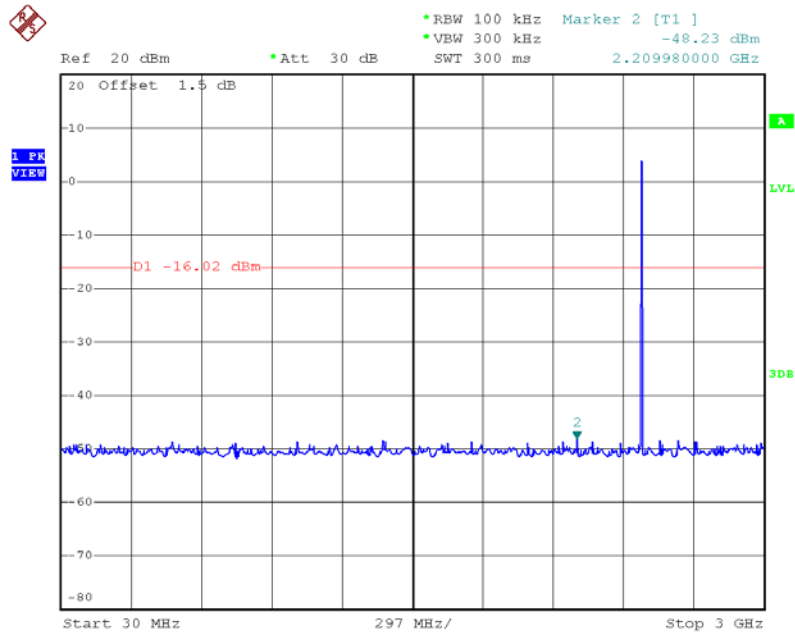
Date: 24.NOV.2018 16:44:24

CH19 (10 Harmonic of the frequency) 3



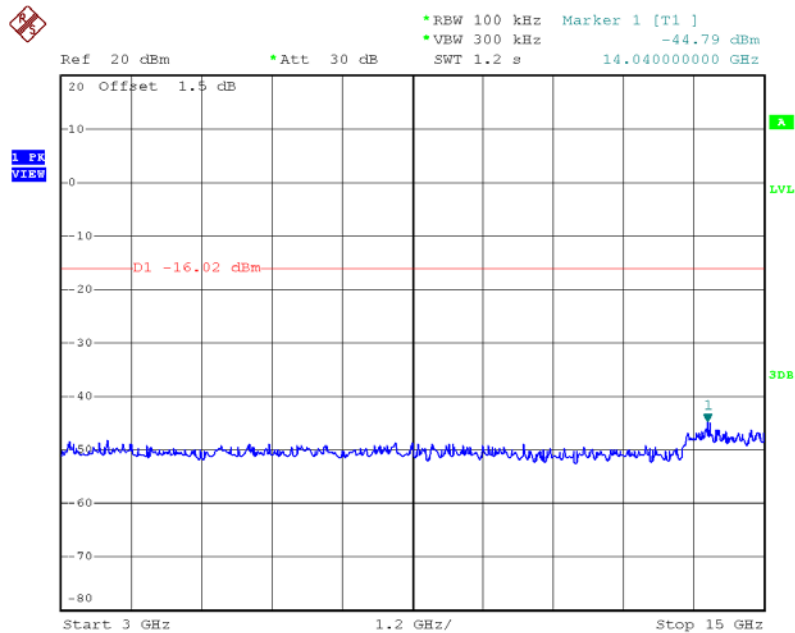
Date: 24.NOV.2018 16:44:34

CH39 (10 Harmonic of the frequency) 1



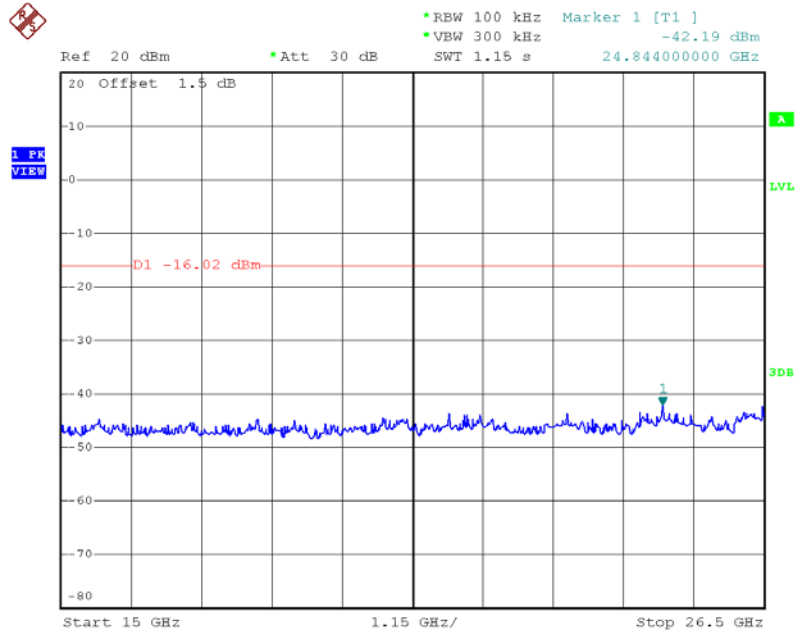
Date: 24.NOV.2018 16:46:10

CH39 (10 Harmonic of the frequency) 2



Date: 24.NOV.2018 16:46:19

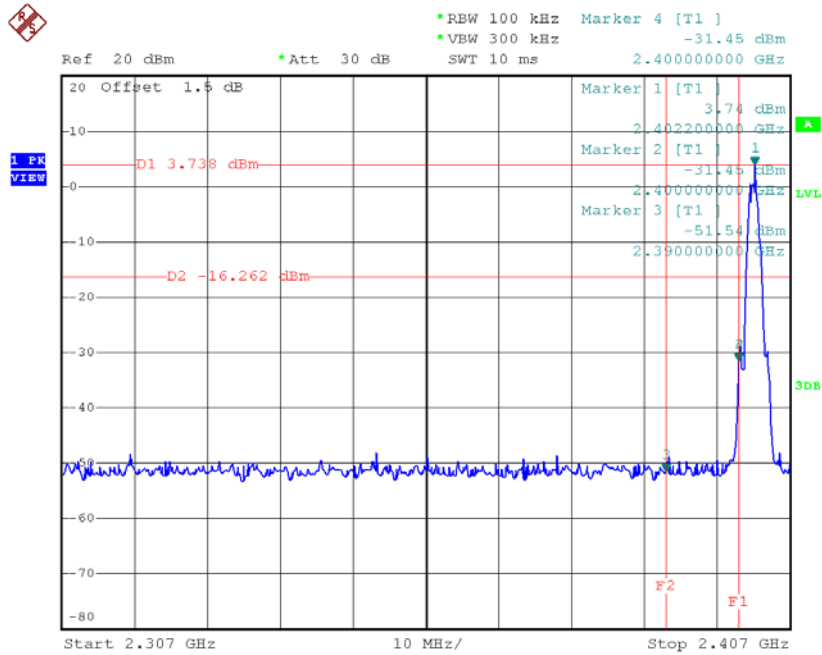
CH39 (10 Harmonic of the frequency) 3



Date: 24.NOV.2018 16:46:29

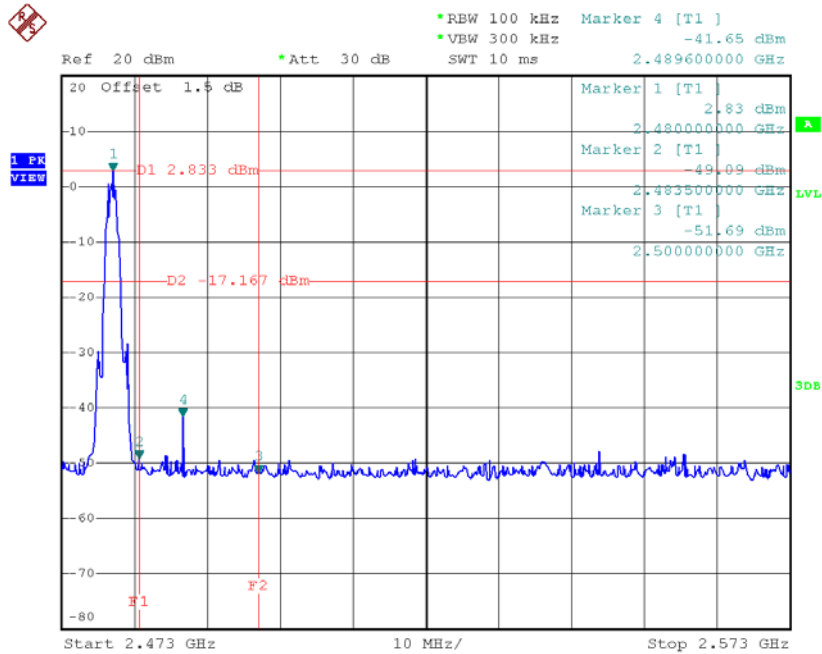
Test Mode : CH00, CH19 , CH39 - 2Mbps

CH00 (Lower) - 2Mbps



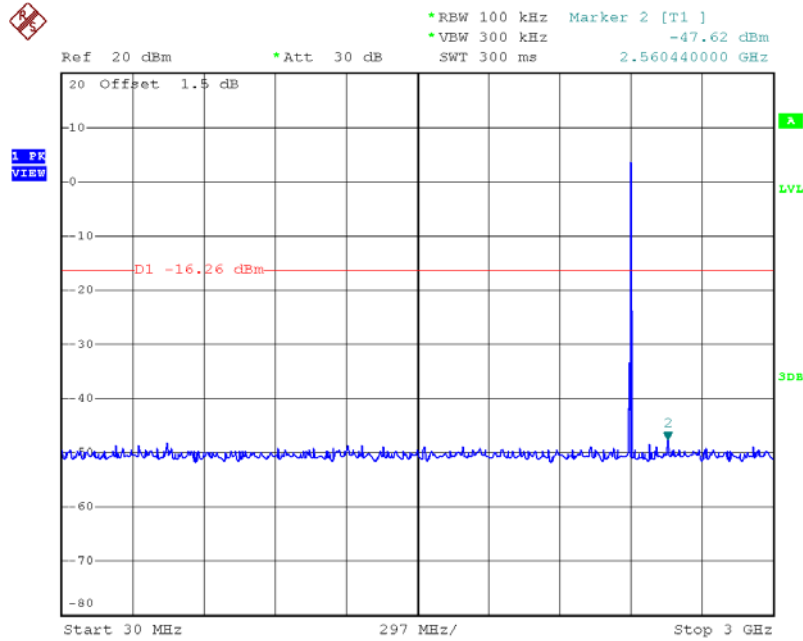
Date: 26.NOV.2018 13:07:41

CH39 (upper) - 2Mbps



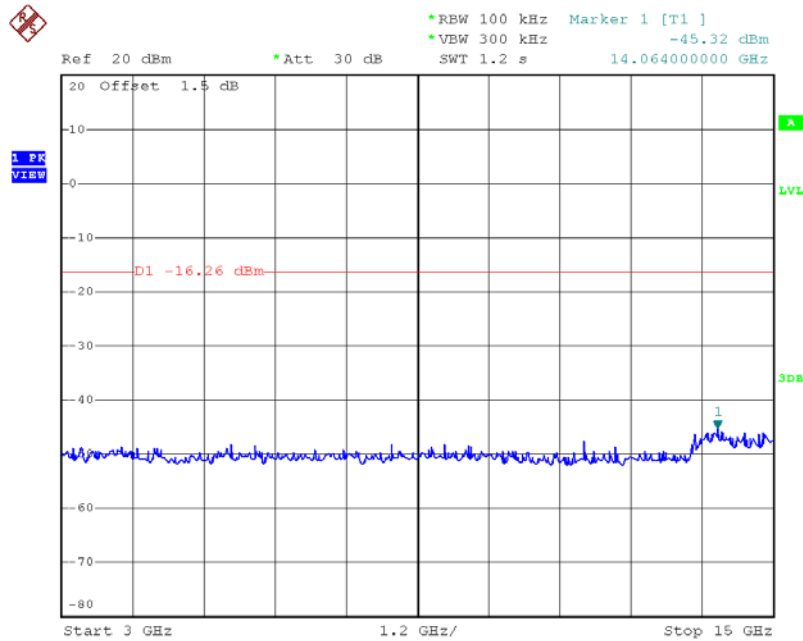
Date: 26.NOV.2018 13:12:51

CH00 (10 Harmonic of the frequency) 1



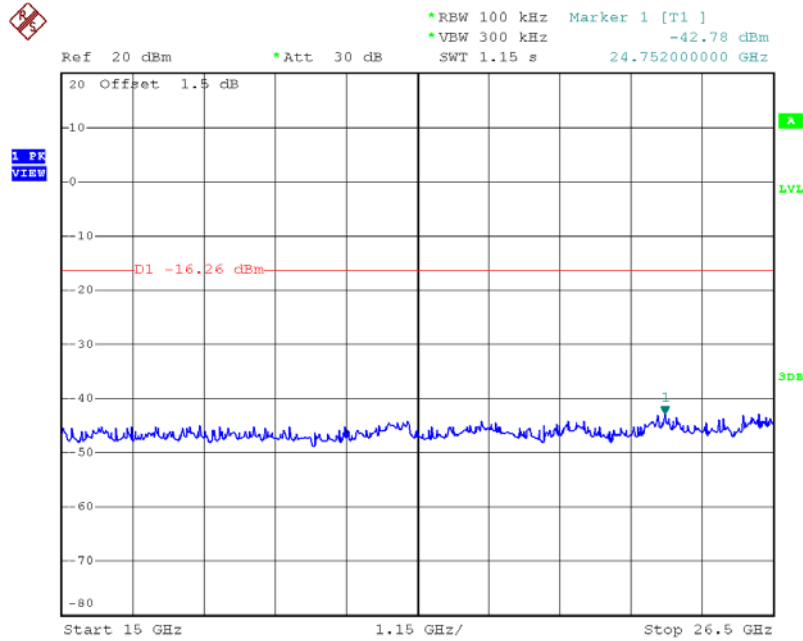
Date: 26.NOV.2018 13:07:56

CH00 (10 Harmonic of the frequency) 2



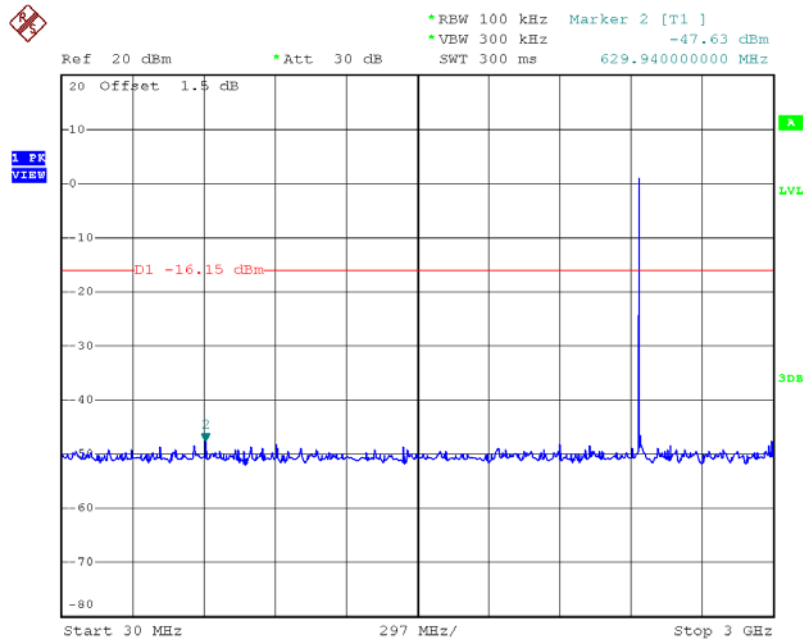
Date: 26.NOV.2018 13:08:05

CH00 (10 Harmonic of the frequency) 3



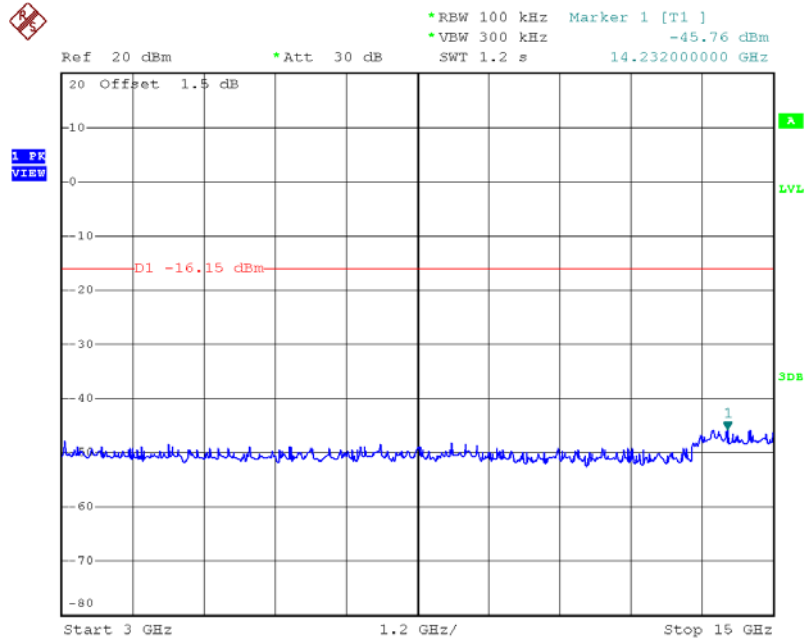
Date: 26.NOV.2018 13:08:14

CH19 (10 Harmonic of the frequency) 1



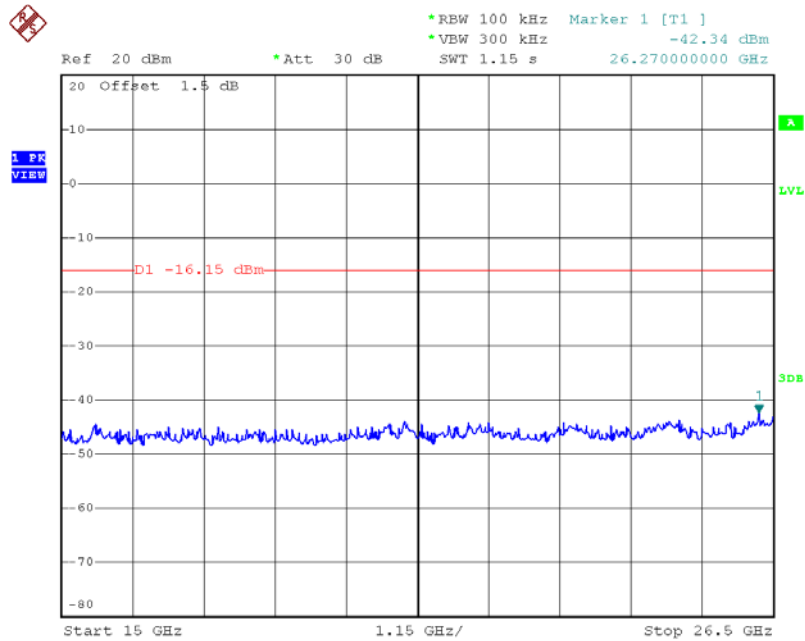
Date: 26.NOV.2018 13:06:07

CH19 (10 Harmonic of the frequency) 2



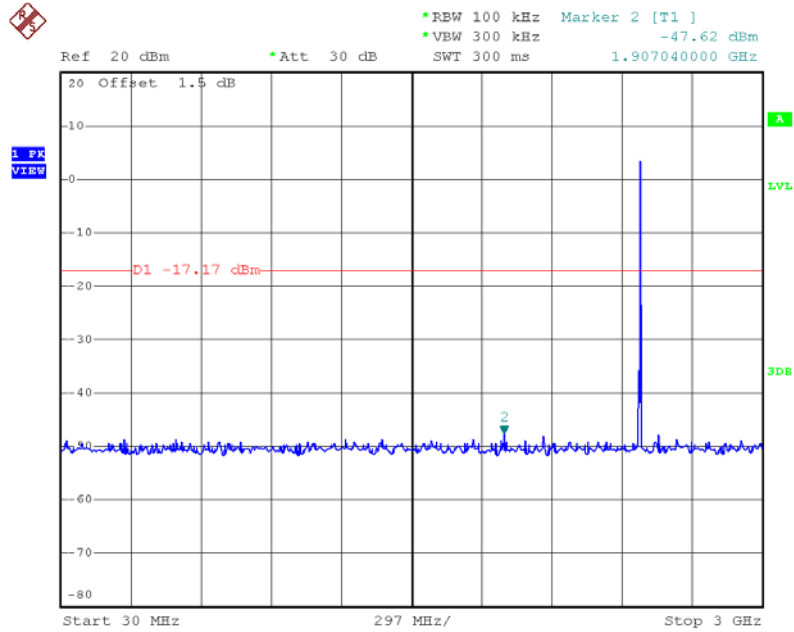
Date: 26.NOV.2018 13:06:17

CH19 (10 Harmonic of the frequency) 3



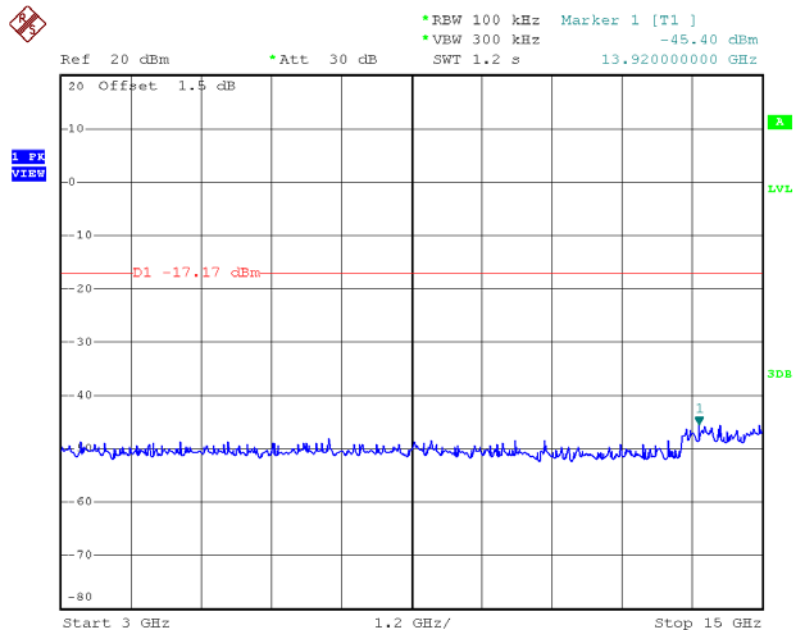
Date: 26.NOV.2018 13:06:26

CH39 (10 Harmonic of the frequency) 1



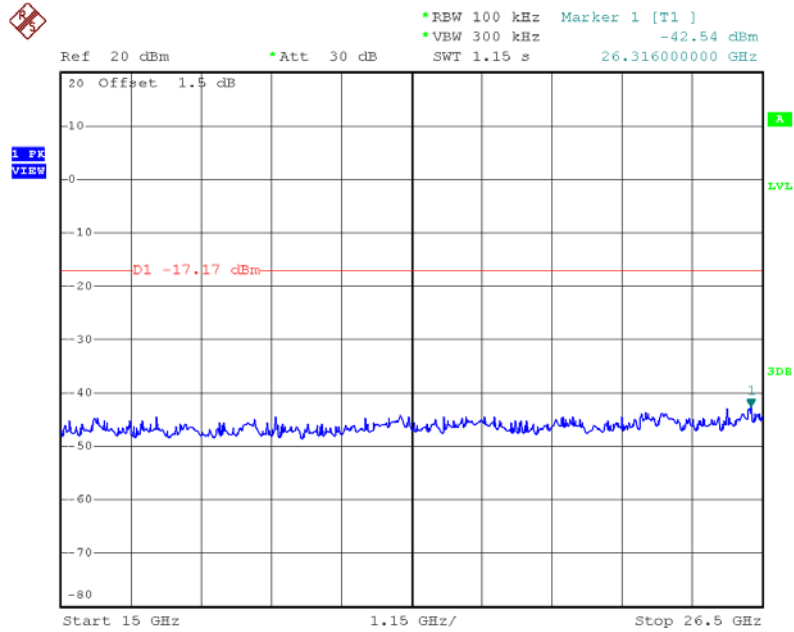
Date: 26.NOV.2018 13:13:06

CH39 (10 Harmonic of the frequency) 2



Date: 26.NOV.2018 13:13:16

CH39 (10 Harmonic of the frequency) 3

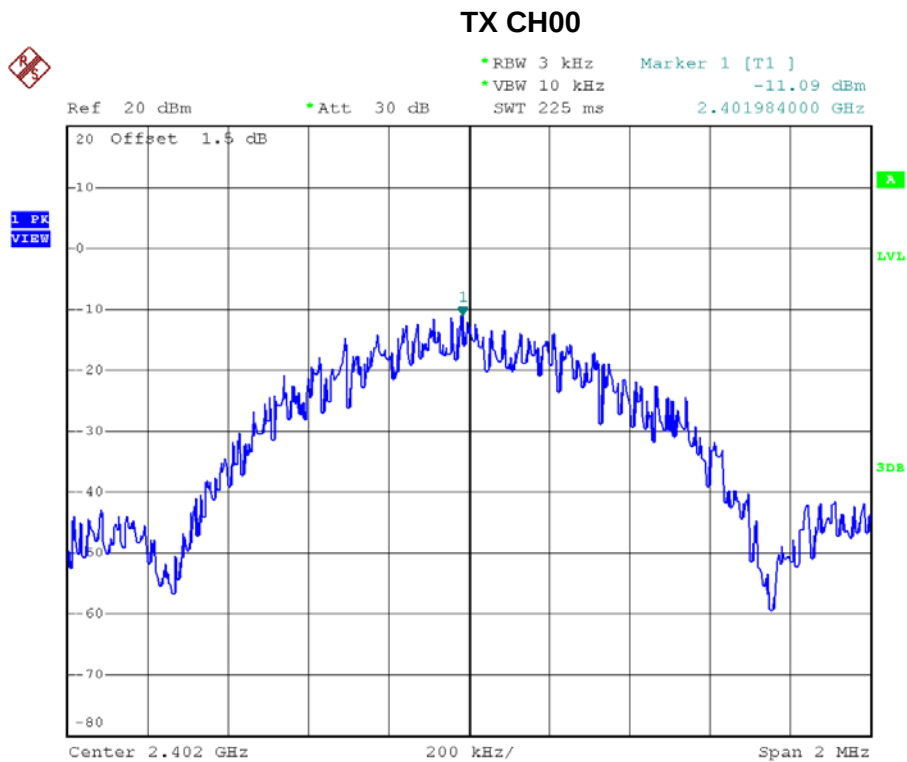


Date: 26.NOV.2018 13:13:25

APPENDIX H - POWER SPECTRAL DENSITY TEST

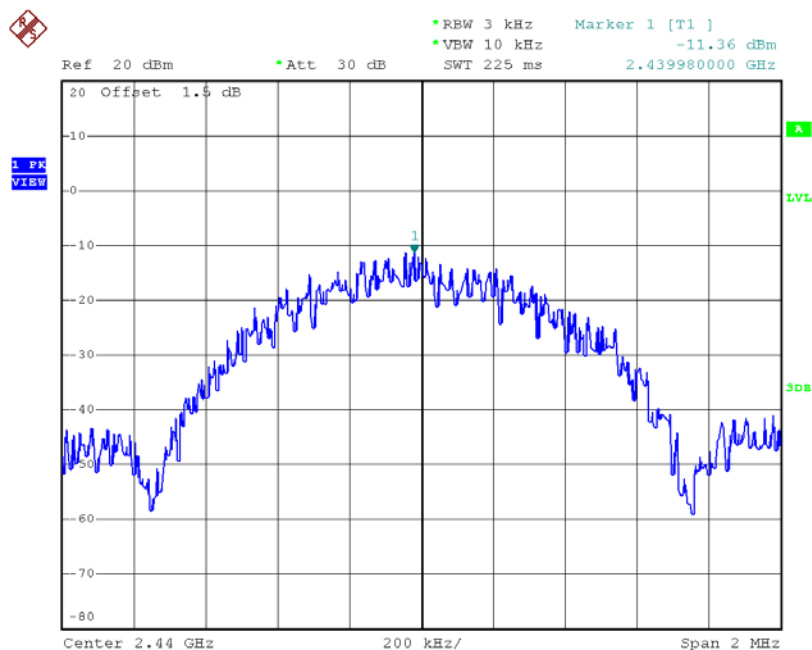
Test Mode:	CH00, CH19 , CH39 - 1Mbps
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Frequency (MHz)	Power Density (dBm/3 kHz)	Power Density (mW/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
2402	-11.090	0.078	8.00	Pass
2440	-11.360	0.073	8.00	Pass
2480	-11.200	0.076	8.00	Pass



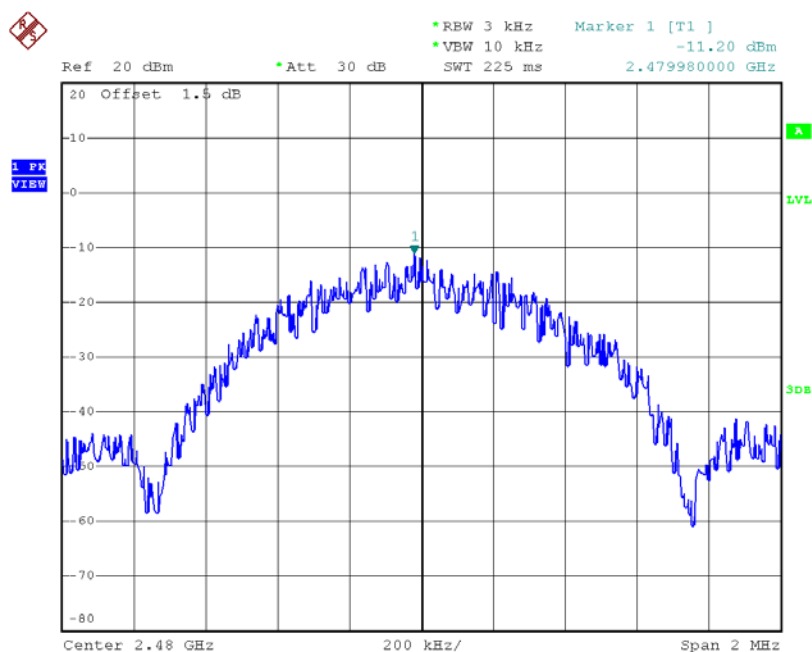
Date: 24.NOV.2018 16:42:58

TX CH19



Date: 24.NOV.2018 16:44:41

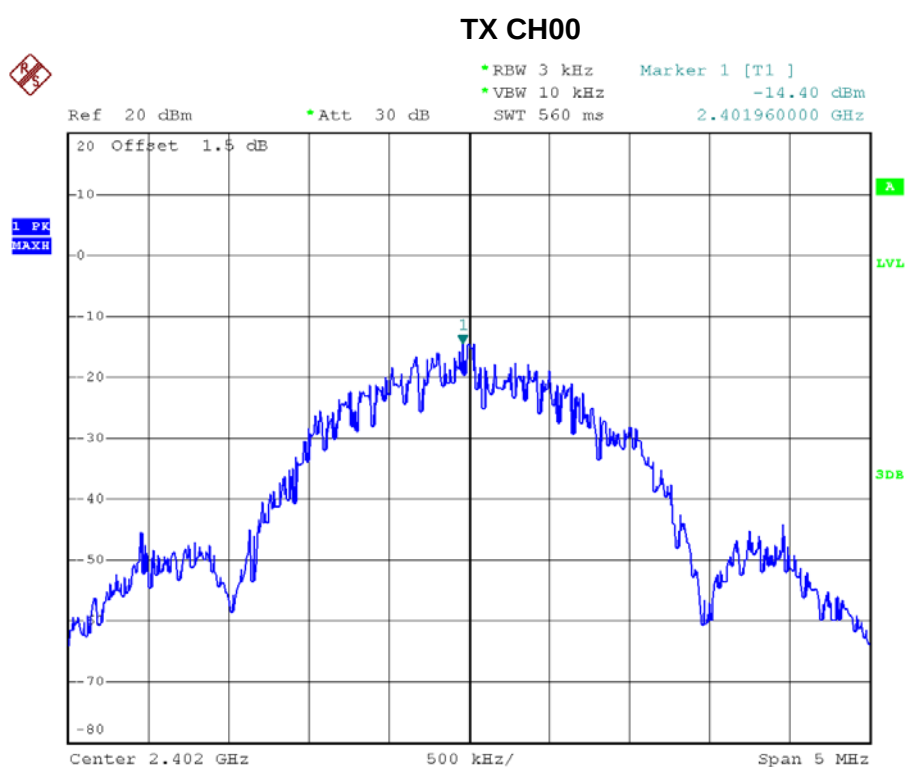
TX CH39



Date: 24.NOV.2018 16:46:36

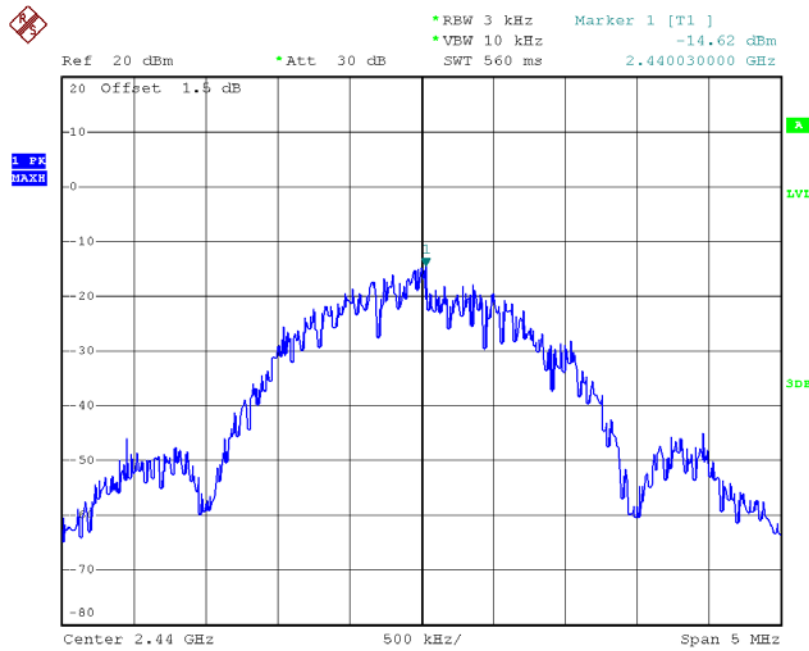
Test Mode:	CH00, CH19 , CH39 - 2Mbps
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Frequency (MHz)	Power Density (dBm/3 kHz)	Power Density (mW/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
2402	-14.40	0.036	8.00	Pass
2440	-14.62	0.035	8.00	Pass
2480	-14.56	0.050	8.00	Pass



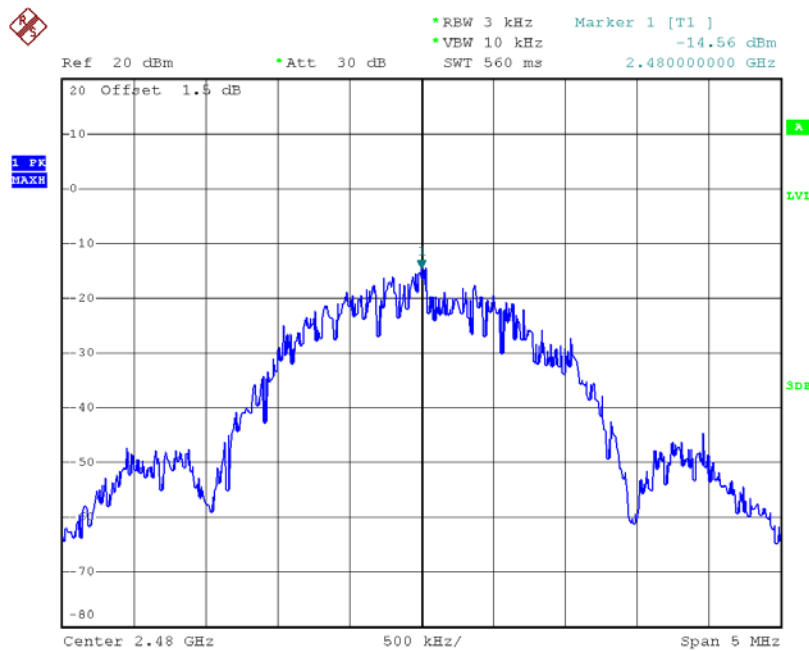
Date: 26.NOV.2018 13:09:23

TX CH19



Date: 26.NOV.2018 13:30:18

TX CH39



Date: 26.NOV.2018 13:14:03

End of Test Report