FCC &ISED Radio Test Report

FCC ID: 2AC23-WCT23
IC:12290A-WCT23

The report concerns: Original Grant

Report Reference No. ..... :	21EFSS12073 00091
Date Sample(s) Received ..... :	2021-12-23
Date of Tested ..... :	2021-12-23 to 2021-01-05
Date of issue ..... :	2021-01-06
Testing Laboratory ..... :	DongGuanShuoXin Electronic Technology Co., Ltd.
Address ..... :	Zone A, 1F, No. 6, XinGang Road YuanGang Street, XinAn District, ChangAn Town, DongGuan City, GuangDong, China
Applicant's name ..... :	Hui Zhou Gaoshengda Technology Co., LTD
Address ..... :	NO.75 Zhongkai Development Area, Huizhou, Guangdong,China
Manufacturer ..... :	Hui Zhou Gaoshengda Technology Co., LTD
Equipment ..... :	WIFI+BT Module
Trade Mark ..... :	GSD
Model ..... :	WCT23M2501F
Ratings ..... :	I/P: DC 3.3V

Test Engineer: Blue Qiu

Responsible Engineer : Smile Wang

Authorized Signatory: King Wang

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1TEST REPORT DECLARE

Applicant	Hui Zhou Gaoshengda Technology Co., LTD
Address	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
Manufacturer	Hui Zhou Gaoshengda Technology Co., LTD
Address	No.2,Jin-da Road, Huinan High-tech Industrial Park, Hui-ao Avenue, Huizhou City, Guangdong, China
Factory	Hui Zhou Gaoshengda Technology Co., LTD
Address	No.2,Jin-da Road, Huinan High-tech Industrial Park, Hui-ao Avenue, Huizhou City, Guangdong, China
Equipment	WIFI+BT Module
Model No.	WCT23M2501F
Trade Mark	GSD
Standard	FCC Part15, Subpart C (15.247) RSS-247 Issue 2, Feb. 2017 RSS-Gen Issue 5, Apr. 2018 ANSI C63.10-2013

We Declare:

The equipment described above is tested by DongGuan ShuoXin Electronic Technology Co., Ltd(ATT). and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and DongGuan ShuoXin Electronic Technology Co., Ltd.(ATT) is assumed of full responsibility for the accuracy and completeness of these tests.

ATT is not responsible for the sampling stage, so the results only apply to the sample as received.

ATT's reports apply only to the specific samples tested under conditions. It is manufacture’s responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. ATT shall have no liability for any declarations, inferences or generalizations drawn by the client or others from ATT issued reports.

2 SUMMARY OF TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below:

Standard(s) Section		Test Item	Judgment	Remark
FCC	ISED			
15.207	RSS-Gen8.8	AC Power Line Conducted Emissions	PASS	------
15.247(d) 15.205(a) 15.209(a)	RSS-247 5.5 RSS-Gen8.9 RSS-Gen8.10	Radiated Emissions	PASS	------
15.247(a)(2)	RSS-247 5.2 (a) RSS-Gen6.7	Bandwidth	PASS	------
15.247(b)(3)	RSS-247 5.4 (d)	Maximum Output Power	PASS	------
15.247(d)	RSS-247 5.5	Conducted Spurious Emission	PASS	------
15.247(e)	RSS-247 5.2 (b)	Power Spectral Density	PASS	------
-	RSS-Gen 6.11	Frequency Stability	PASS	------
15.203	-	Antenna Requirement	PASS	Note(2)

Note:

(1) “N/A” denotes test is not applicable in this test report.

(2) The device what use a permanently attached antenna were considered sufficient tocomply with the provisions of 15.203.

2.1MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Uncertainty for Conduction emission test (9kHz-150kHz)	3.7 dB
Uncertainty for Conduction emission test (150kHz-30MHz)	3.3 dB
Uncertainty for Radiation Emission test (30MHz-200MHz)	4.60 dB (Polarize: V)
	4.60 dB (Polarize: H)
Uncertainty for Radiation Emission test (200MHz-1GHz)	6.10 dB (Polarize: V)
	5.08 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz-6GHz)	5.01 dB (Polarize: V)
	5.01 dB (Polarize: H)
Uncertainty for Radiation Emission test (6GHz-18GHz)	5.26 dB (Polarize: V)
	5.26 dB (Polarize: H)
Uncertainty for Radiation Emission test (18GHz-40GHz)	5.06 dB (Polarize: V)
	5.06 dB (Polarize: H)
Uncertainty for radio frequency	±0.048kHz
Uncertainty for conducted RF Power	±0.32dB

Note:

This uncertainty represents an expanded uncertainty expressed at approximately the 95%confidence level using a coverage factor of k=2.

Test Facility:

The Test site used by DongGuan ShuoXin Electronic Technology Co., Ltd. to collect test data is located on the Zone A, 1F, No. 6, XinGang Road YuanGang Street, XinAn District, ChangAn Town, DongGuan City, GuangDong, China

The test facility is recognized, certified, or accredited by the following organizations:

Item	Registration No.	Expiration Date
CNAS	L3098	2024-08-27
A2LA	4893.01	2022-06-30
Innovation, Science and Economic Development Canada (ISED)	11033A CAB identifier:CN0083	2022-06-30
Federal Communications Commission (FCC)	171688 Designation No.:CN1235	2022-06-30

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	WIFI+BT Module	
Brand Name	GSD	
Test Model	WCT23M2501F	
Series Model	N/A	
Model Difference(s)	N/A	
Hardware Version	V1.0	
Software Version	V1.0	
Power Source	Supplied from USB.	
Power Rating	DC 3.3V	
Operation Frequency	2412 MHz~ 2462 MHz	
Modulation Technology	IEEE 802.11b:DSSS IEEE 802.11g:OFDM IEEE 802.11n:OFDM	
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 300 Mbps	
Operating Mode	IEEE 802.11b:1TX(Ant 1 or Ant 2) IEEE 802.11g:1TX(Ant 1 or Ant 2) IEEE 802.11n (HT20):2TX(Ant 1+Ant 2) IEEE 802.11n (HT40):2TX(Ant 1+Ant 2)	
Antenna Information	Antenna Type: PCB	Maximum Peak Gain:3 dBi
Max. Output Power	IEEE 802.11b: 18.43dBm(0.0697W) IEEE 802.11g: 22.63dBm(0.1832W) IEEE 802.11n (HT20):25.07dBm(0.3214W) IEEE 802.11n (HT40):25.59dBm(0.3622W)	

Note:

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

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n (HT20) CH03-CH09 for IEEE 802.11n (HT40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11
Mode 4	TX N-40 MHz Mode Channel03/06/09
Mode 5	TX N-40 MHz Mode Channel 09

Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test	
Final Test Mode	Description
Mode 5	TX N-40 MHz Mode Channel 09

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 5	TX N-40 MHz Mode Channel 09

Radiated emissions test- Above 1GHz	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11
Mode 4	TX N-40 MHz Mode Channel03/06/09

Conducted test	
Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11
Mode 4	TX N-40 MHz Mode Channel03/06/09

NOTE:

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

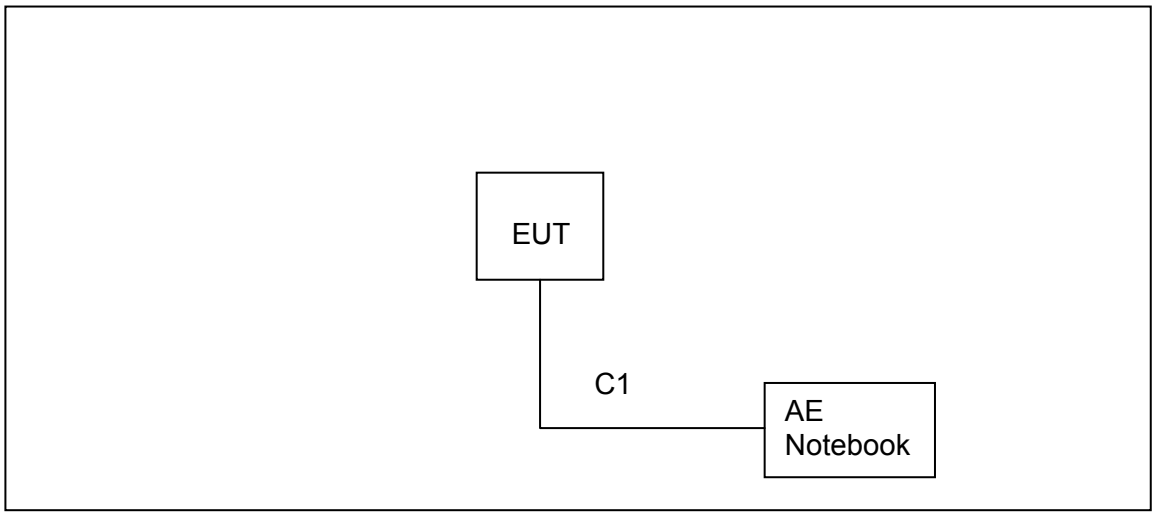
(2) 802.11b mode: DBPSK (1Mbps)
802.11g mode: OFDM (6Mbps)
802.11n HT20 mode : BPSK (13Mbps)
802.11n HT40mode : BPSK (27Mbps)
For radiated emission tests, the highest output powers were set for final test.

(3)For radiated emission below 1GHzand AC power line conducted emissions test, the IEEE 802.11n20 channel 11is found to be the worst case and recorded.

3.3PARAMETERS OF TEST SOFTWARE

Test Software	MT7663QA		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	22	21	21
IEEE 802.11g	21	21	21
IEEE 802.11n (HT20)	22	22	22
Test Frequency (MHz)	2422	2437	2452
IEEE 802.11n (HT40)	23	23	23

3.4BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
AE	Notebook	Lenovo	/	/

Item	Cable Type	Shielded Type	Ferrite Core	Length
C1	DC Cable	NO	NO	0.8m

3.6TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage
AC Power Line Conducted Emissions	25°C	53%	DC 3.3V
Radiated Emissions-9K-30MHz	25°C	60%	DC 3.3V
Radiated Emissions-30 MHz to 1GHz	24°C	68%	DC 3.3V
Radiated Emissions-Above 1000 MHz	24°C	68%	DC 3.3V
Bandwidth	24.8°C	40.9%	DC 3.3V
Maximum Output Power	24.8°C	40.9%	DC 3.3V
Conducted Spurious Emission	24.8°C	40.9%	DC 3.3V
Power Spectral Density	24.8°C	40.9%	DC 3.3V

3.7DUTY CYCLE

All tests were performed under the condition of 100% Duty Cycle

4AC POWER LINE CONDUCTED EMISSIONS TEST

4.1LIMIT

Frequency of Emission (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.50	66to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

NOTE:

(1) The tighter limit applies at the band edges.
(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

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

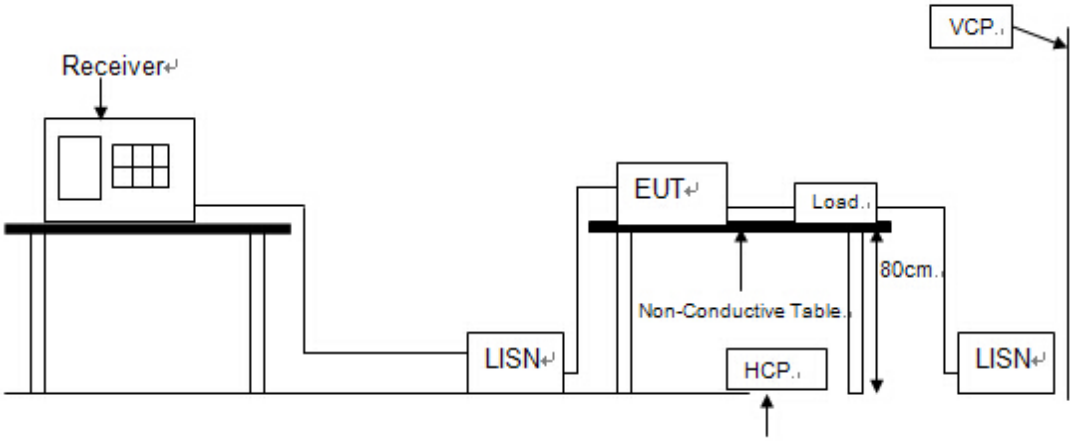
4.2TEST PROCEDURE

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.

4.3MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-010-0024	12/19/2022
2	EMI Test Receiver	R&S	ESCI	101308	12/17/2022
3	LISN	AFJ	LS16	16011103219	06/09/2022
4	LISN	Schwarzbeck	NSLK 8127	8127-432	12/17/2022
5	Measurement Software	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A

4.4TESTSETUP



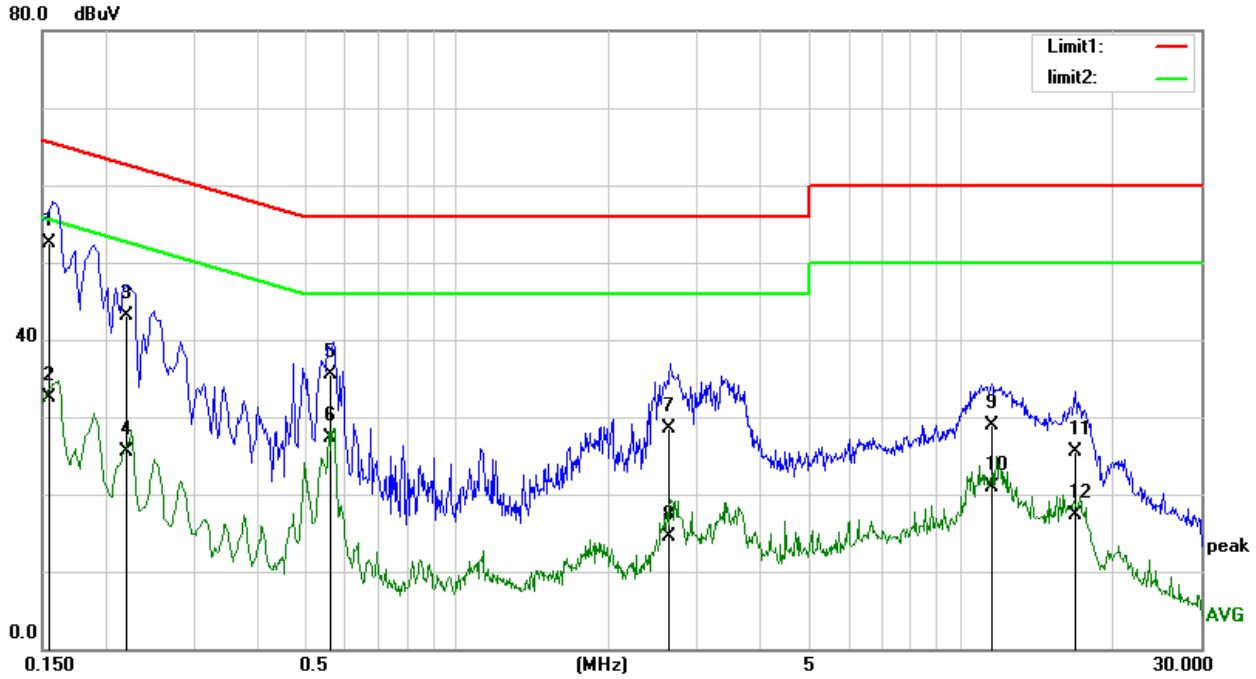
4.5EUT OPERATION CONDITIONS

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.

4.6TEST RESULTS

Test Mode:	TX N-40 MHz Mode Channel 09

Line

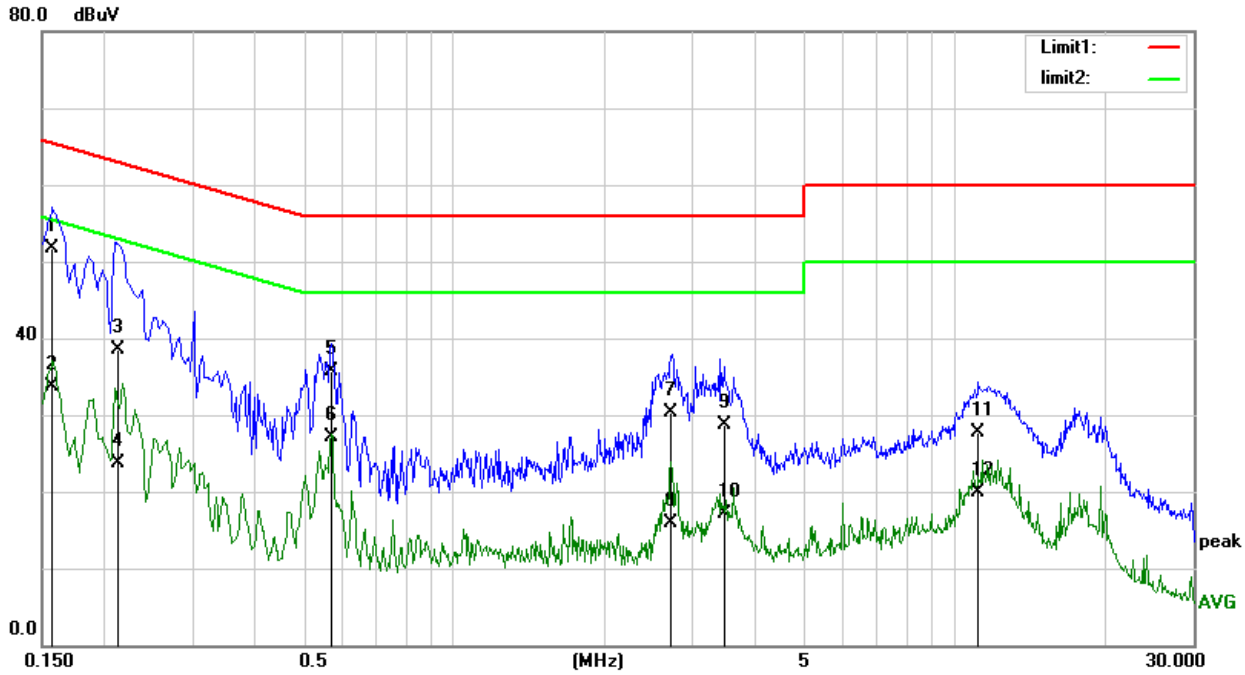


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1545	41.10	11.50	52.60	65.75	-13.15	QP
2	0.1545	21.05	11.50	32.55	55.75	-23.20	AVG
3	0.2202	32.12	11.06	43.18	62.81	-19.63	QP
4	0.2202	14.48	11.06	25.54	52.81	-27.27	AVG
5	0.5651	25.24	10.27	35.51	56.00	-20.49	QP
6	0.5651	17.01	10.27	27.28	46.00	-18.72	AVG
7	2.6407	18.22	10.22	28.44	56.00	-27.56	QP
8	2.6407	4.30	10.22	14.52	46.00	-31.48	AVG
9	11.5166	18.73	10.20	28.93	60.00	-31.07	QP
10	11.5166	10.80	10.20	21.00	50.00	-29.00	AVG
11	16.8575	15.34	10.21	25.55	60.00	-34.45	QP
12	16.8575	7.08	10.21	17.29	50.00	-32.71	AVG

Remarks:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX N-40 MHz Mode Channel 09

Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1564	40.14	11.49	51.63	65.65	-14.02	QP
2	0.1564	22.14	11.49	33.63	55.65	-22.02	AVG
3	0.2137	27.49	11.10	38.59	63.06	-24.47	QP
4	0.2137	12.59	11.10	23.69	53.06	-29.37	AVG
5	0.5676	25.36	10.27	35.63	56.00	-20.37	QP
6	0.5676	16.90	10.27	27.17	46.00	-18.83	AVG
7	2.6986	20.15	10.22	30.37	56.00	-25.63	QP
8	2.6986	5.68	10.22	15.90	46.00	-30.10	AVG
9	3.4550	18.57	10.23	28.80	56.00	-27.20	QP
10	3.4550	6.82	10.23	17.05	46.00	-28.95	AVG
11	11.1175	17.58	10.20	27.78	60.00	-32.22	QP
12	11.1175	9.76	10.20	19.96	50.00	-30.04	AVG

Remarks:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

5 RADIATED EMISSIONSTEST

5.1LIMIT

In case the emission fall within the restricted band specified on 15.205(a) and RSS-Gen 8.10, then the 15.209(a) andRSS-Gen 8.9limit in the table below has to be followed.

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

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
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-30 MHz)

Frequency (MHz)	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (meters)
0.009-0.490	6.37/F(kHz)	300
0.490-1.705	6.37/F(kHz)	30
1.705-30.0	0.08	30

LIMITS OF RADIATED EMISSION MEASUREMENT (30 MHz-1000MHz)

Frequency (MHz)	Field Strength (μV/m at 3m)
30-88	100
88-216	150
216-960	200
Above 960	500

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

NOTE:
(1) The limit for radiated test was performed according to FCC PART 15C and RSS-247.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).

5.2TEST PROCEDURE

a. 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 1GHz)
b. 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 1GHz)
c. 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.
d. 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).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. 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.
g. 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 1GHz)
h. 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 1GHz)
i. The test result is calculated as the following:
(1) Result = Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
(3) Margin = Result - Limit

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

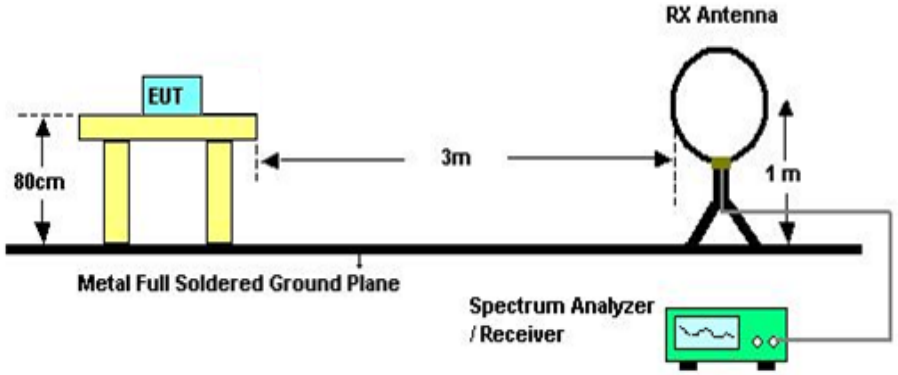
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz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

5.3MEASUREMENT INSTRUMENTS LIST

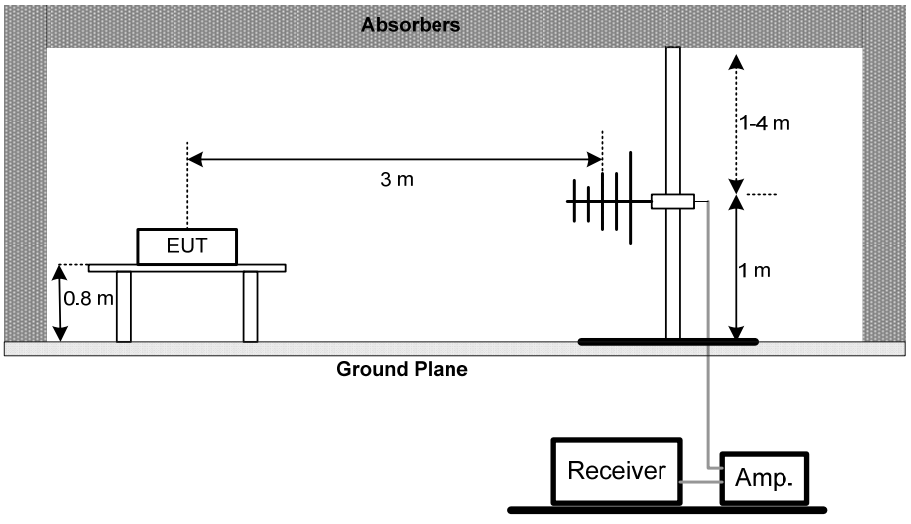
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	101307	12/17/2022
2	Spectrum Analyzer	Agilent	E4407B	US40240708	11/16/2022
3	Loop antenna	SCHWARZBECK K	FMZB1519	1519-062	12/17/2022
4	Broadband antenna	SCHWARZBECK	VULB9168	VULB9168-192	08/05/2022
5	HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D 1065	05/07/2022
6	Preamplifier Amplifier	HP	8447F	3113A05680	12/19/2022
7	PRE-AMPLIFIER	CY	EMC011830	980136	04/19/2022
8	RF Cable	R&S	Test Cable 4	4	12/19/2022
9	RF Cable	R&S	Test Cable 5	5	12/19/2022
10	RF Cable	R&S	Test Cable 9	9	04/21/2022
11	RF Cable	R&S	Test Cable 10	10	12/19/2022
12	Measurement Software	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A

5.4TESTSETUP

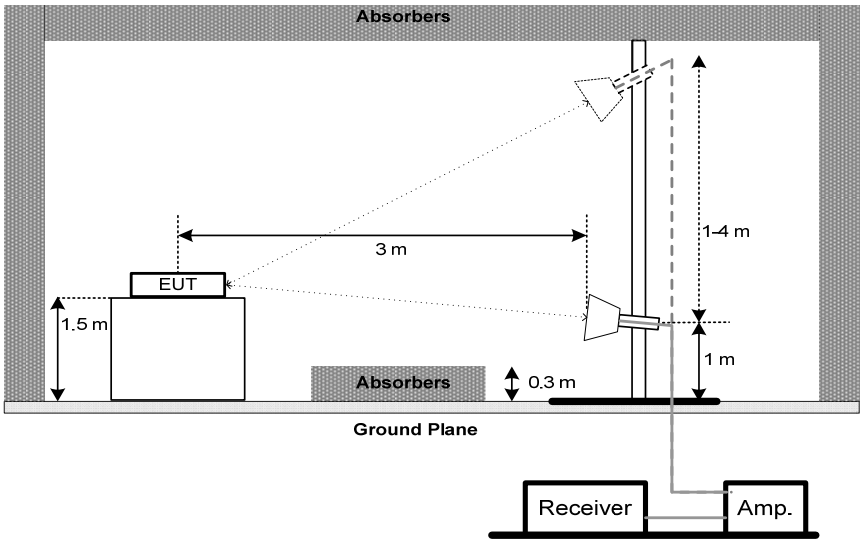
9 kHz-30 MHz



30 MHz to 1 GHz



Above 1 GHz



5.5EUT OPERATIONCONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6TEST RESULTS - 9kHz TO 30MHz

Test Mode:	TX N-40 MHz Mode Channel 09

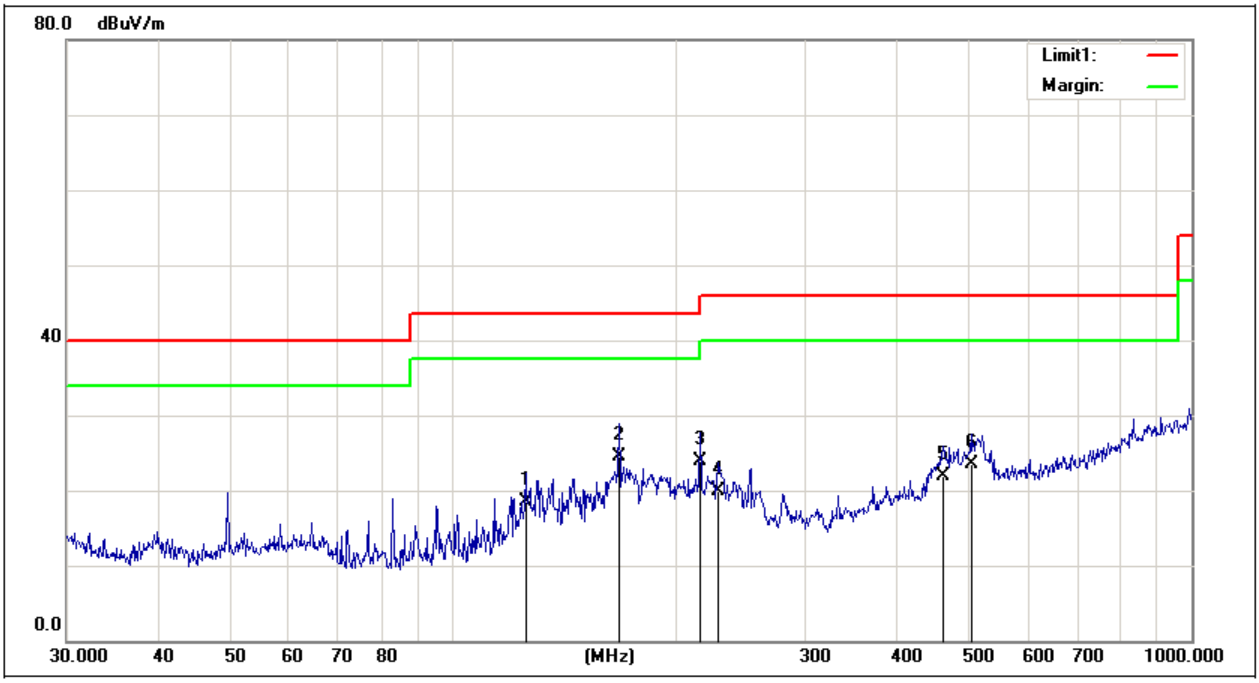
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor

5.7TEST RESULTS - 30MHzTO 1000MHz

Test Mode :	TX N-40 MHz Mode Channel 09

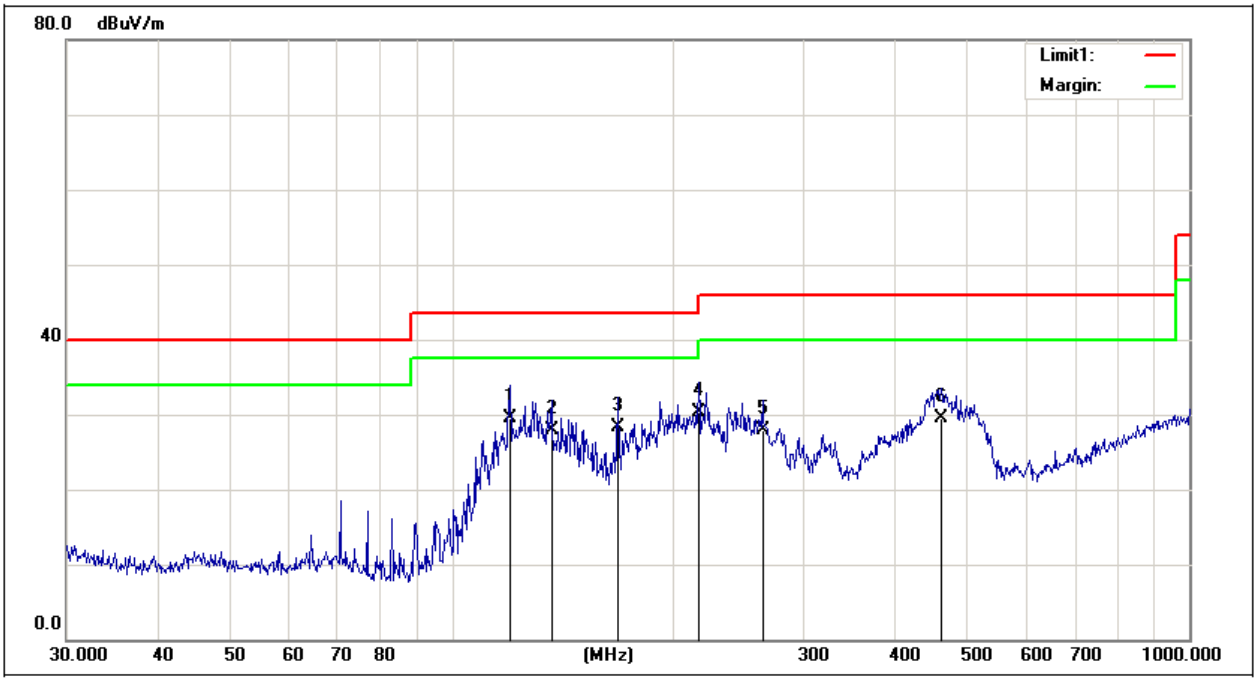
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	125.4457	30.15	-11.59	18.56	43.50	-24.94	QP
2	167.8243	35.04	-10.48	24.56	43.50	-18.94	QP
3	216.0240	34.45	-10.58	23.87	46.00	-22.13	QP
4	228.4903	28.05	-8.23	19.82	46.00	-26.18	QP
5	460.7271	28.04	-6.07	21.97	46.00	-24.03	QP
6	502.9395	29.16	-5.70	23.46	46.00	-22.54	QP

Test Mode :	TX N-40 MHz Mode Channel 09

Horizontal

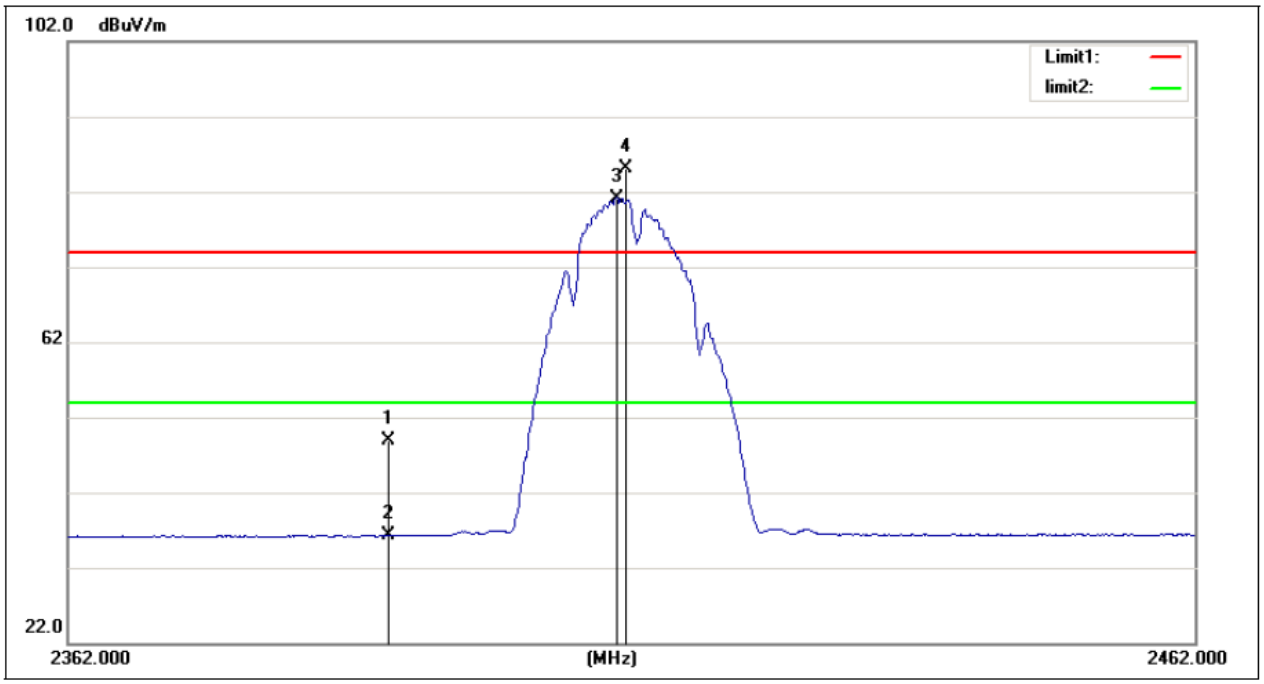


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	119.8556	43.45	-13.89	29.56	43.50	-13.94	QP
2	136.4598	40.94	-13.02	27.92	43.50	-15.58	QP
3	167.8242	39.26	-10.91	28.35	43.50	-15.15	QP
4	216.0240	39.61	-9.38	30.23	46.00	-15.77	QP
5	263.8190	32.58	-4.76	27.82	46.00	-18.18	QP
6	460.7271	35.58	-6.07	29.51	46.00	-16.49	QP

5.8TEST RESULTS- ABOVE 1000MHz(BAND EDGE)

Orthogonal Axis	X
Test Mode:	TX B Mode 2412 MHz

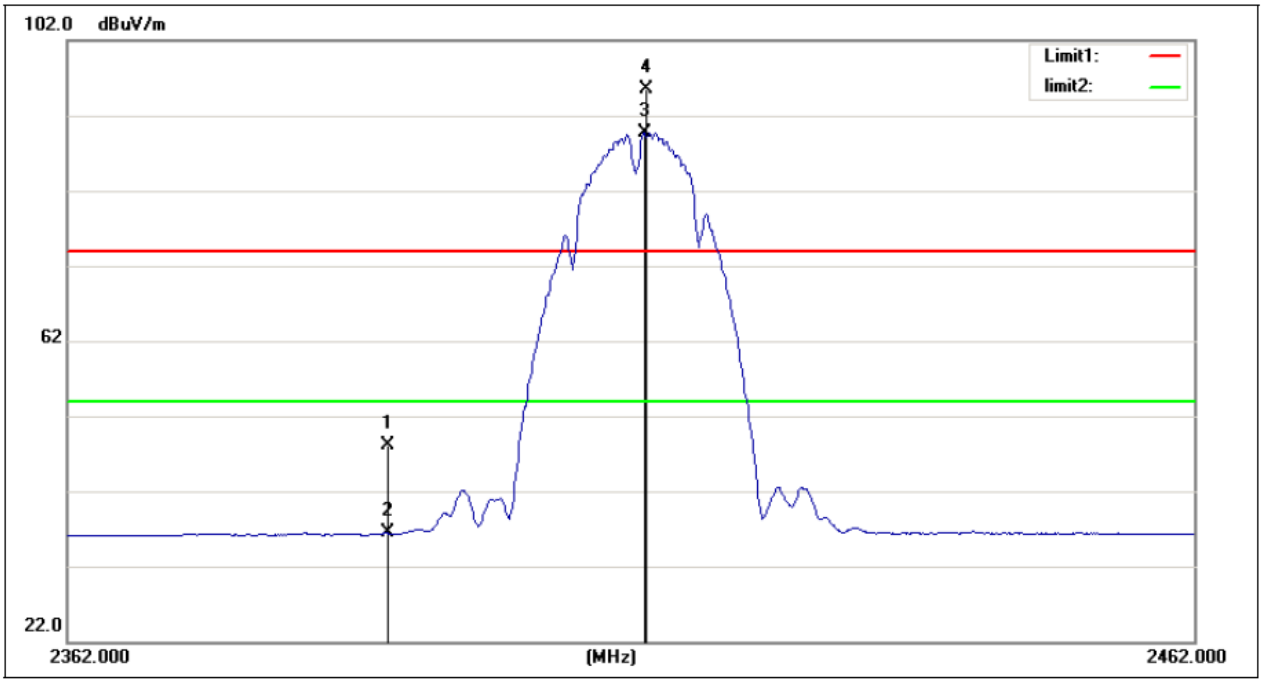
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	50.86	-2.02	48.84	74.00	-25.16	peak
2	2390.000	38.26	-2.02	36.24	54.00	-17.76	AVG
3	2410.200	83.16	-1.96	81.20	/	/	AVG
4	2411.000	87.14	-1.96	85.18	/	/	peak

Orthogonal Axis	X
Test Mode:	TX B Mode 2412 MHz

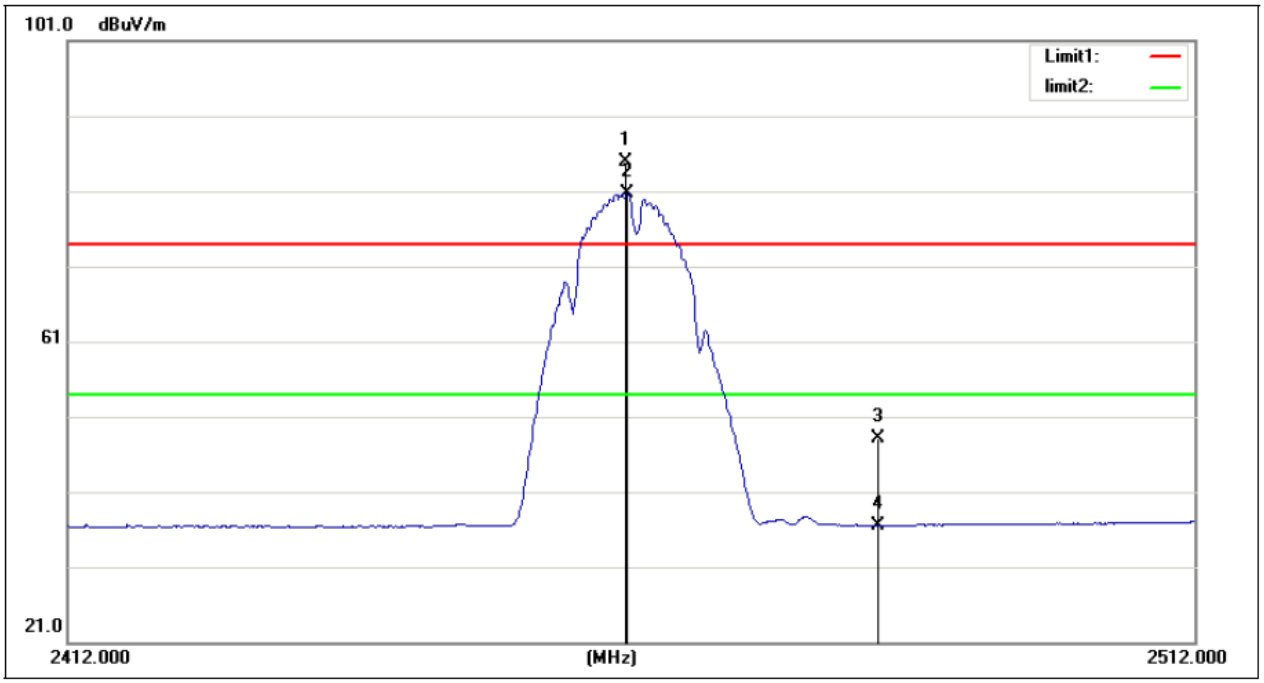
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	50.07	-2.02	48.05	74.00	-25.95	peak
2	2390.000	38.45	-2.02	36.43	54.00	-17.57	AVG
3	2412.700	91.66	-1.95	89.71	/	/	AVG
4	2412.900	97.46	-1.95	95.51	/	/	peak

Orthogonal Axis	X
Test Mode:	TX B Mode 2462 MHz

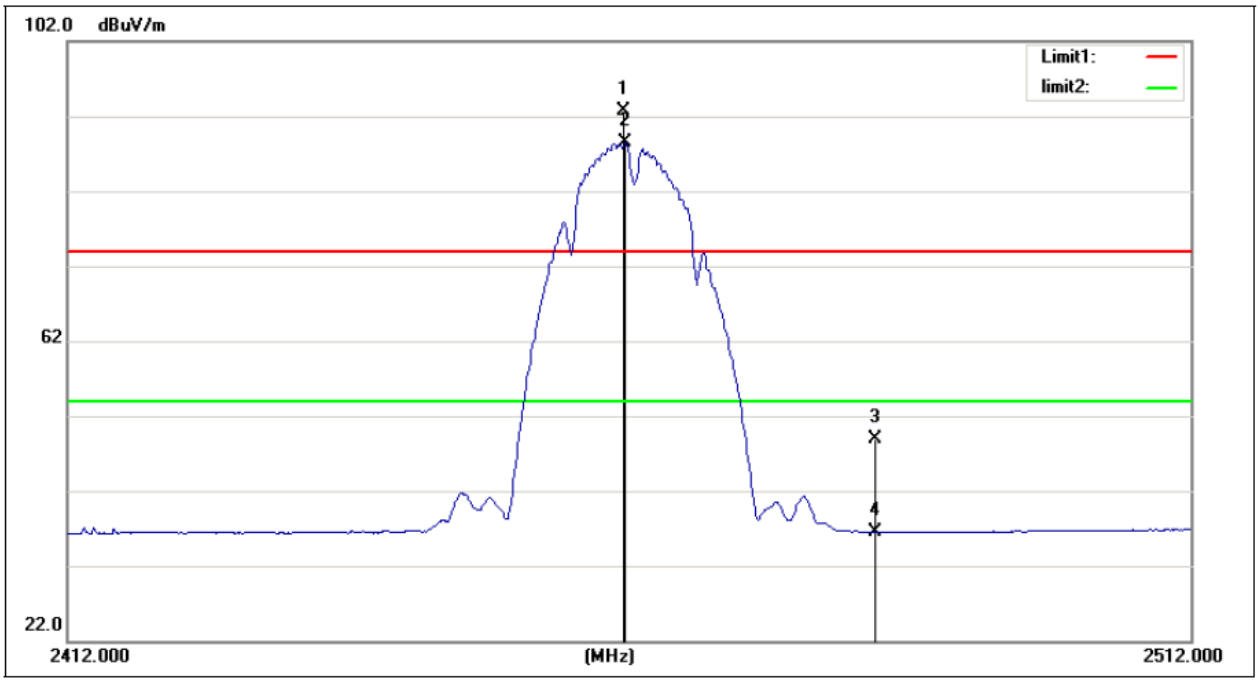
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.000	86.69	-1.79	84.90	/	/	peak
2	2461.200	82.58	-1.79	80.79	/	/	AVG
3	2483.500	49.88	-1.72	48.16	74.00	-25.84	peak
4	2483.500	38.29	-1.72	36.57	54.00	-17.43	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2462 MHz

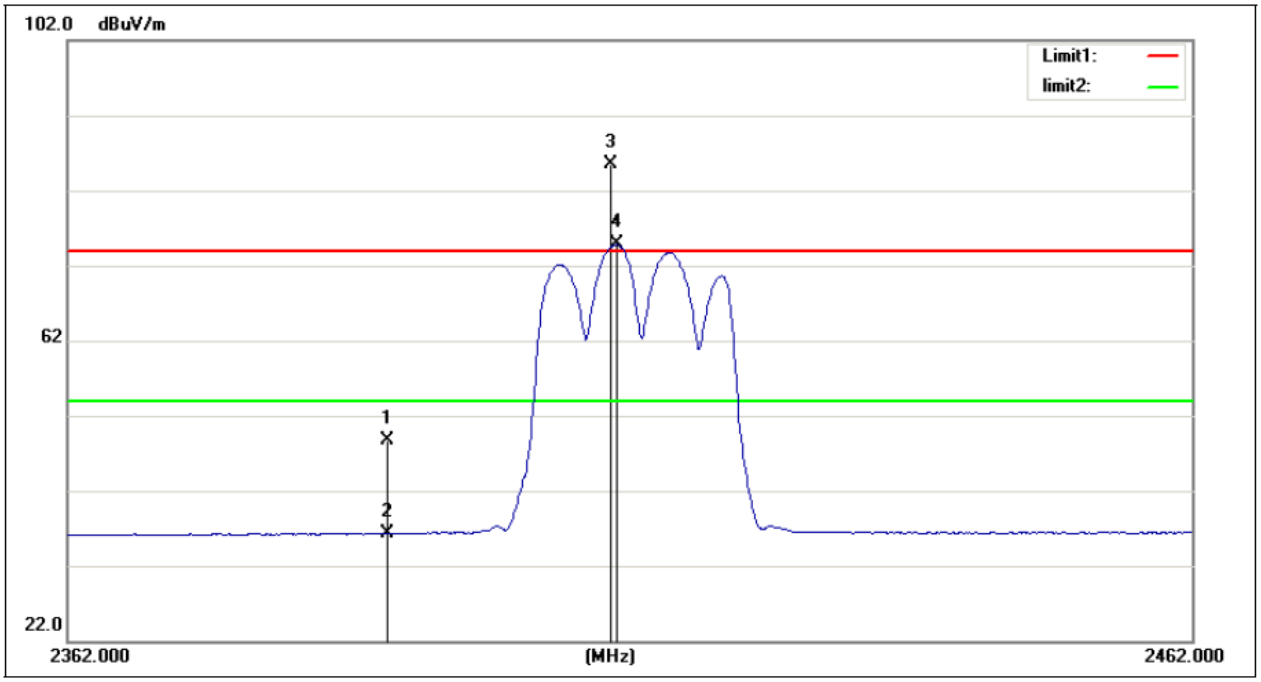
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.000	94.50	-1.79	92.71	/	/	peak
2	2461.200	90.27	-1.79	88.48	/	/	AVG
3	2483.500	50.63	-1.72	48.91	74.00	-25.09	peak
4	2483.500	38.18	-1.72	36.46	54.00	-17.54	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2412 MHz

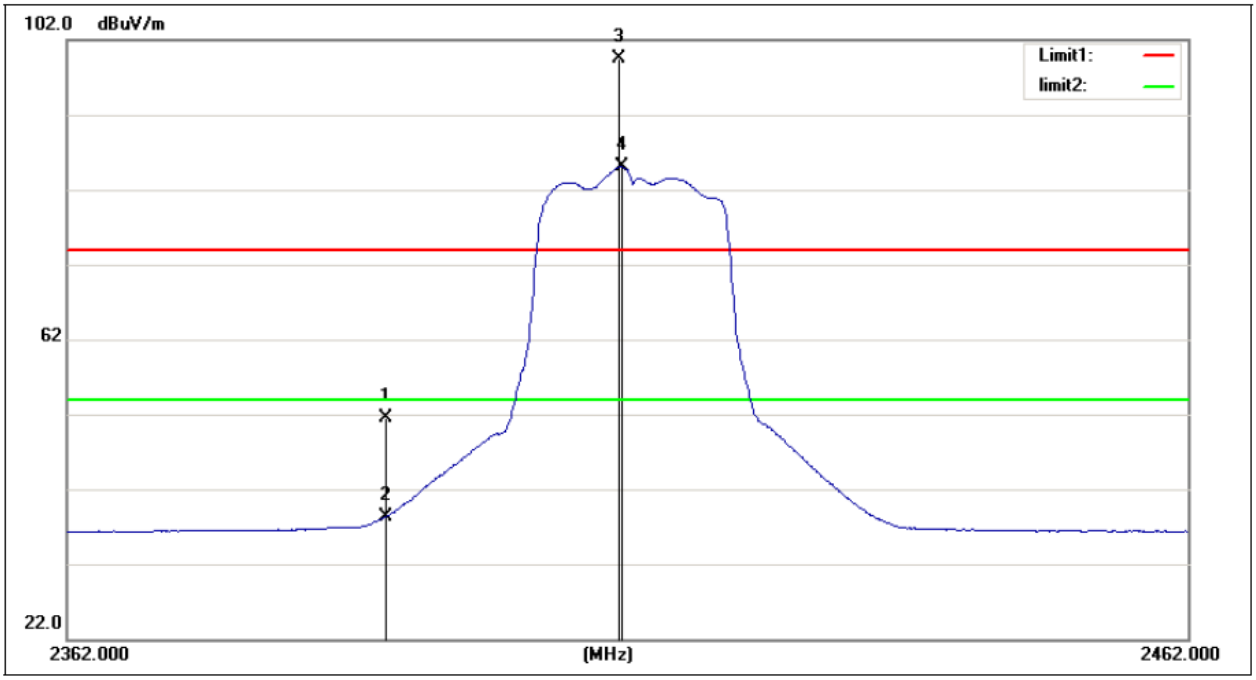
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	50.82	-2.02	48.80	74.00	-25.20	peak
2	2390.000	38.30	-2.02	36.28	54.00	-17.72	AVG
3	2409.700	87.37	-1.96	85.41	/	/	peak
4	2410.300	76.77	-1.96	74.81	/	/	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2412 MHz

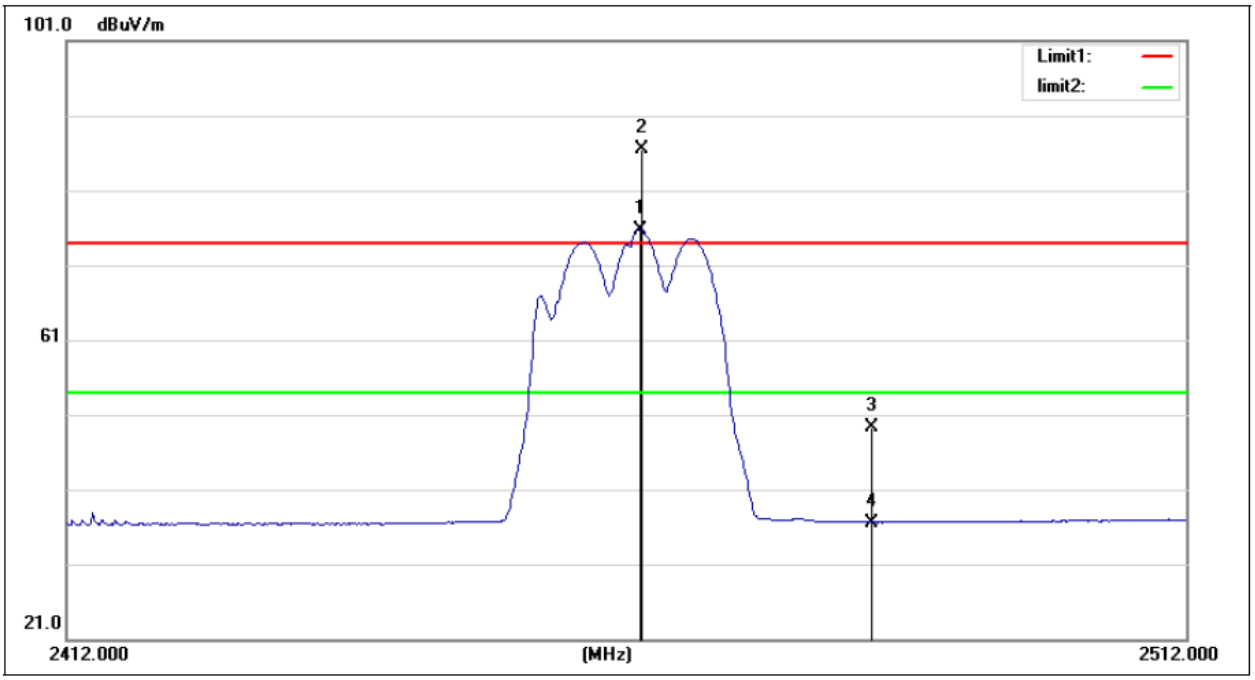
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	53.52	-2.02	51.50	74.00	-22.50	peak
2	2390.000	40.36	-2.02	38.34	54.00	-15.66	AVG
3	2410.700	101.55	-1.96	99.59	/	/	peak
4	2411.000	87.07	-1.96	85.11	/	/	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2462 MHz

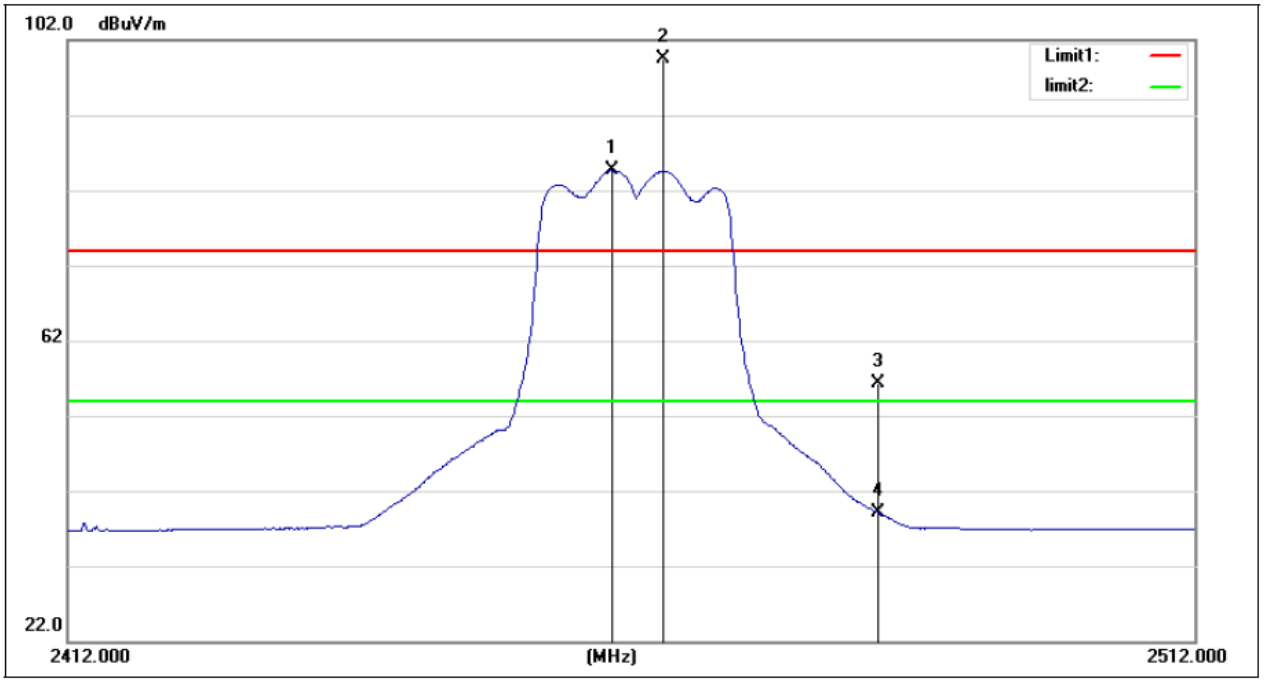
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2462.700	77.56	-1.78	75.78	/	/	AVG
2	2462.900	88.19	-1.78	86.41	/	/	peak
3	2483.500	51.01	-1.72	49.29	74.00	-24.71	peak
4	2483.500	38.32	-1.72	36.60	54.00	-17.40	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2462 MHz

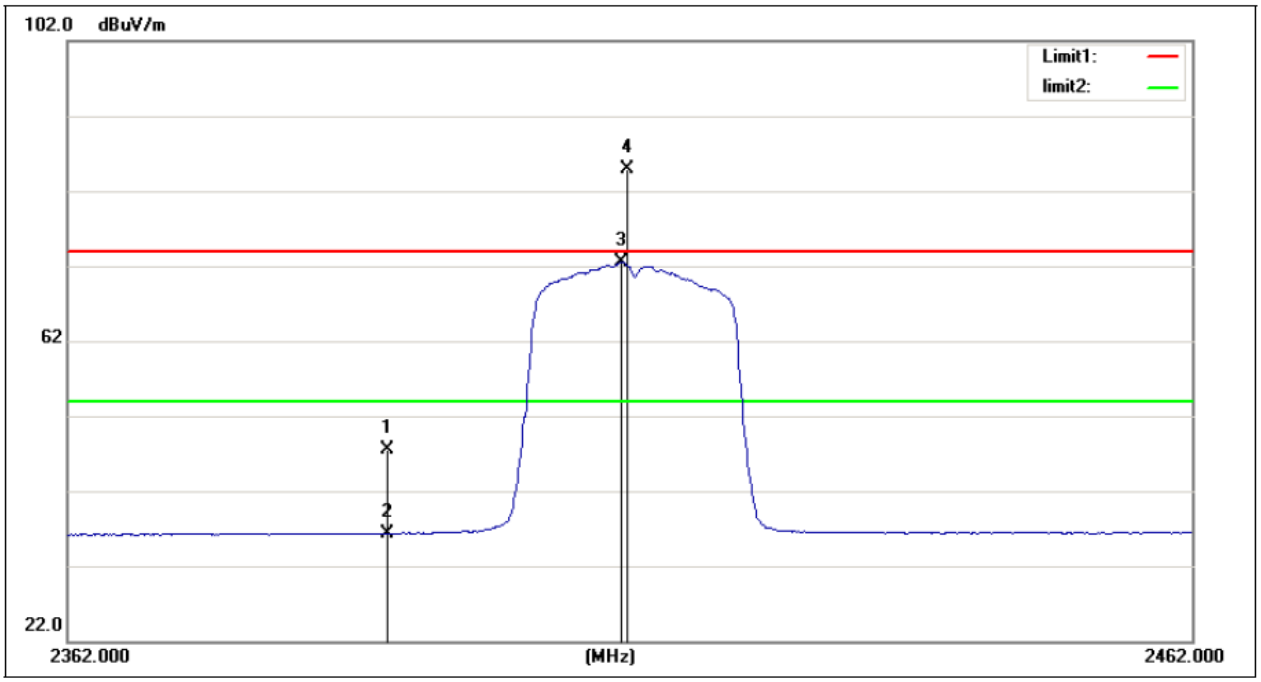
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2459.800	86.42	-1.79	84.63	/	/	AVG
2	2464.300	101.20	-1.78	99.42	/	/	peak
3	2483.500	57.93	-1.72	56.21	74.00	-17.79	peak
4	2483.500	40.91	-1.72	39.19	54.00	-14.81	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2412 MHz

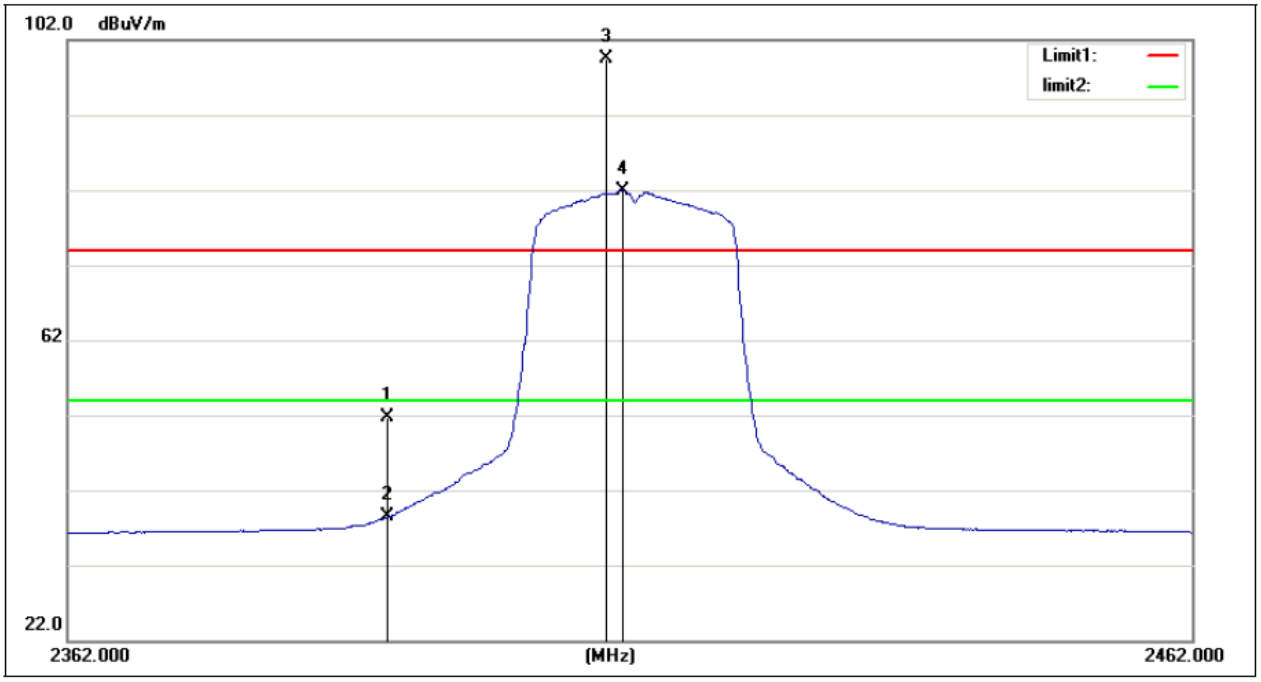
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	49.52	-2.02	47.50	74.00	-26.50	peak
2	2390.000	38.31	-2.02	36.29	54.00	-17.71	AVG
3	2410.800	74.48	-1.96	72.52	/	/	AVG
4	2411.300	86.78	-1.96	84.82	/	/	peak

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2412 MHz

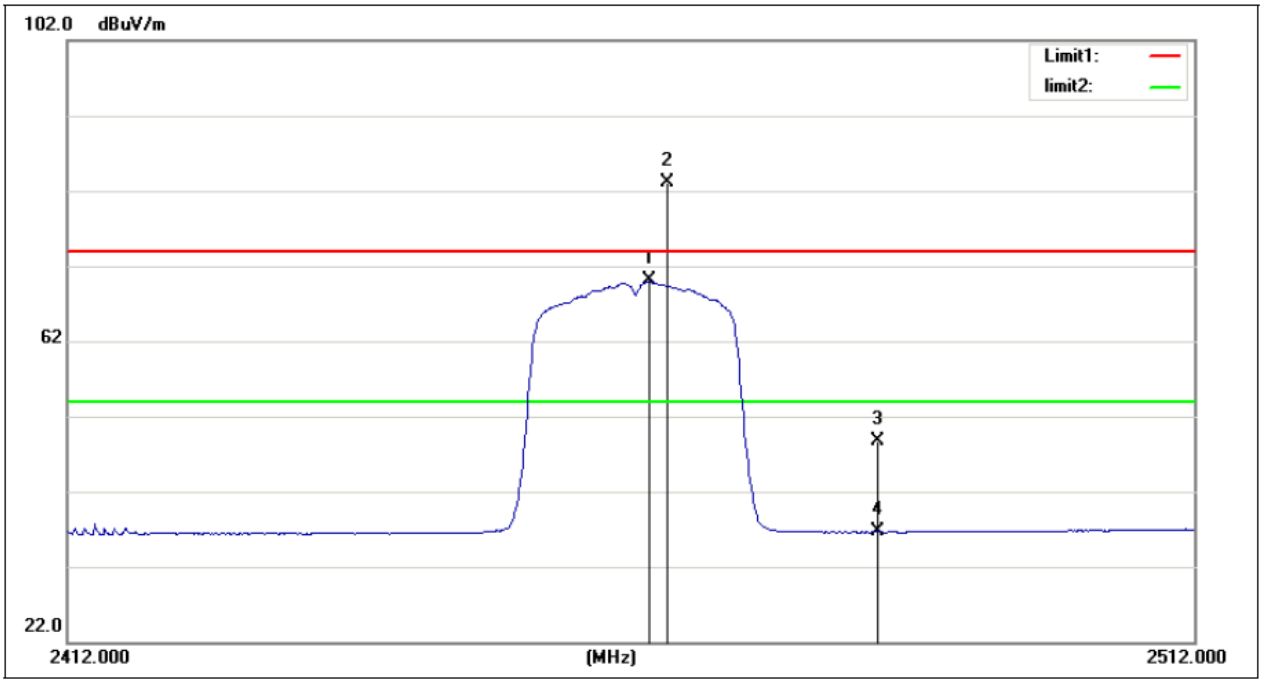
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	53.81	-2.02	51.79	74.00	-22.21	peak
2	2390.000	40.44	-2.02	38.42	54.00	-15.58	AVG
3	2409.400	101.49	-1.96	99.53	/	/	peak
4	2410.900	83.89	-1.96	81.93	/	/	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2462 MHz

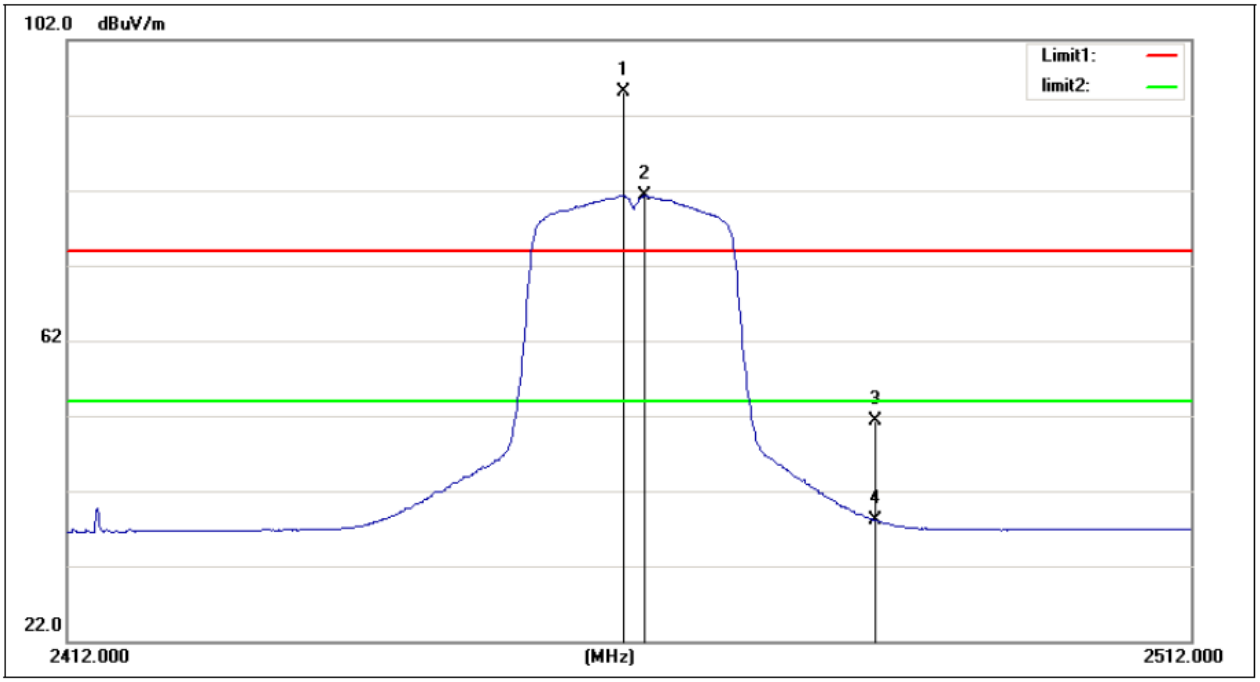
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.100	71.83	-1.78	70.05	/	/	AVG
2	2464.800	84.87	-1.78	83.09	/	/	peak
3	2483.500	50.40	-1.72	48.68	74.00	-25.32	peak
4	2483.500	38.38	-1.72	36.66	54.00	-17.34	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2462 MHz

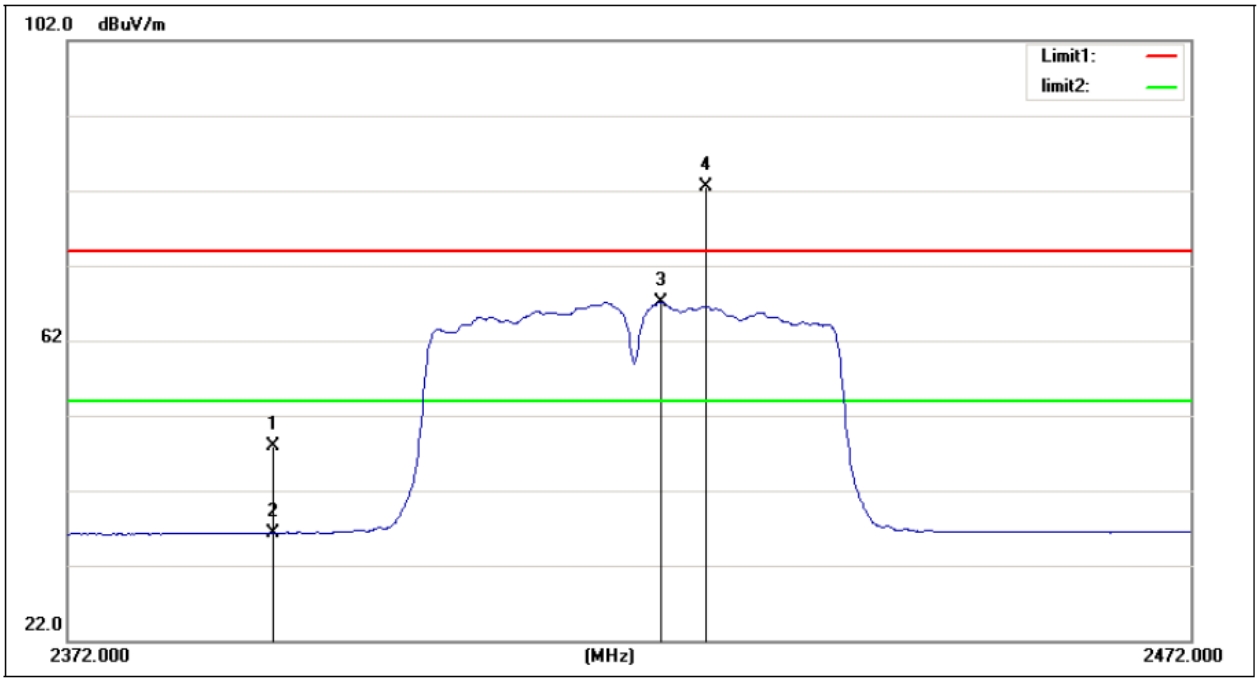
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.000	96.91	-1.79	95.12	/	/	peak
2	2462.900	83.11	-1.78	81.33	/	/	AVG
3	2483.500	52.97	-1.72	51.25	74.00	-22.75	peak
4	2483.500	39.83	-1.72	38.11	54.00	-15.89	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2422MHz

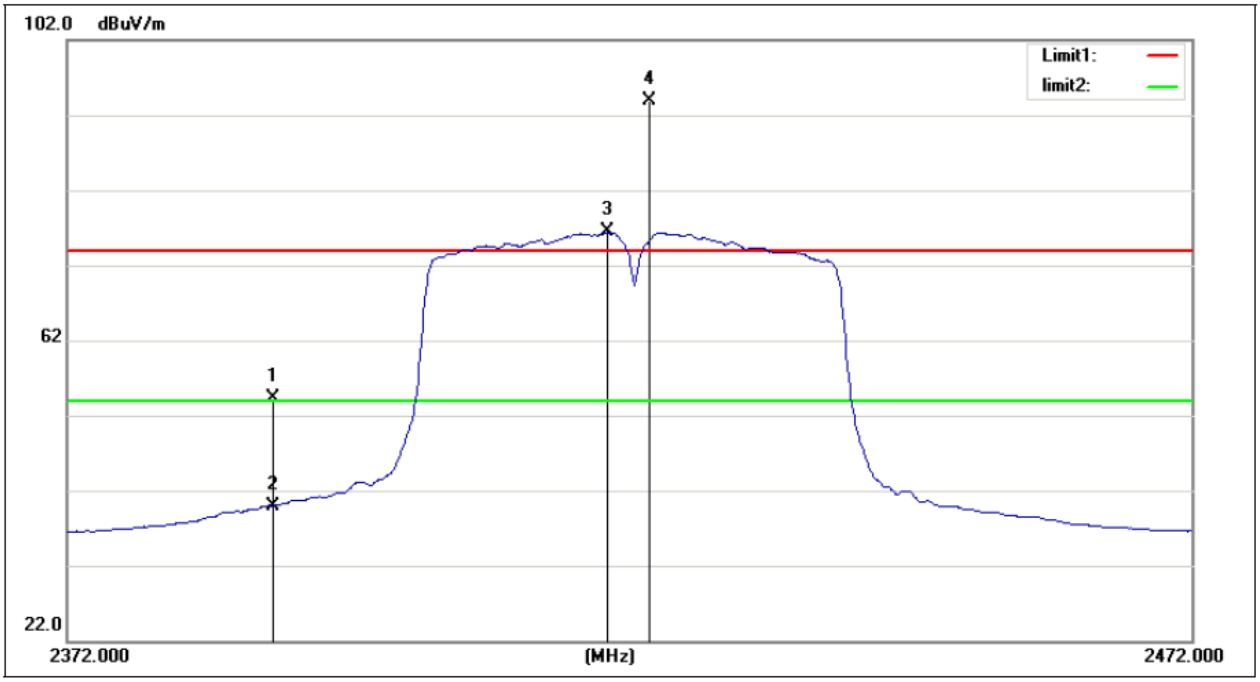
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	50.01	-2.02	47.99	74.00	-26.01	peak
2	2390.000	38.35	-2.02	36.33	54.00	-17.67	AVG
3	2424.400	69.01	-1.91	67.10	/	/	AVG
4	2428.400	84.33	-1.90	82.43	/	/	peak

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2422MHz

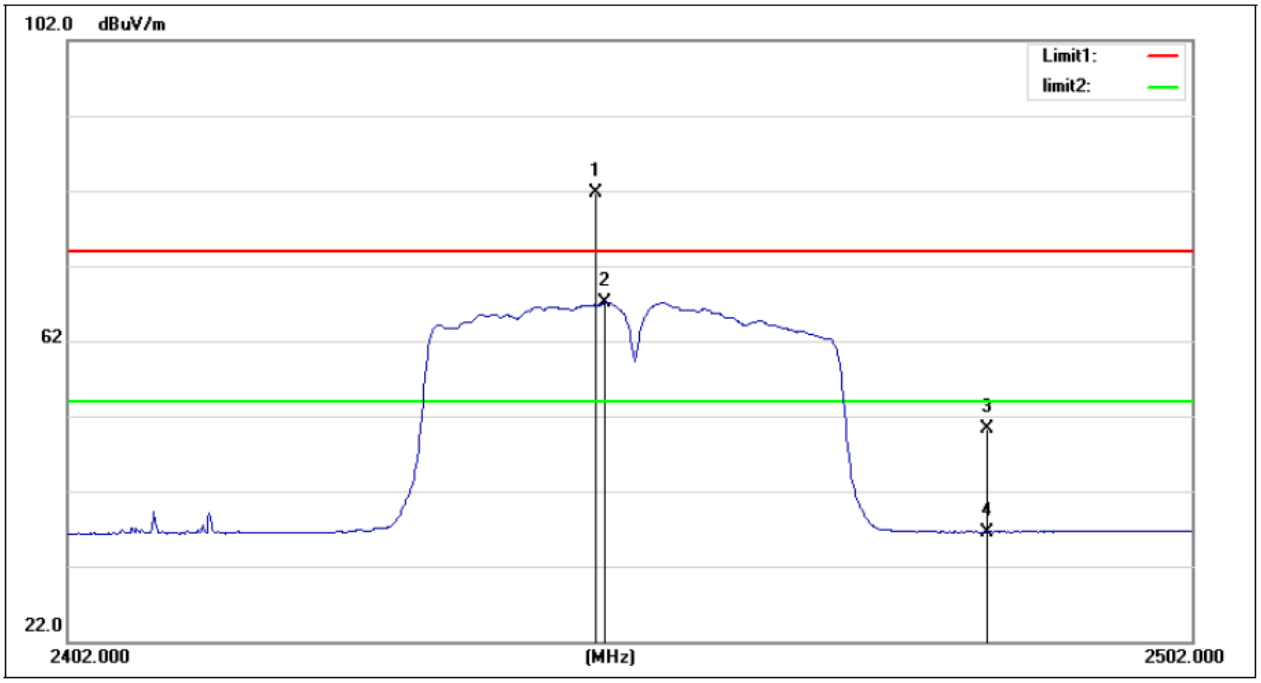
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	56.27	-2.02	54.25	74.00	-19.75	peak
2	2390.000	41.98	-2.02	39.96	54.00	-14.04	AVG
3	2419.600	78.34	-1.93	76.41	/	/	AVG
4	2423.200	95.80	-1.92	93.88	/	/	peak

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2452 MHz

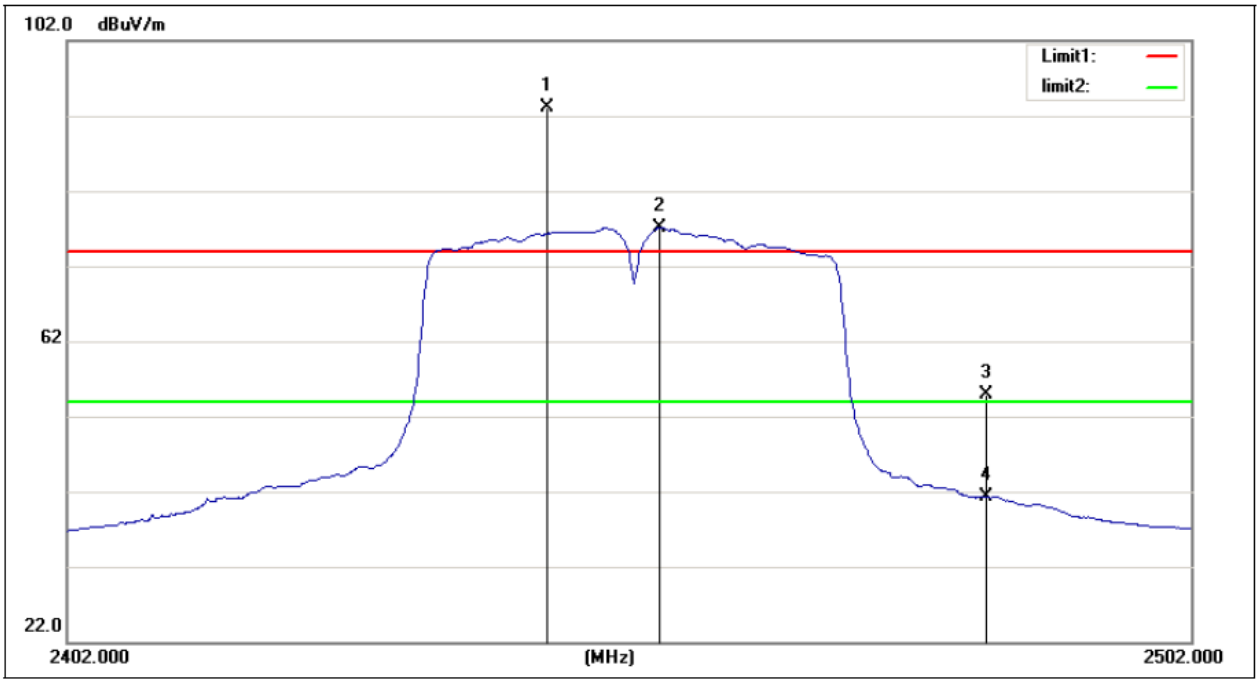
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2448.500	83.60	-1.83	81.77	/	/	peak
2	2449.300	68.97	-1.83	67.14	/	/	AVG
3	2483.500	52.10	-1.72	50.38	74.00	-23.62	peak
4	2483.500	38.31	-1.72	36.59	54.00	-17.41	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2452 MHz

Horizontal

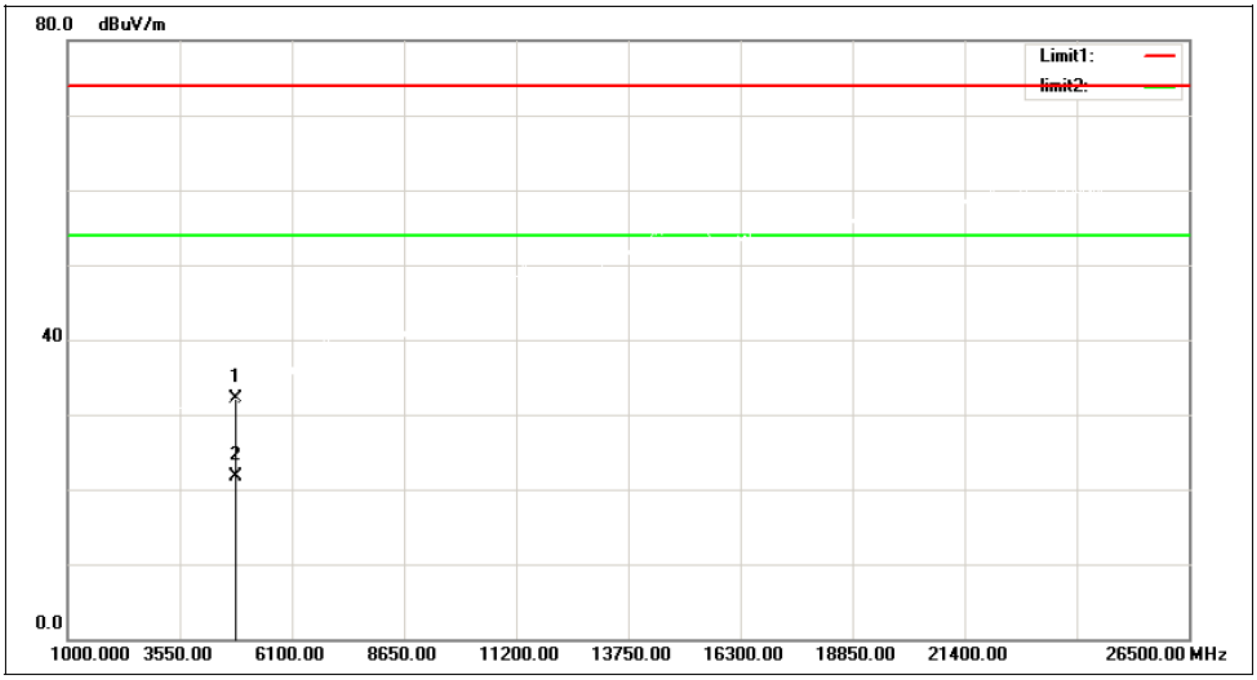


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2444.200	94.86	-1.85	93.01	/	/	peak
2	2454.200	78.90	-1.81	77.09	/	/	AVG
3	2483.500	56.71	-1.72	54.99	74.00	-19.01	peak
4	2483.500	43.10	-1.72	41.38	54.00	-12.62	AVG

5.9TEST RESULTS- ABOVE 1000MHz(HARMONIC)

Orthogonal Axis	X
Test Mode:	TX B Mode 2412 MHz

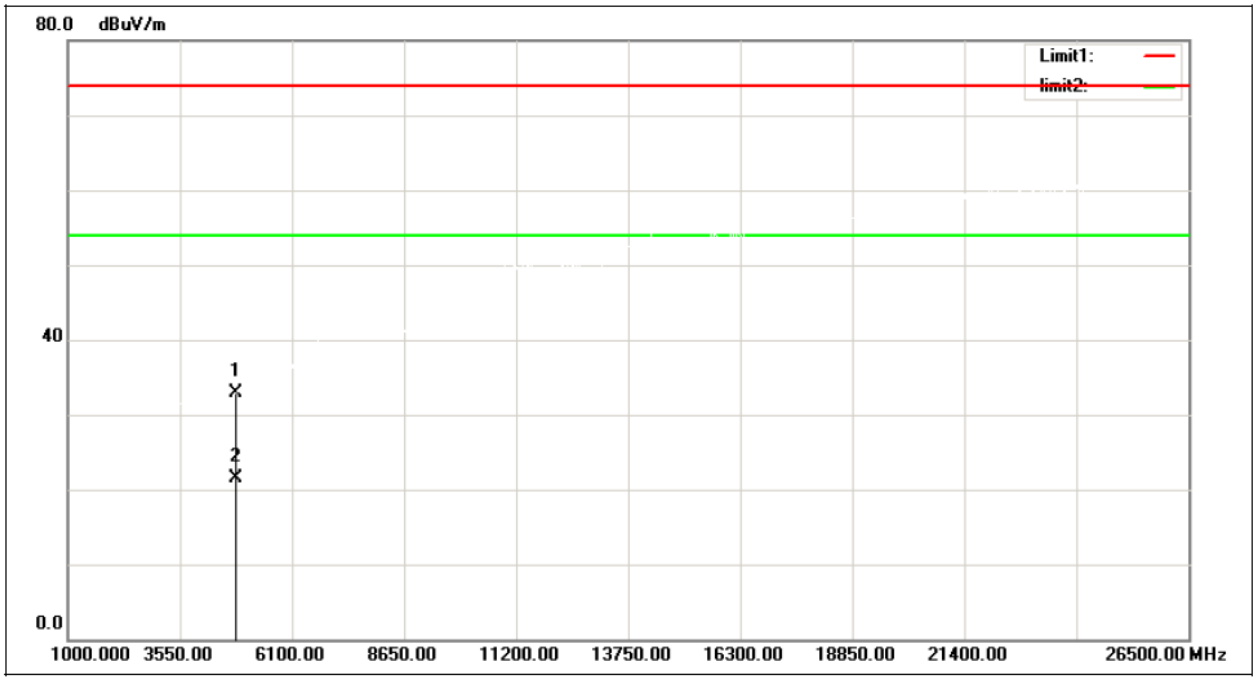
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	39.61	-7.48	32.13	74.00	-41.87	peak
2	4824.000	29.16	-7.48	21.68	54.00	-32.32	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2412 MHz

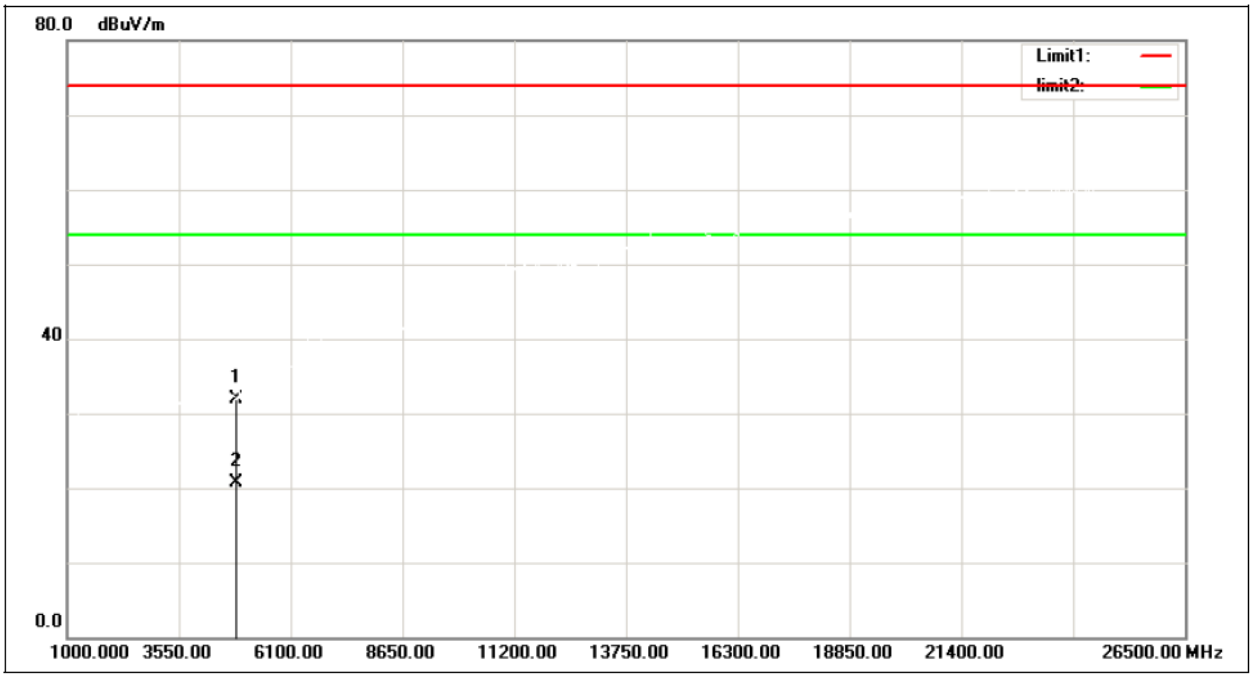
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	40.43	-7.48	32.95	74.00	-41.05	peak
2	4824.000	29.04	-7.48	21.56	54.00	-32.44	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2437 MHz

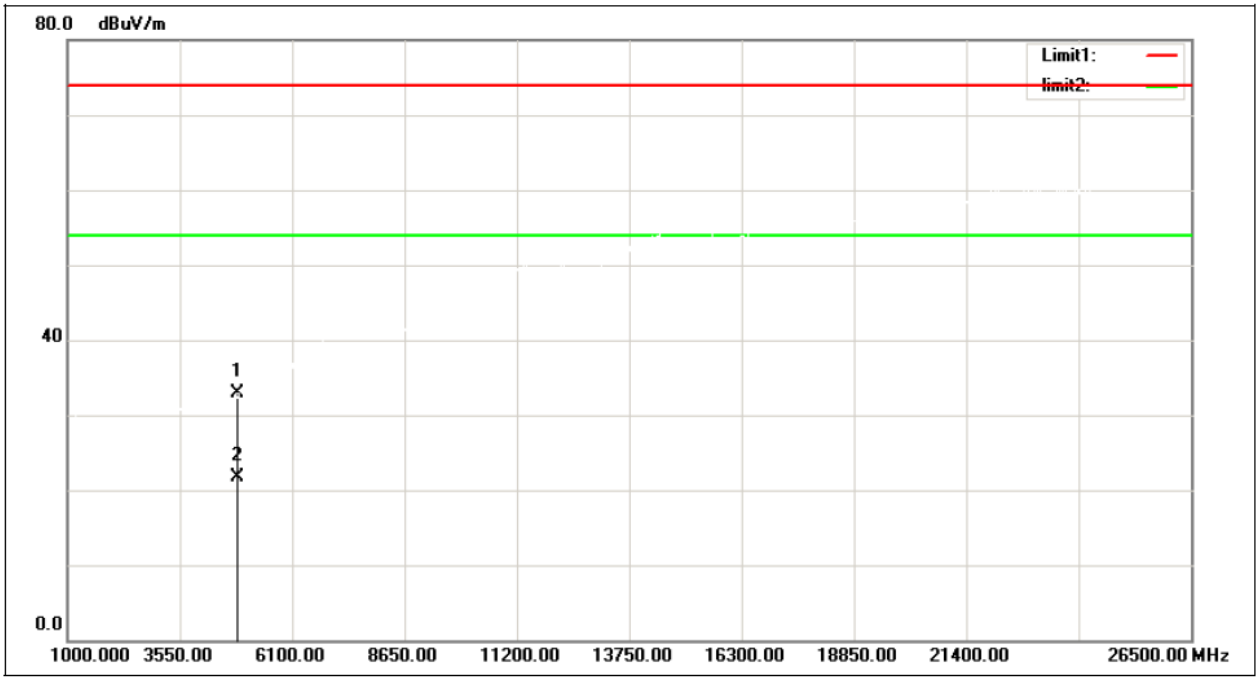
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	39.23	-7.34	31.89	74.00	-42.11	peak
2	4874.000	28.09	-7.34	20.75	54.00	-33.25	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2437 MHz

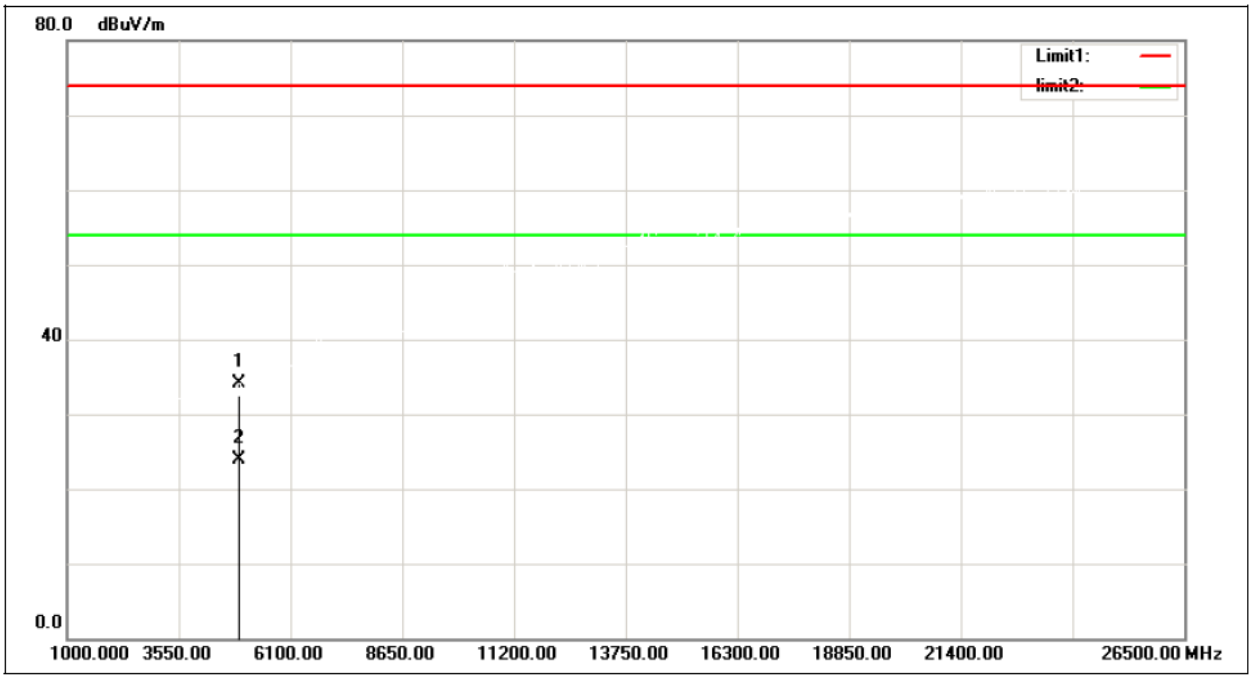
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	40.16	-7.34	32.82	74.00	-41.18	peak
2	4874.000	29.07	-7.34	21.73	54.00	-32.27	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2462 MHz

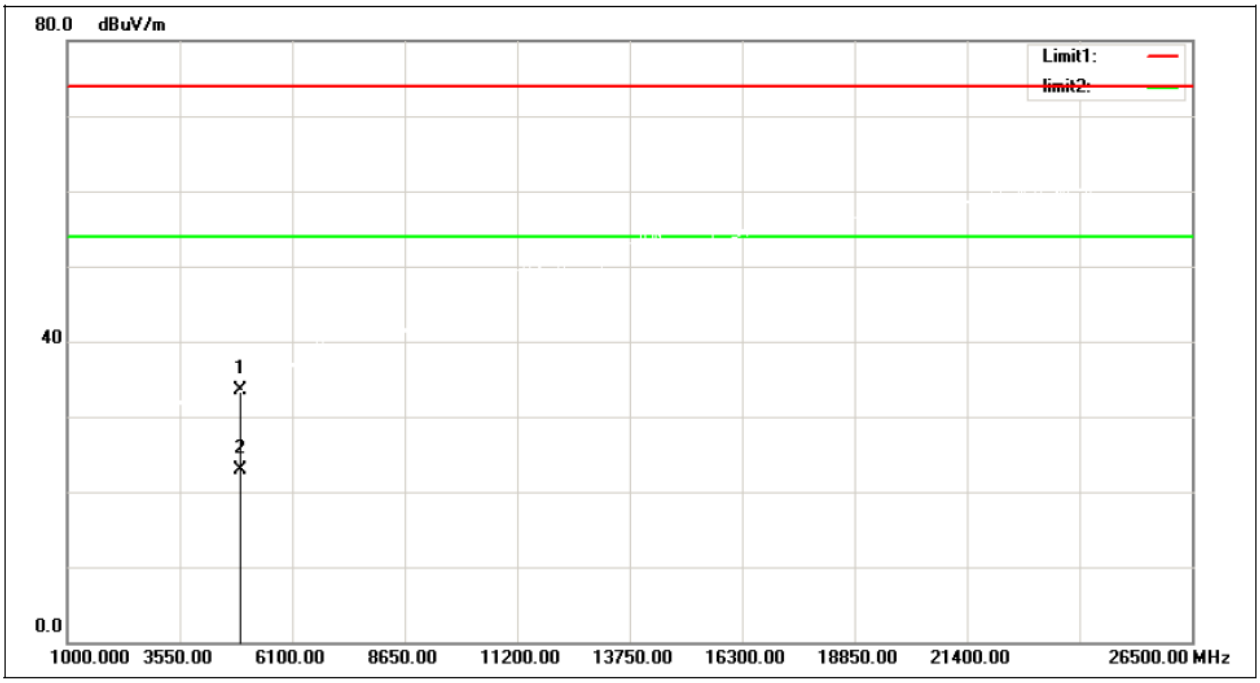
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	41.24	-7.20	34.04	74.00	-39.96	peak
2	4924.000	31.06	-7.20	23.86	54.00	-30.14	AVG

Orthogonal Axis	X
Test Mode:	TX B Mode 2462 MHz

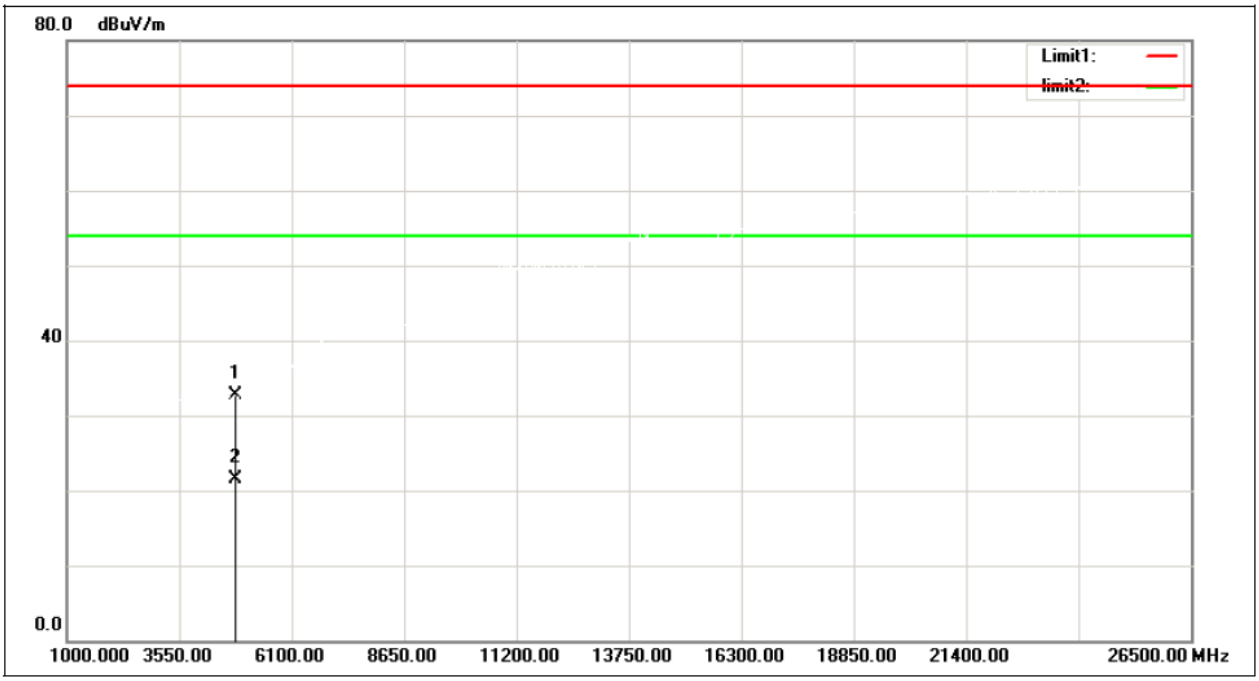
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	40.69	-7.20	33.49	74.00	-40.51	peak
2	4924.000	30.04	-7.20	22.84	54.00	-31.16	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2412 MHz

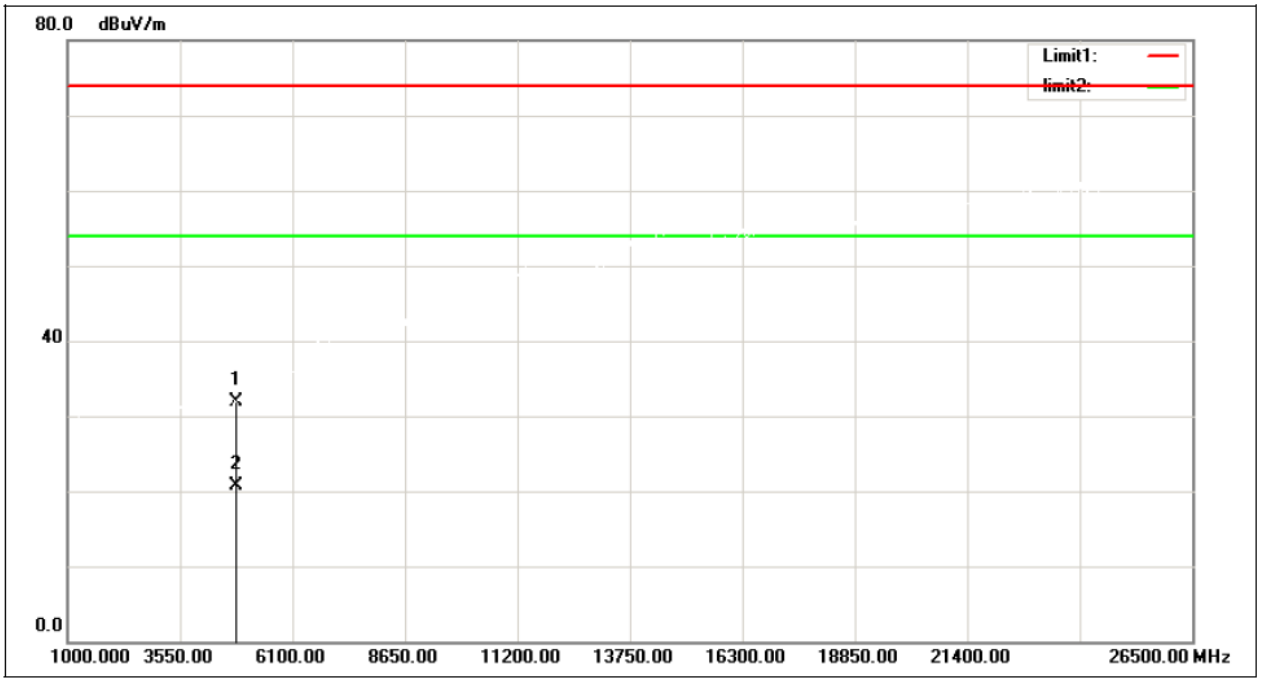
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	40.12	-7.48	32.64	74.00	-41.36	peak
2	4824.000	29.04	-7.48	21.56	54.00	-32.44	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2412 MHz

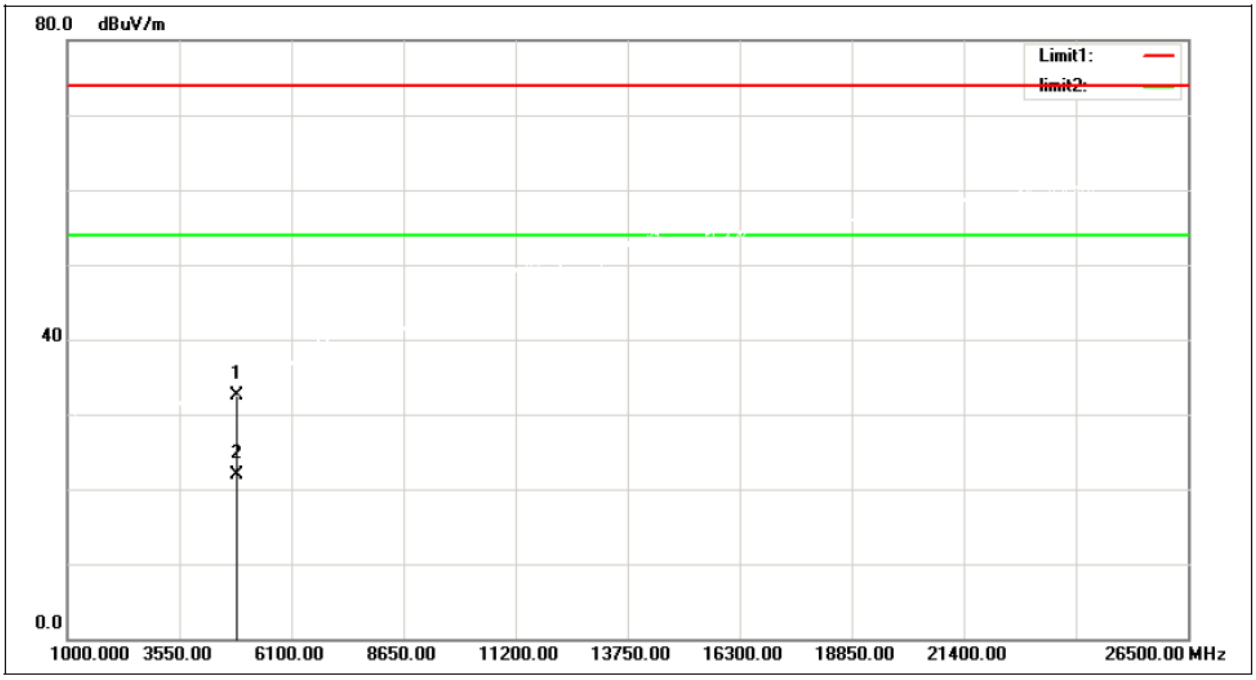
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	39.33	-7.48	31.85	74.00	-42.15	peak
2	4824.000	28.27	-7.48	20.79	54.00	-33.21	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2437 MHz

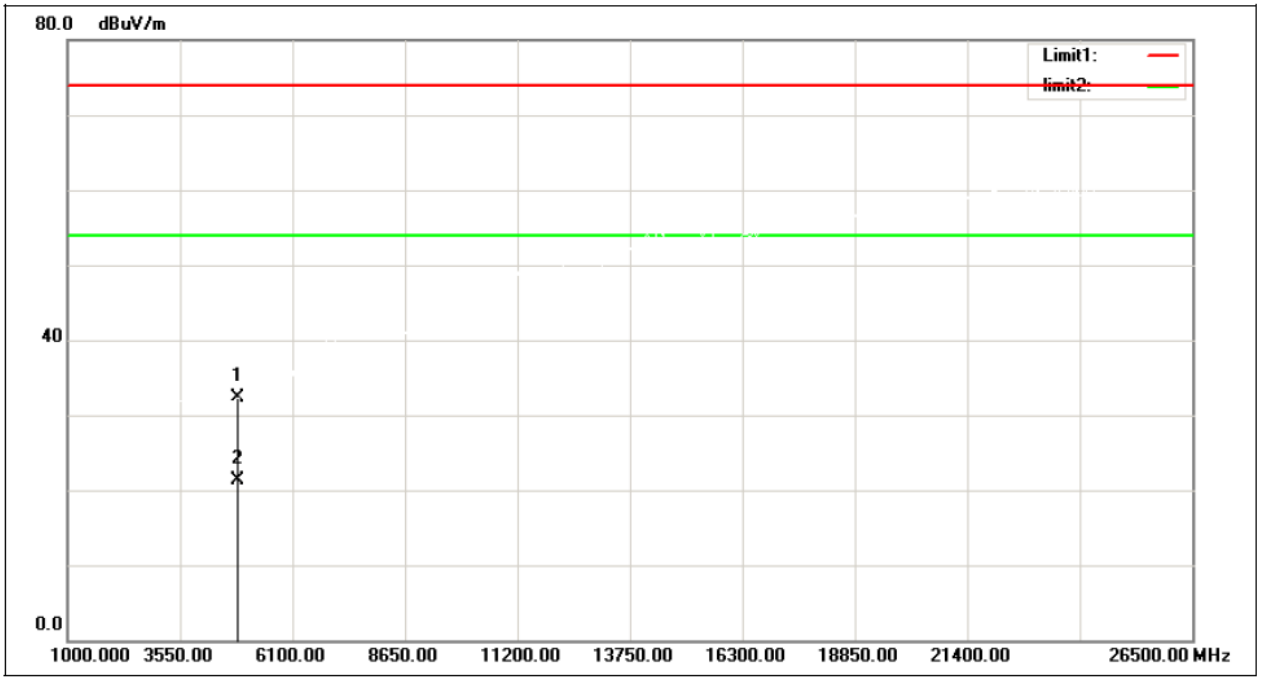
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	39.83	-7.34	32.49	74.00	-41.51	peak
2	4874.000	29.27	-7.34	21.93	54.00	-32.07	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2437 MHz

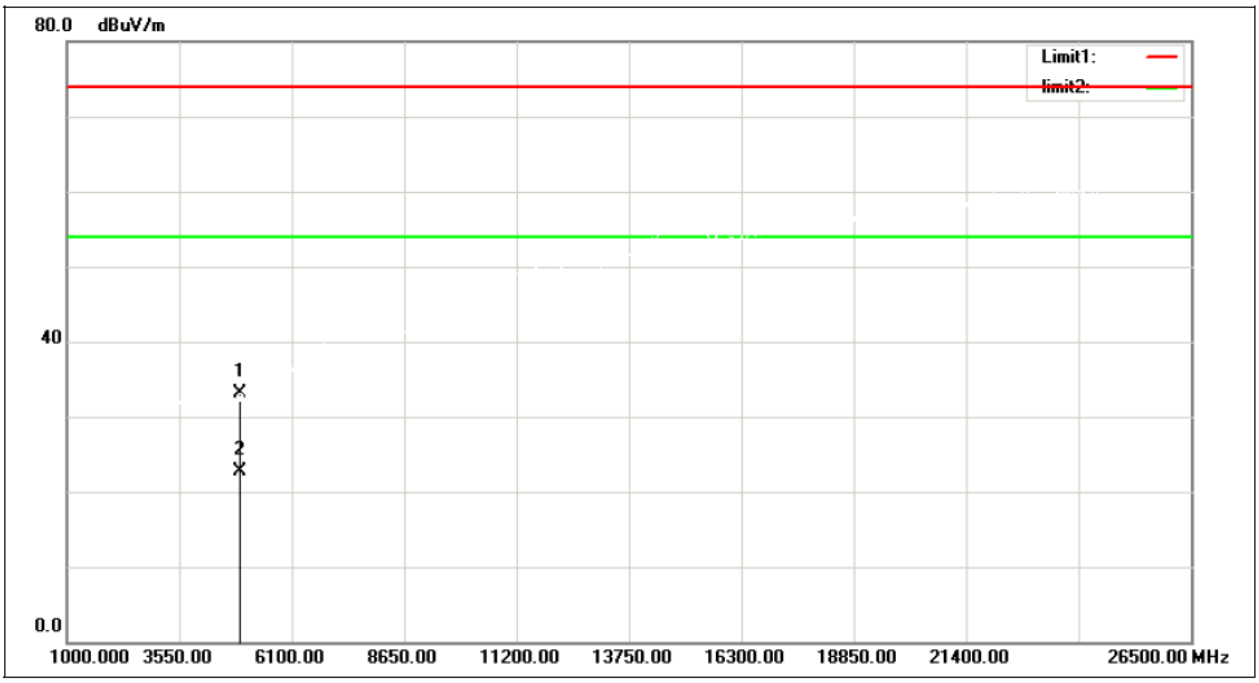
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	39.61	-7.34	32.27	74.00	-41.73	peak
2	4874.000	28.72	-7.34	21.38	54.00	-32.62	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2462 MHz

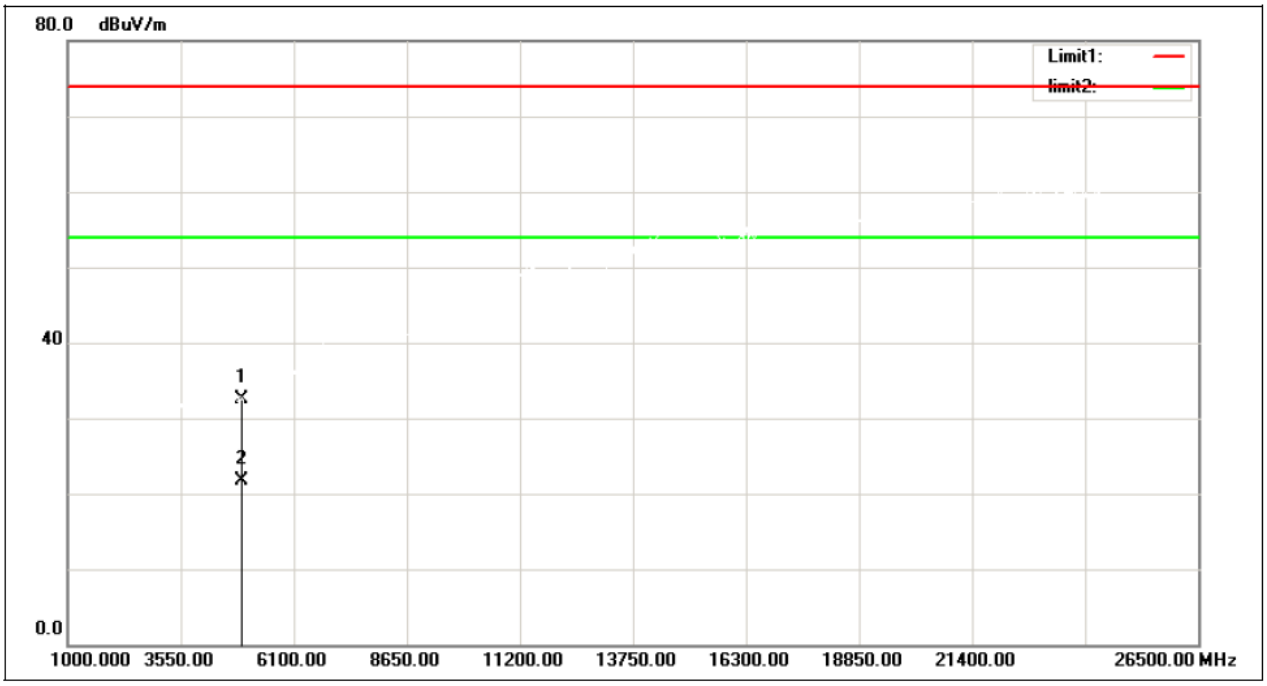
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	40.22	-7.20	33.02	74.00	-40.98	peak
2	4924.000	29.96	-7.20	22.76	54.00	-31.24	AVG

Orthogonal Axis	X
Test Mode:	TX G Mode 2462 MHz

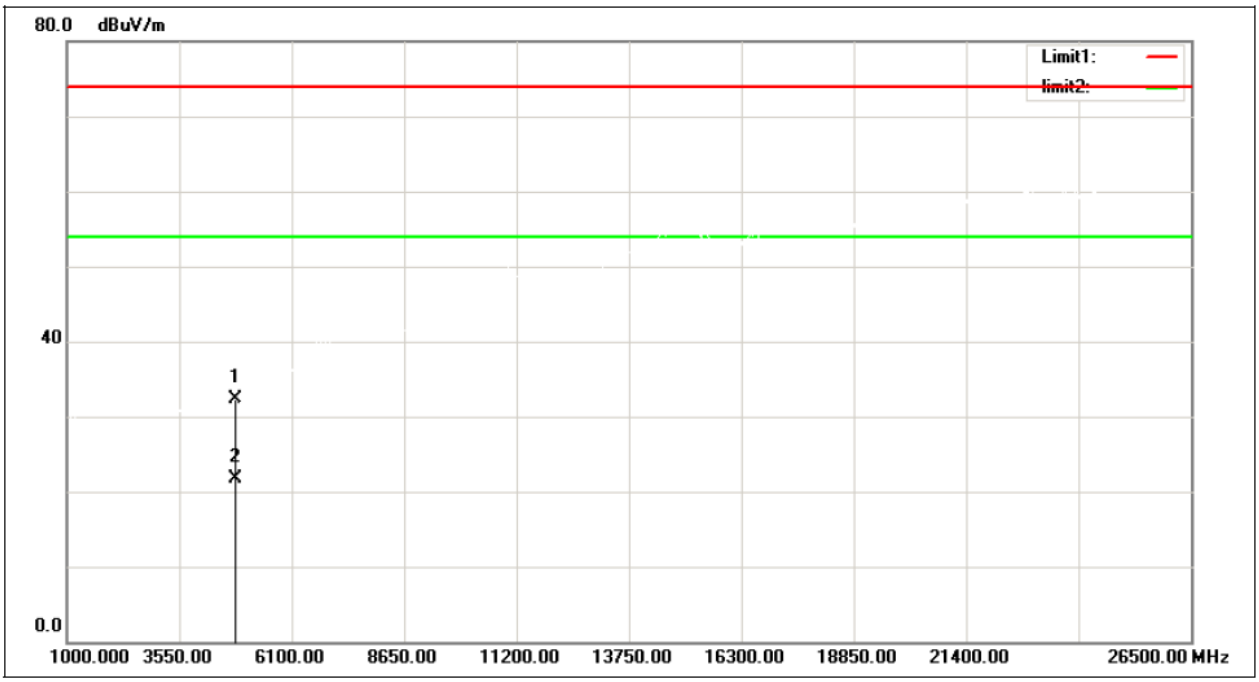
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	39.69	-7.20	32.49	74.00	-41.51	peak
2	4924.000	28.95	-7.20	21.75	54.00	-32.25	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2412 MHz

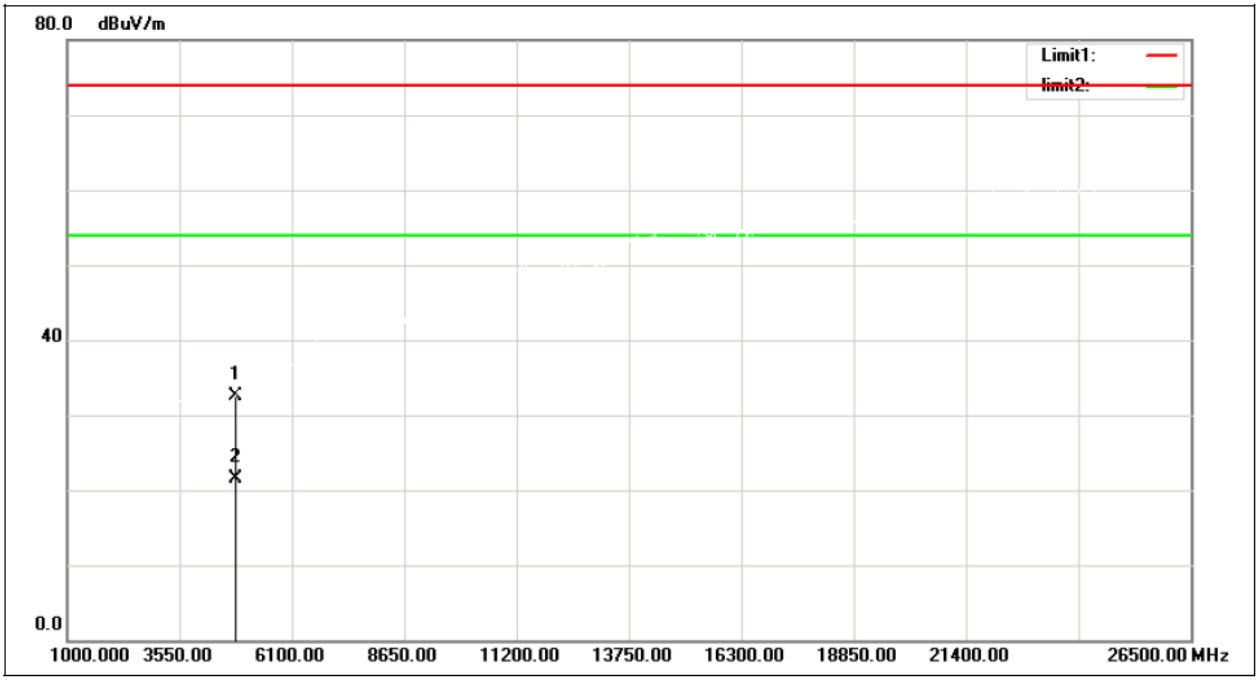
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	39.86	-7.48	32.38	74.00	-41.62	peak
2	4824.000	29.22	-7.48	21.74	54.00	-32.26	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2412 MHz

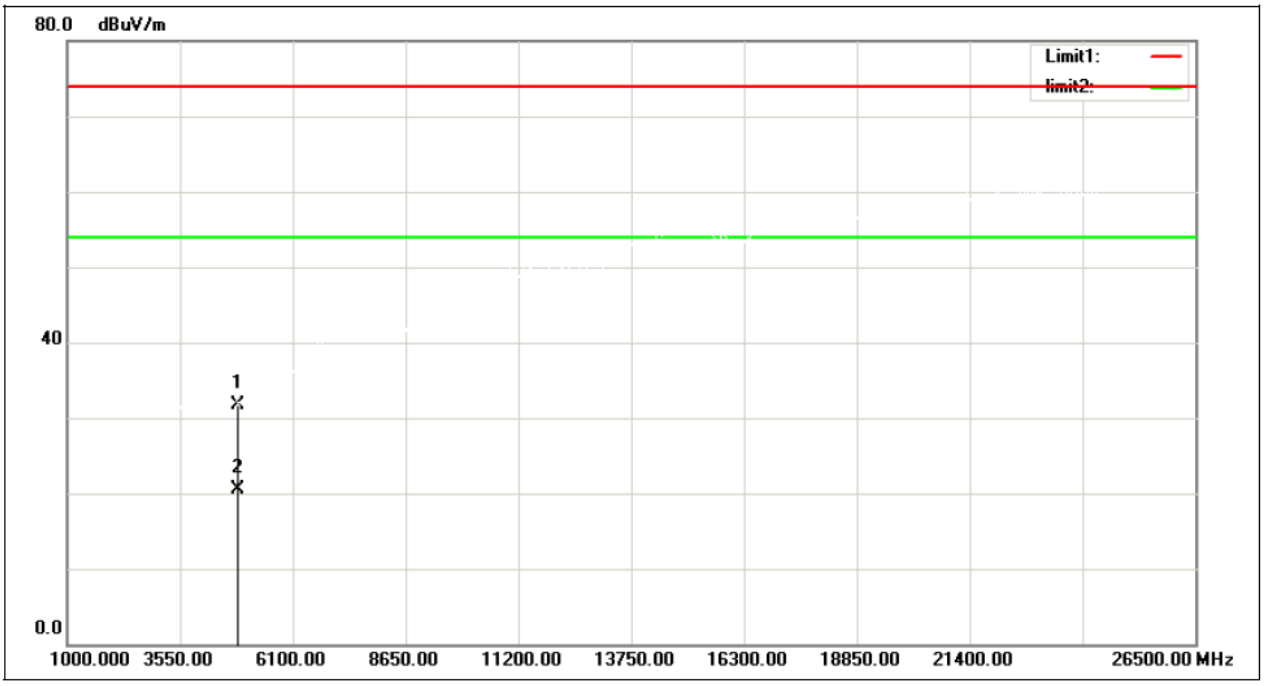
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	39.96	-7.48	32.48	74.00	-41.52	peak
2	4824.000	29.07	-7.48	21.59	54.00	-32.41	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2437 MHz

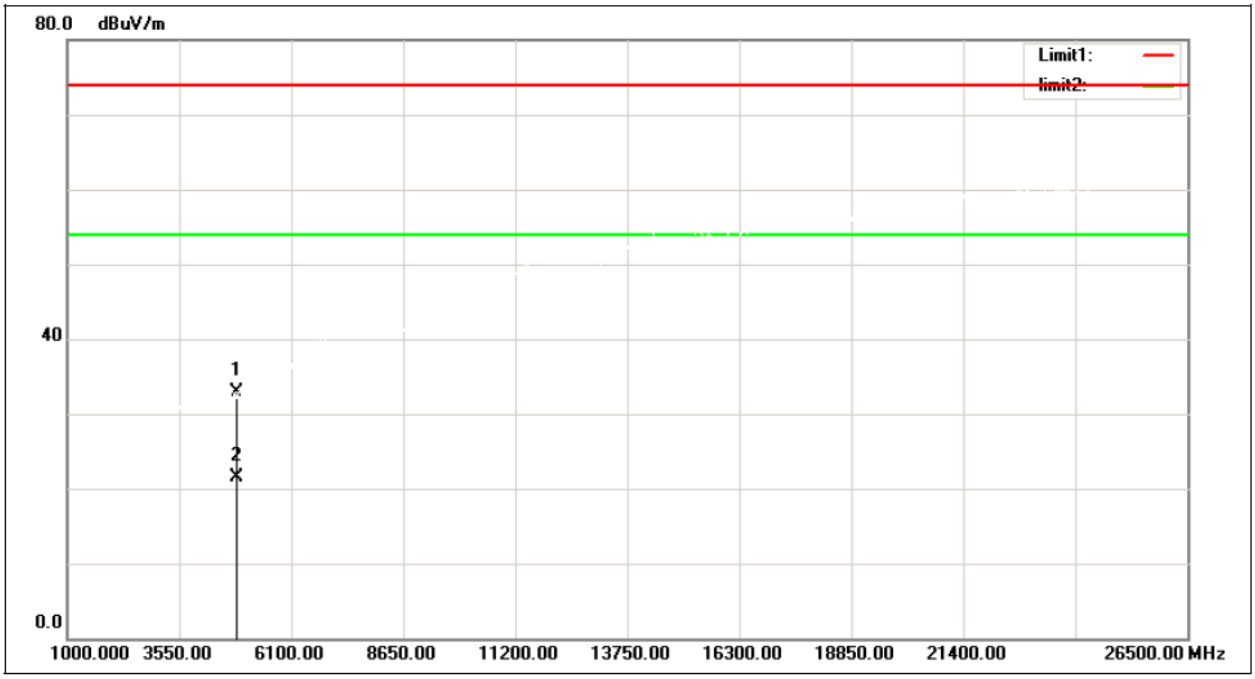
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	38.96	-7.34	31.62	74.00	-42.38	peak
2	4874.000	27.82	-7.34	20.48	54.00	-33.52	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2437 MHz

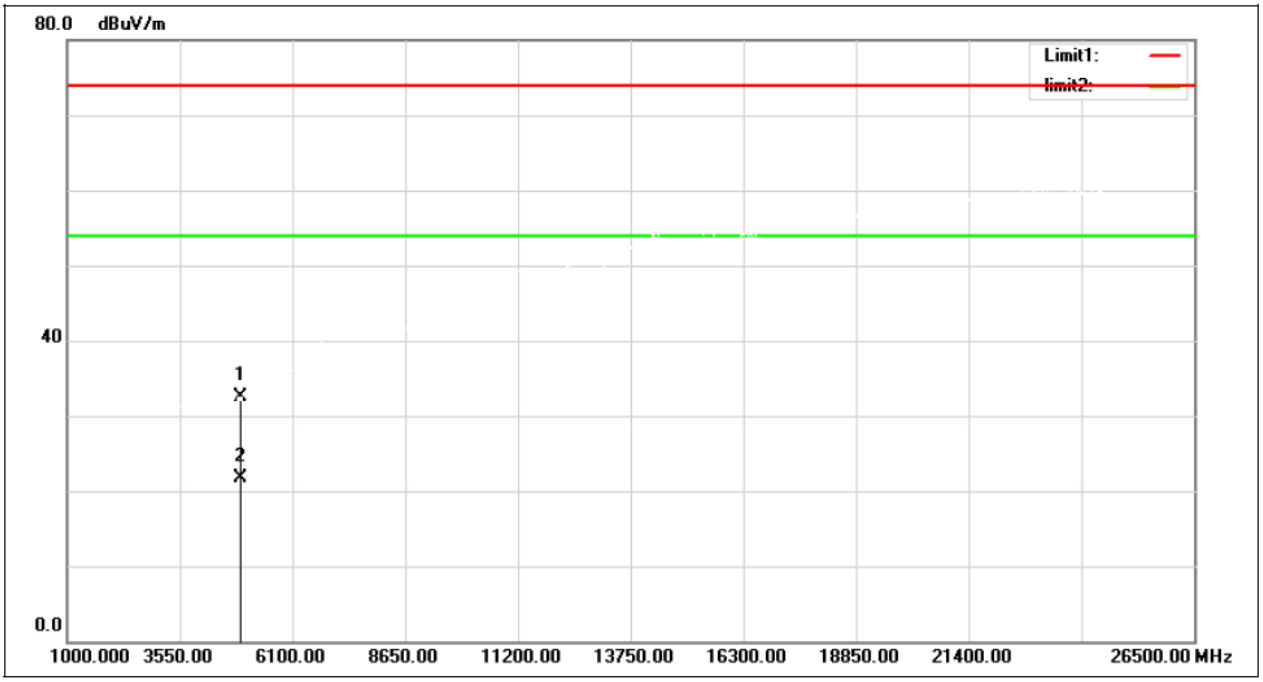
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	40.32	-7.34	32.98	74.00	-41.02	peak
2	4874.000	28.80	-7.34	21.46	54.00	-32.54	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2462 MHz

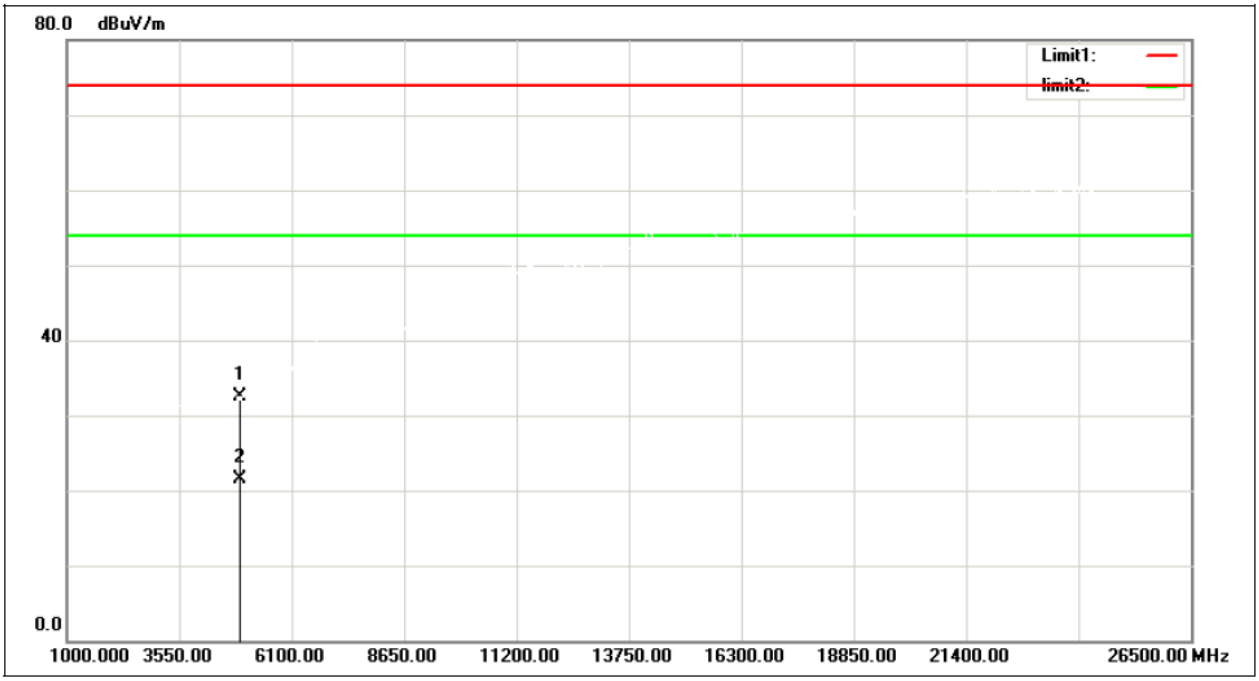
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	39.70	-7.20	32.50	74.00	-41.50	peak
2	4924.000	28.89	-7.20	21.69	54.00	-32.31	AVG

Orthogonal Axis	X
Test Mode:	TX N-20M Mode 2462 MHz

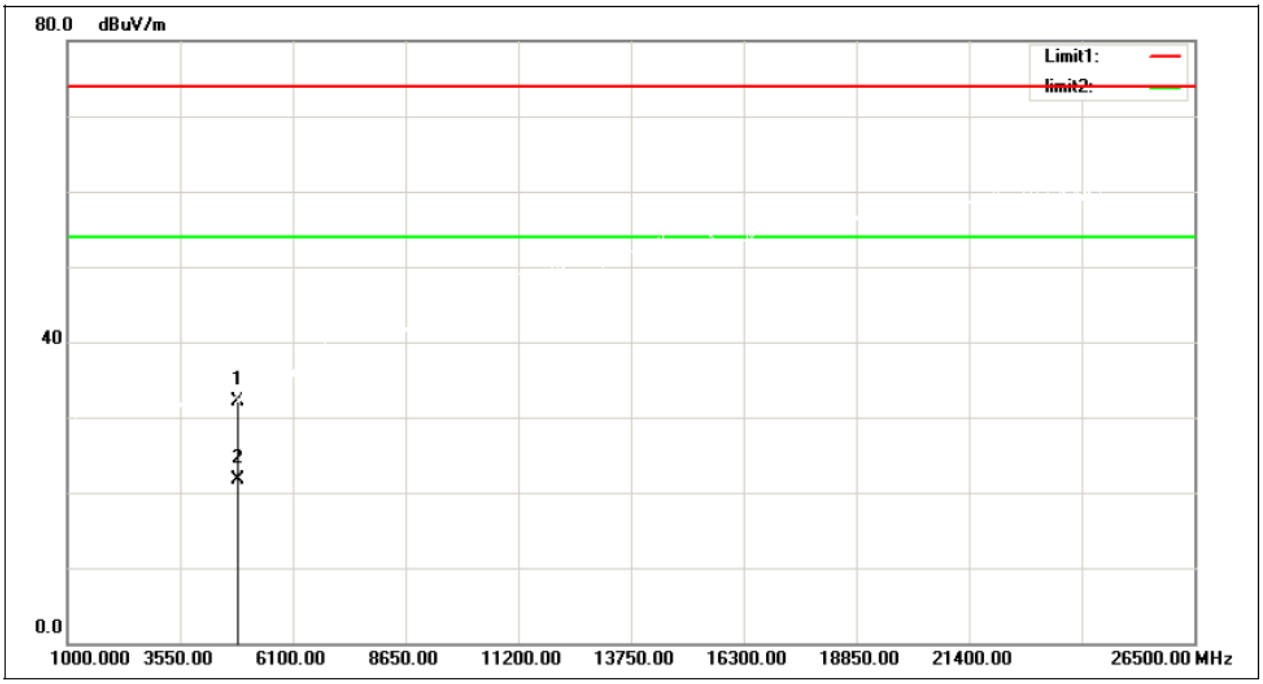
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	39.71	-7.20	32.51	74.00	-41.49	peak
2	4924.000	28.68	-7.20	21.48	54.00	-32.52	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2422MHz

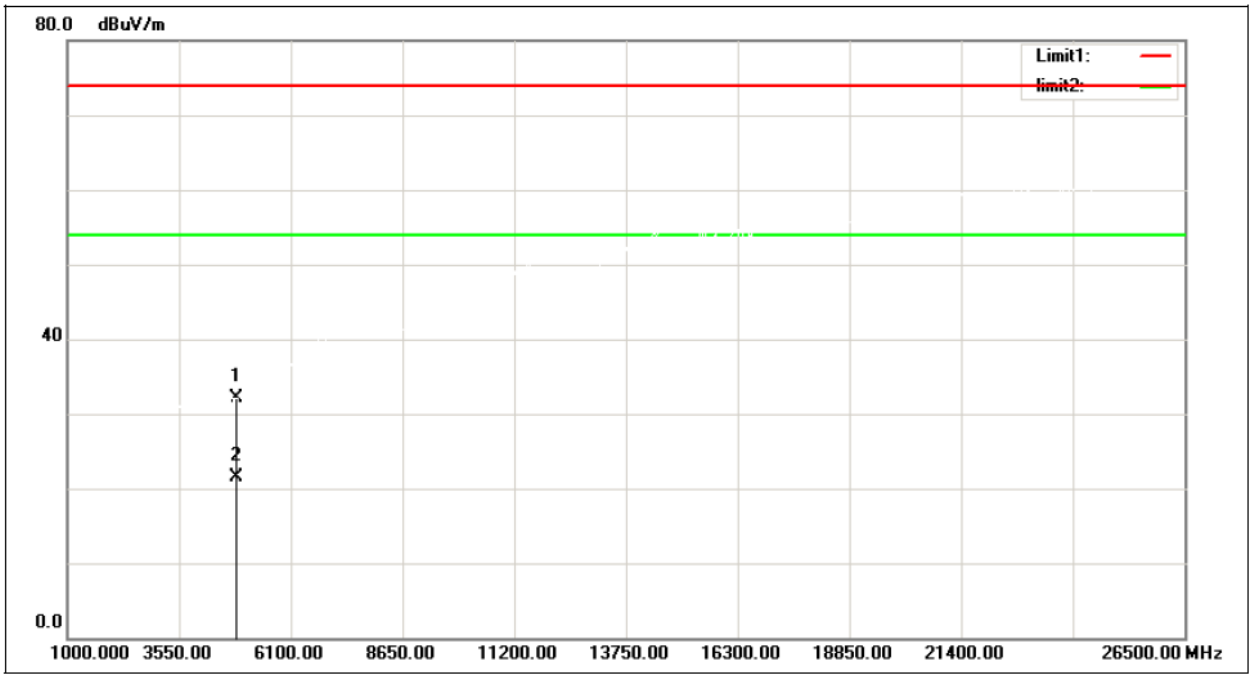
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	39.48	-7.42	32.06	74.00	-41.94	peak
2	4844.000	29.10	-7.42	21.68	54.00	-32.32	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2422MHz

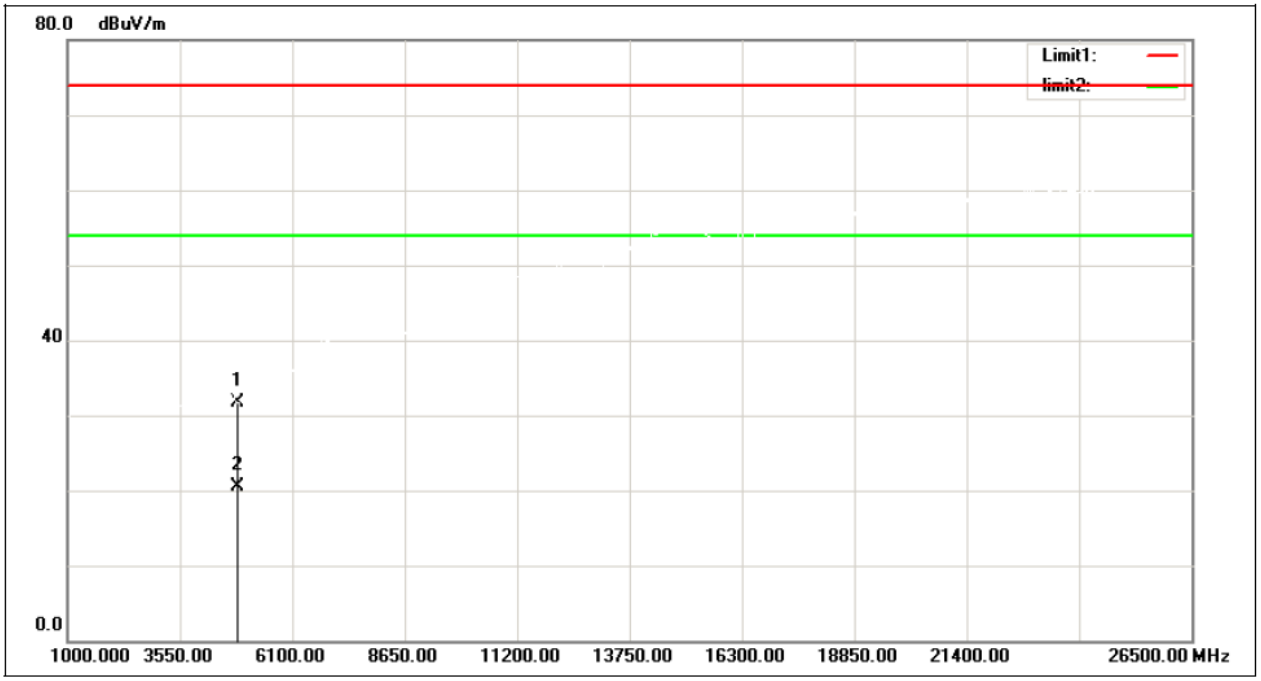
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	39.46	-7.42	32.04	74.00	-41.96	peak
2	4844.000	28.96	-7.42	21.54	54.00	-32.46	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2437 MHz

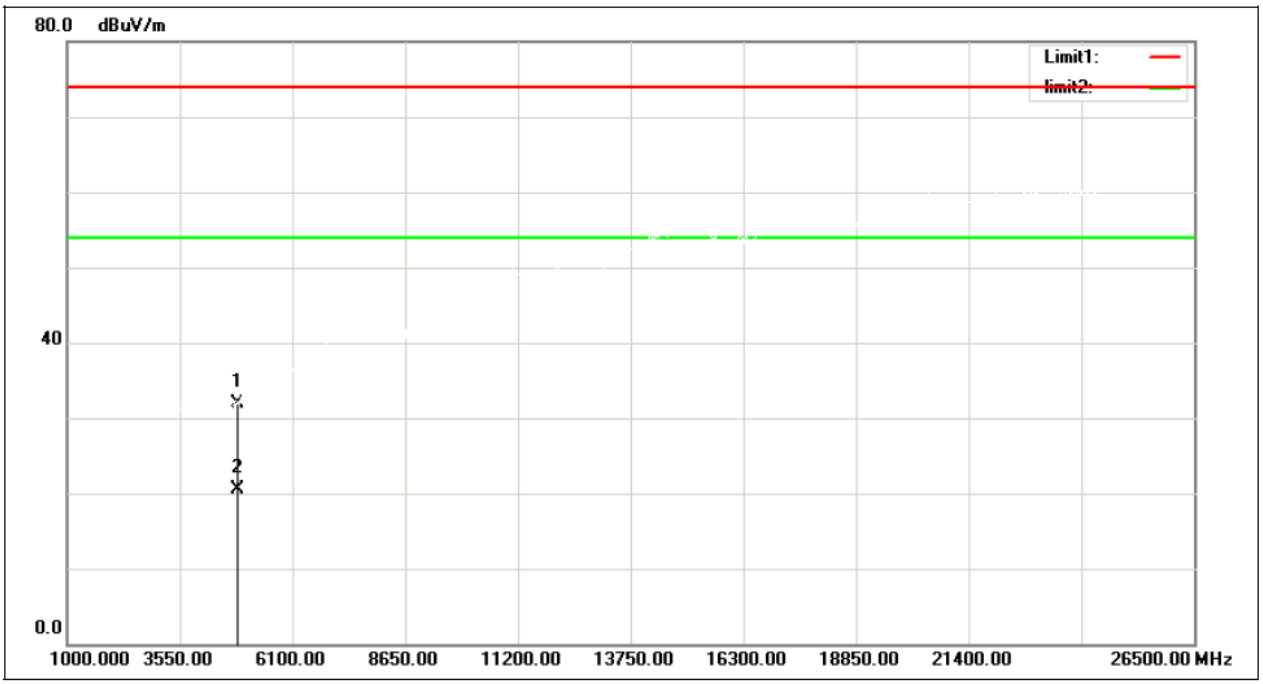
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	38.96	-7.34	31.62	74.00	-42.38	peak
2	4874.000	27.80	-7.34	20.46	54.00	-33.54	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2437 MHz

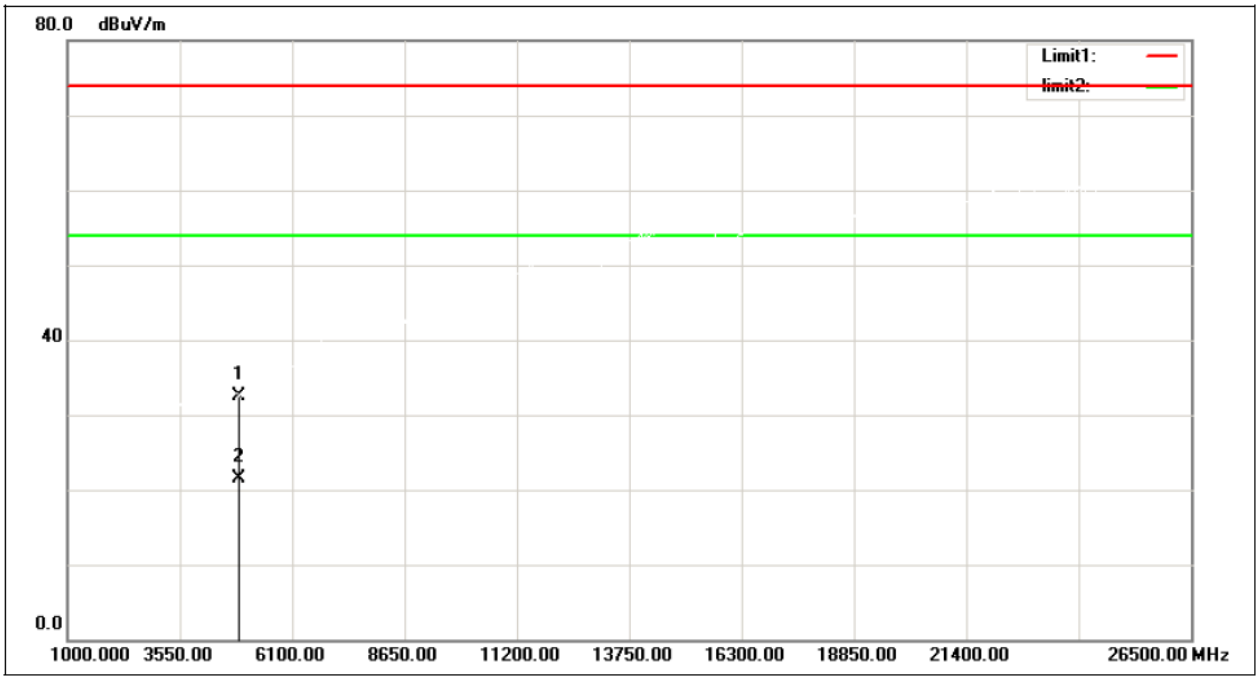
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	39.21	-7.34	31.87	74.00	-42.13	peak
2	4874.000	27.89	-7.34	20.55	54.00	-33.45	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2452 MHz

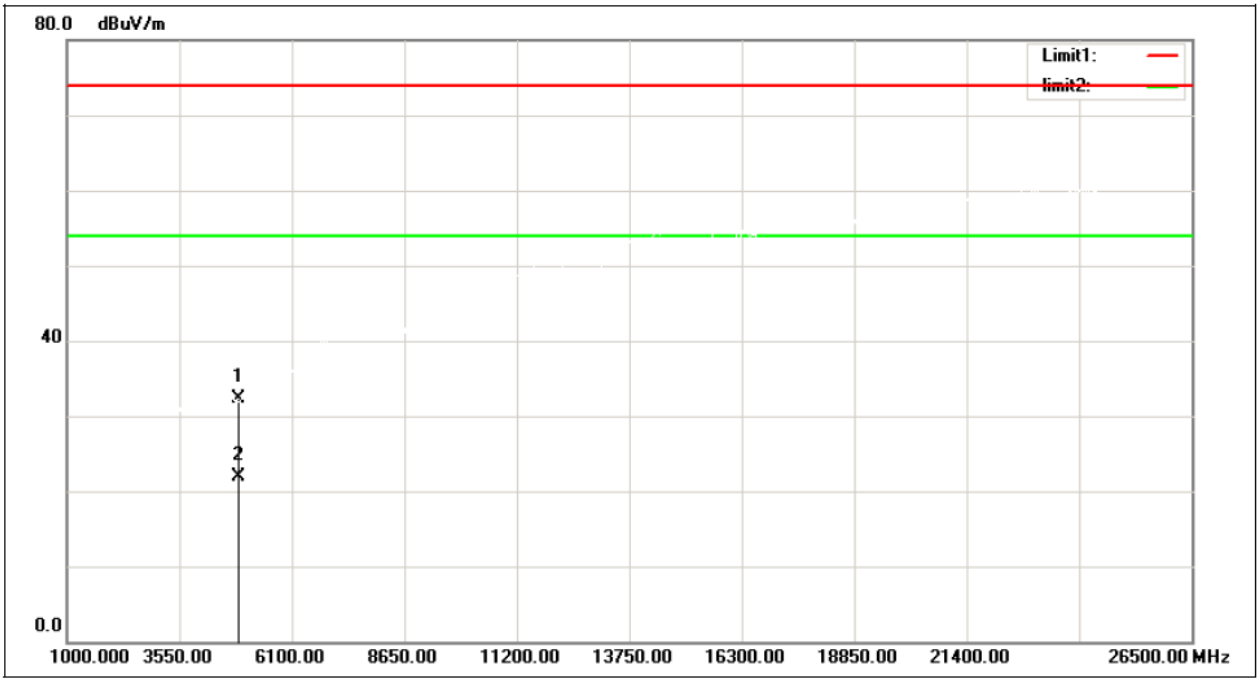
Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	39.78	-7.25	32.53	74.00	-41.47	peak
2	4904.000	28.68	-7.25	21.43	54.00	-32.57	AVG

Orthogonal Axis	X
Test Mode:	TX N-40M Mode 2452 MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	39.52	-7.25	32.27	74.00	-41.73	peak
2	4904.000	29.11	-7.25	21.86	54.00	-32.14	AVG

6BANDWIDTH TEST

6.1LIMIT

FCC Part15, Subpart C (15.247)&RSS-Gen and RSS-247		
Section	Test Item	Limit
15.247(a)(2) RSS-Gen6.7 RSS-247 5.2 (a)	6dB Bandwidth	Minimum 500 kHz
	99% Emission Bandwidth	-

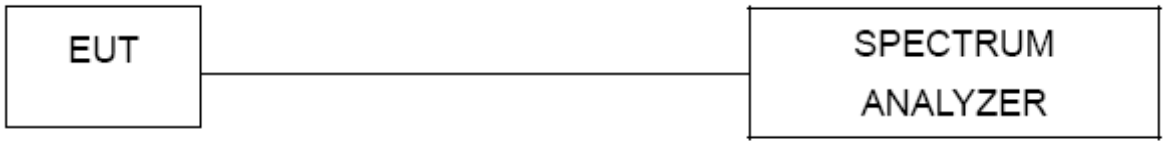
6.2TEST PROCEDURE AND SETTING

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. For 6dB Bandwidth Spectrum setting:RBW= 100KHz, VBW=300KHz, Sweep time = 2.5ms.
For 99% OBW Spectrum Setting: RBW= 300KHz, VBW=1MHz,Sweep time = 2.5ms.
c. The bandwidth was performed in accordance with method 11.8.1 of ANSI C63.10-2013.

6.3MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2022/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	N/A
3	RF Cable	Mi-cable	C10-01-01-1	100309	N/A

6.4TEST SETUP



6.5EUT OPERATION CONDITIONS

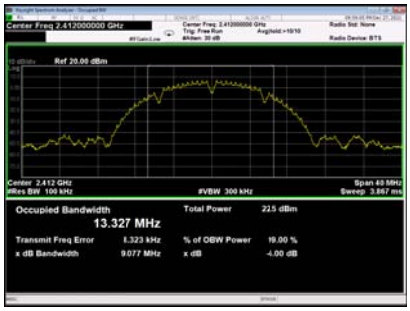
The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

6.6TESTRESULTS

TX B Mode					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Emission Bandwidth(MHz)	6dB Bandwidth Min. Limit(kHz)	Result
01	2412	9.007	13.330	500	PASS
06	2437	9.055	13.326	500	PASS
11	2462	9.068	13.341	500	PASS

6dB

CH01

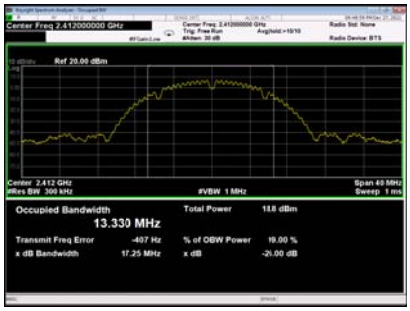


CH06

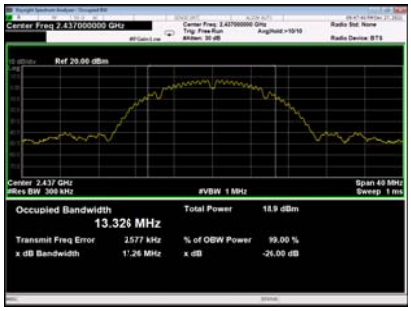
CH11

99%

CH01



CH06

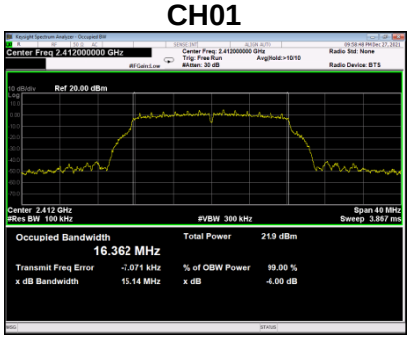


CH11

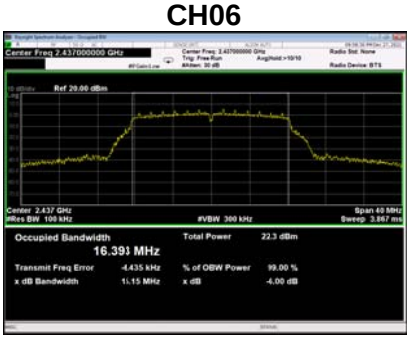
TX G Mode					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Emission Bandwidth(MHz)	6dB Bandwidth Min. Limit(kHz)	Result
01	2412	15.14	16.696	500	PASS
06	2437	15.15	16.707	500	PASS
11	2462	15.16	16.680	500	PASS

6dB

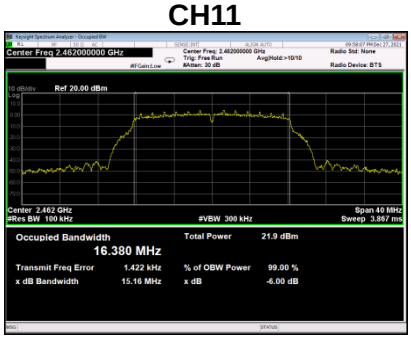
CH01



CH06

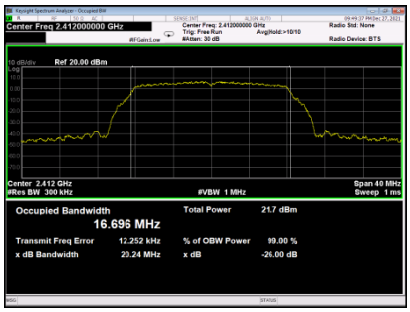


CH11

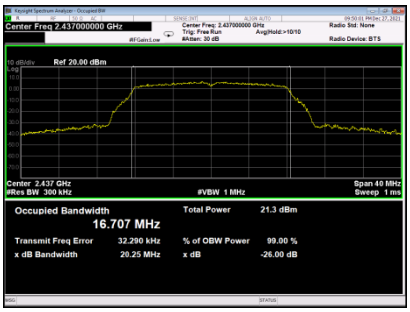


99%

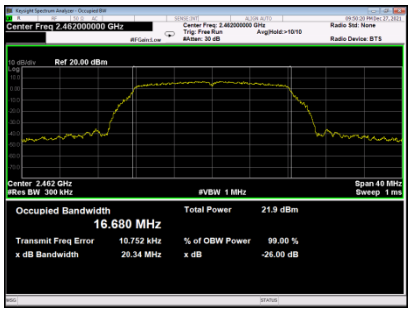
CH01



CH06



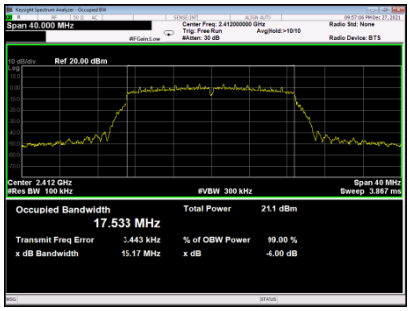
CH11



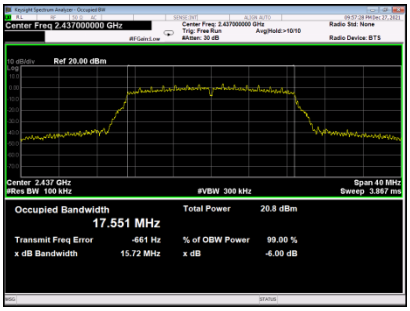
TX N (HT20) Mode					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Emission Bandwidth(MHz)	6dB Bandwidth Min. Limit(kHz)	Result
01	2412	15.17	17.624	500	PASS
06	2437	15.72	17.653	500	PASS
11	2462	16.28	17.630	500	PASS

6dB

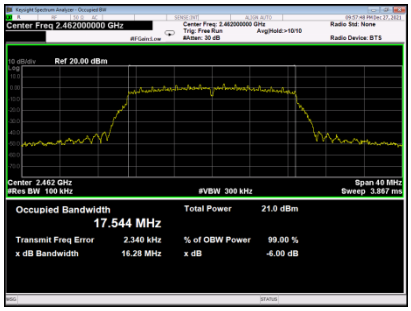
CH01



CH06

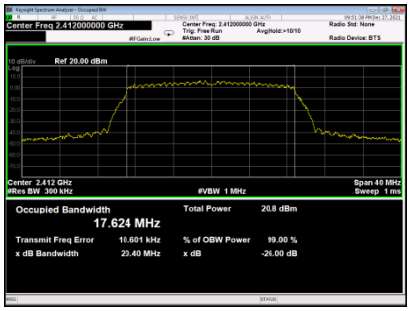


CH11

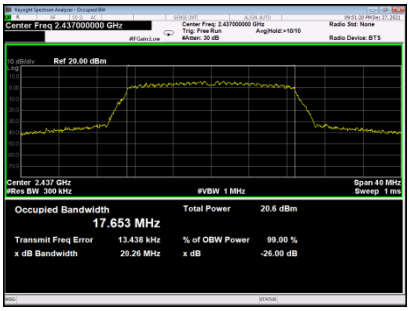


99%

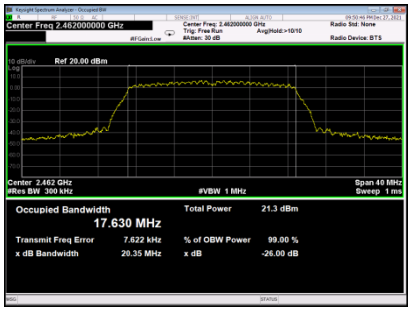
CH01



CH06



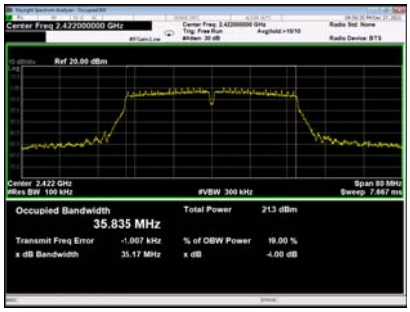
CH11



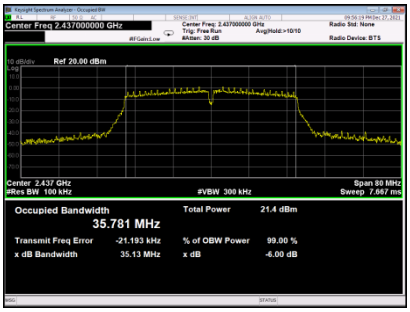
TX N (HT40) Mode					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Emission Bandwidth(MHz)	6dB Bandwidth Min. Limit(kHz)	Result
03	2422	35.17	36.319	500	PASS
06	2437	35.13	36.143	500	PASS
09	2452	35.17	36.285	500	PASS

6dB

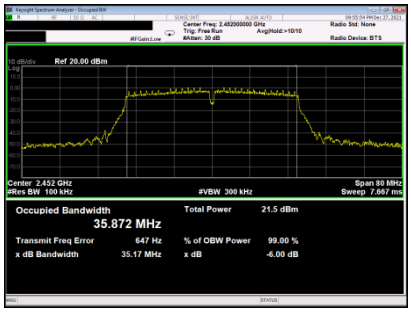
CH03



CH06

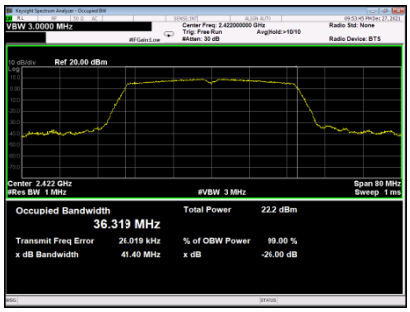


CH09



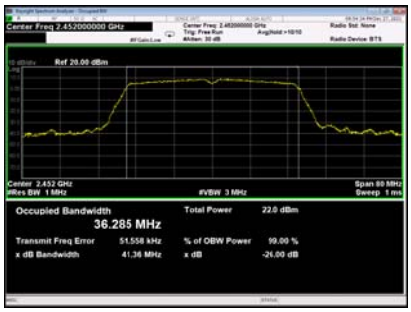
99%

CH03



CH06

CH9



7MAXIMUM OUTPUT POWER TEST

7.1LIMIT

FCC Part15, Subpart C (15.247)&RSS-247		
Section	Test Item	Limit
15.247(b)(3) RSS-2475.4 (d)	Maximum Output Power	1 Watt or 30dBm

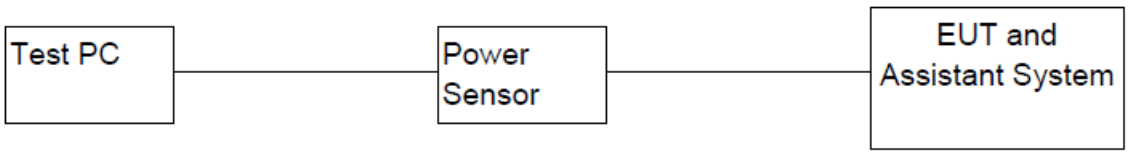
7.2TEST PROCEDURE AND SETTING

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
b. The maximum conducted output power was performed in accordance with method 11.9.1.3 of ANSI C63.10-2013.and FCC KDB 662911 D01 v02r01 Multiple Transmitter Output.

7.3MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Power Sensor	KEYSIGHT	U2021XA	MY55240009	05/24/2022
2	Attenuator	Mini-Circuits	BW-S10W2	101109	N/A
3	RF Cable	Micable	C10-01-01-1	100309	N/A
4	Test Software	KEYSIGHT	Power Panel	V3.11	N/A

7.4TEST SETUP



7.5EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

7.6TESTRESULTS

TX B Mode_Ant 1				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	17.87	0.0612	PASS
06	2437	18.06	0.0640	PASS
11	2462	17.74	0.0594	PASS
Limit	30dBm / 1W			

TX B Mode_Ant 2				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	18.43	0.0697	PASS
06	2437	18.21	0.0662	PASS
11	2462	18.10	0.0646	PASS
Limit	30dBm / 1W			

TX G Mode_Ant 1				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	21.97	0.1574	PASS
06	2437	21.59	0.1442	PASS
11	2462	21.95	0.1567	PASS
Limit	30dBm / 1W			

TX G Mode_Ant 2				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	22.49	0.1774	PASS
06	2437	22.60	0.1820	PASS
11	2462	22.63	0.1832	PASS
Limit	30dBm / 1W			

TX N (HT20) _Ant 1				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	22.08	0.1614	PASS
06	2437	21.63	0.1455	PASS
11	2462	21.81	0.1517	PASS
Limit	30dBm / 1W			

TX N (HT20) _Ant 2				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	22.03	0.1596	PASS
06	2437	21.82	0.1521	PASS
11	2462	21.94	0.1563	PASS
Limit	30dBm / 1W			

TX N (HT20) _Total				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
01	2412	25.07	0.3210	PASS
06	2437	24.74	0.2976	PASS
11	2462	24.89	0.3080	PASS
Limit	30dBm / 1W			

TX N (HT40) _Ant 1				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
03	2422	21.99	0.1581	PASS
06	2437	21.90	0.1549	PASS
09	2452	22.56	0.1803	PASS
Limit	30dBm / 1W			

TX N (HT40) _Ant 2				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
03	2422	22.69	0.1858	PASS
06	2437	22.55	0.1799	PASS
09	2452	22.59	0.1816	PASS
Limit	30dBm / 1W			

TX N (HT40) _Total				
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Result
03	2422	25.36	0.3439	PASS
06	2437	25.25	0.3348	PASS
09	2452	25.59	0.3619	PASS
Limit	30dBm / 1W			

8CONDUCTED SPURIOUS EMISSIONS

8.1 LIMIT

For FCC

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.

For ISED

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

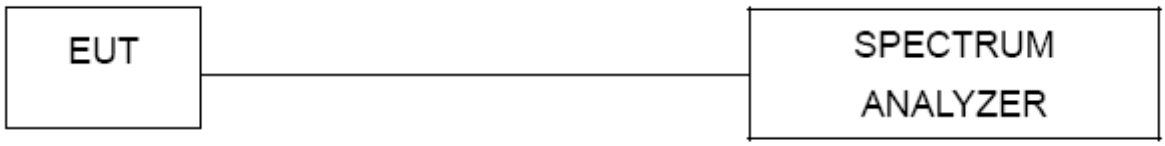
8.2TEST PROCEDURE AND SETTING

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

8.3MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2022/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	N/A
3	RF Cable	Mi-cable	C10-01-01-1	100309	N/A

8.4TEST SETUP



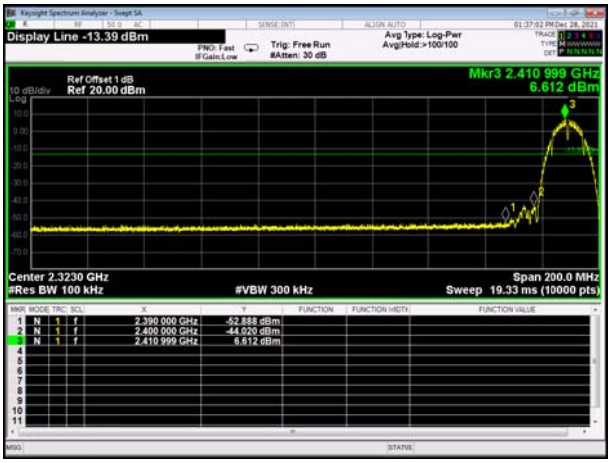
8.5EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5unless otherwise a special operating condition is specified in the follows during the testing.

8.6TESTRESULTS

TX B Mode_Ant 1

Bandedge-CH01



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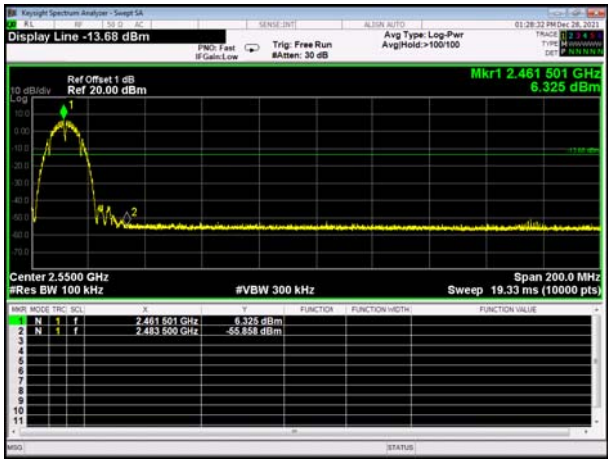
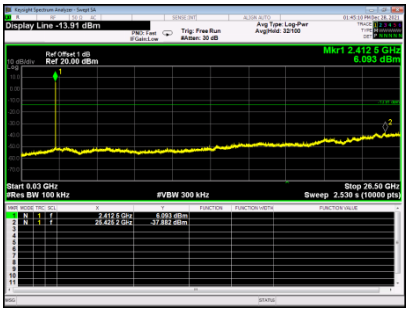
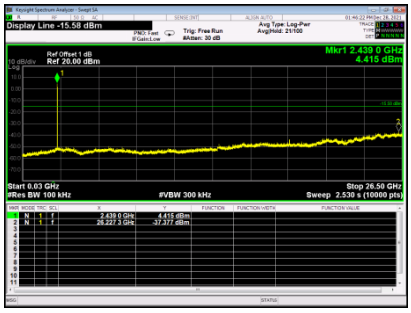


10th Harmonic of the fundamental frequency

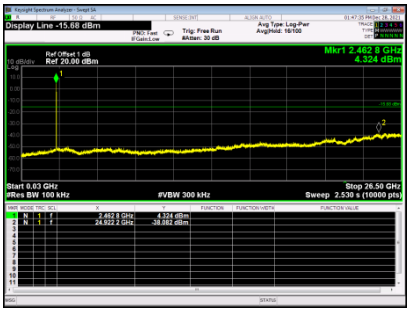
CH01



CH06

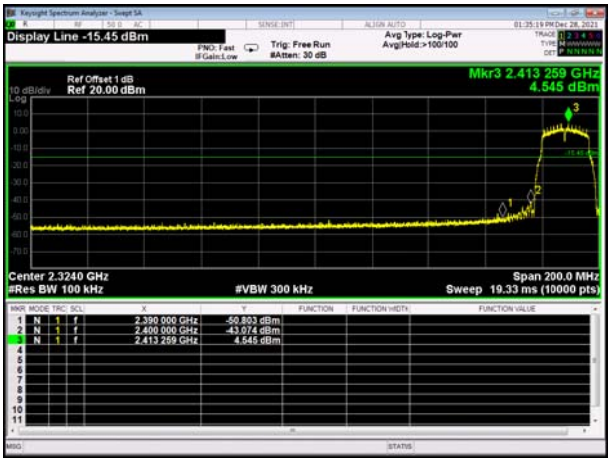


CH11

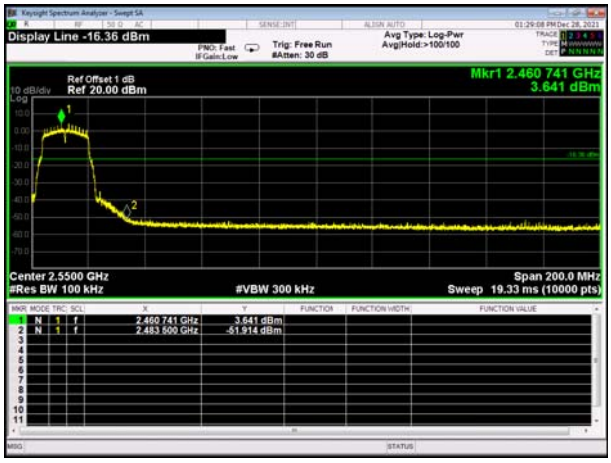


TX G Mode_Ant 1

Bandedge-CH01

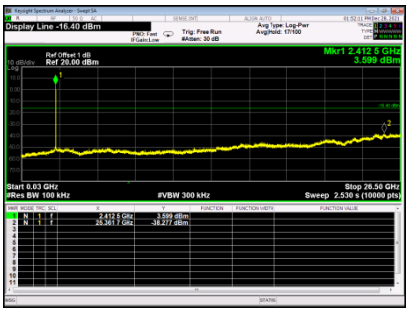


Bandedge-CH11

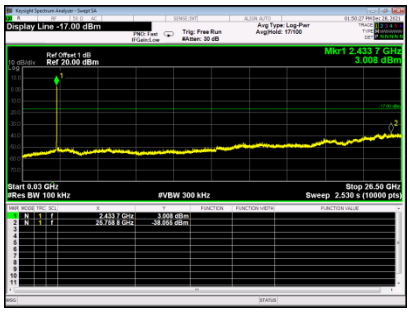


10th Harmonic of the fundamental frequency

CH01



CH06



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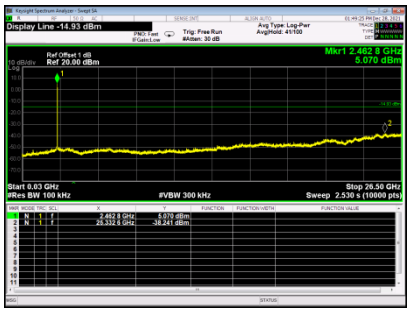
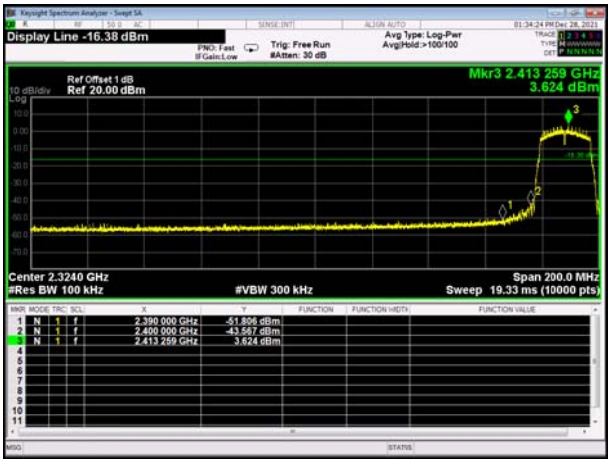
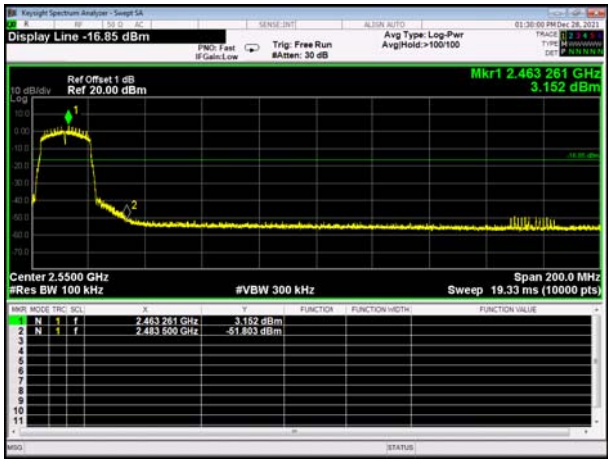


TX N (HT20) Mode _Ant 1

Bandedge-CH01

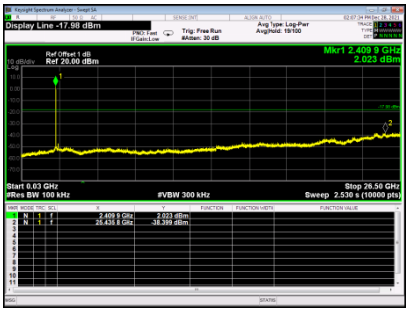


Bandedge-CH11

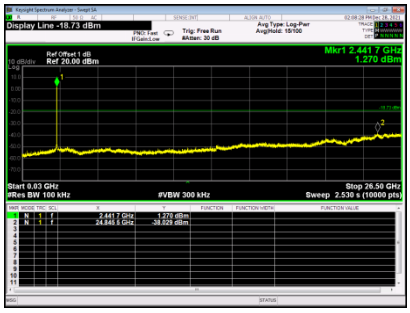


10th Harmonic of the fundamental frequency

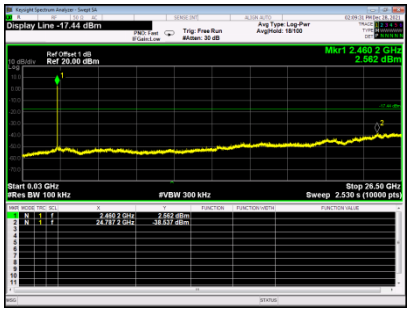
CH01



CH06

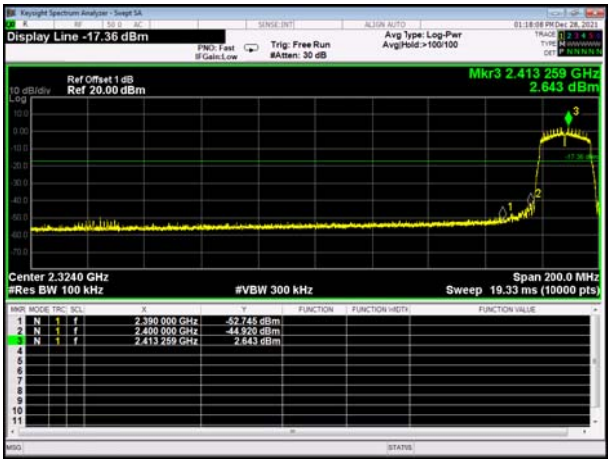


CH11

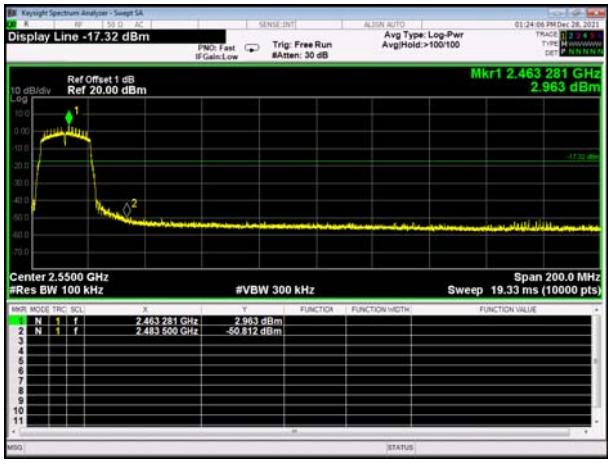


TX N (HT20) Mode _Ant 2

Bandedge-CH01

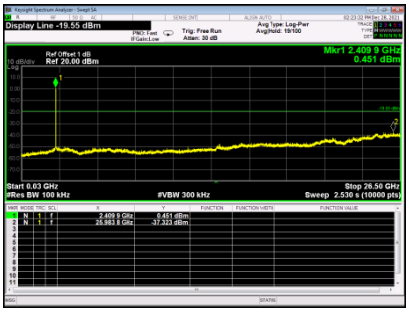


Bandedge-CH11

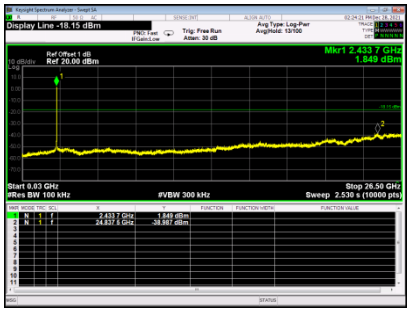


10th Harmonic of the fundamental frequency

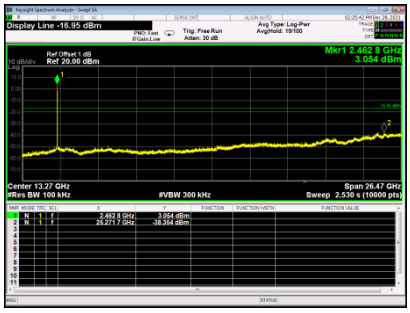
CH01



CH06

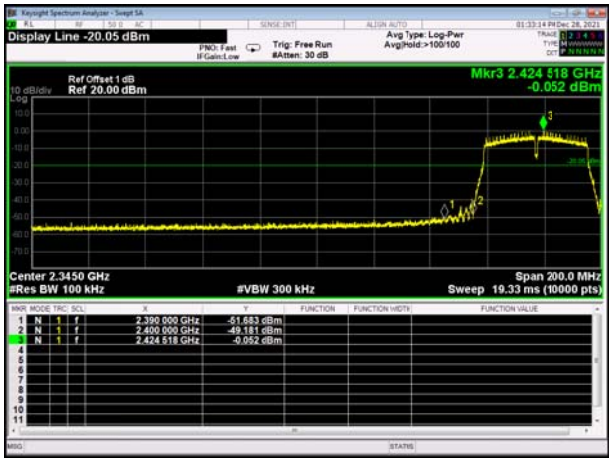


CH11

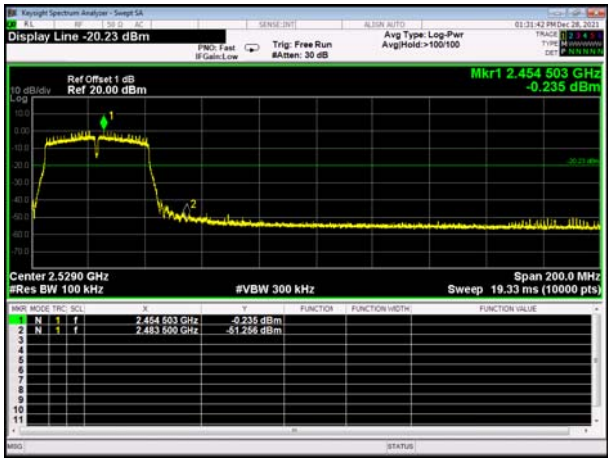


TX N (HT40) Mode _Ant 1

Bandedge-CH03

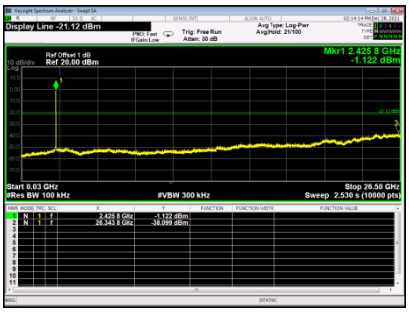


Bandedge-CH09

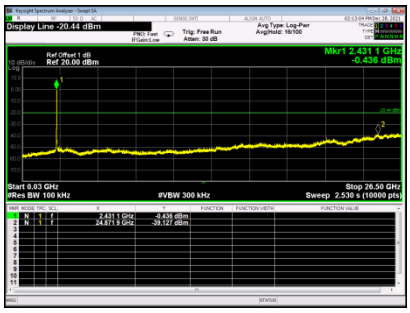


10th Harmonic of the fundamental frequency

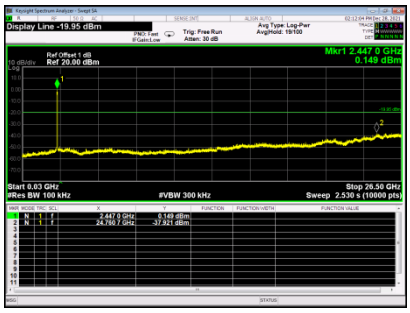
CH03



CH06

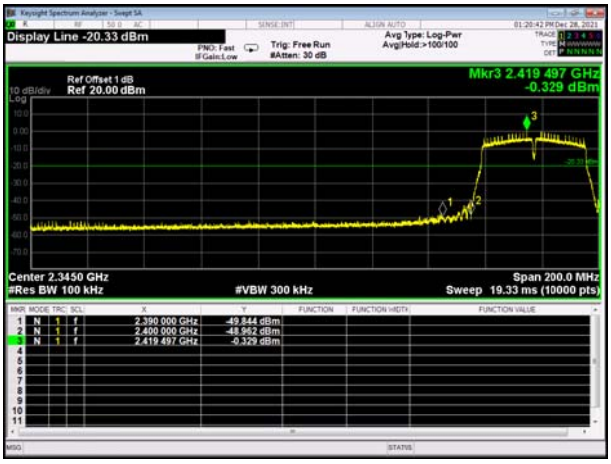


CH09

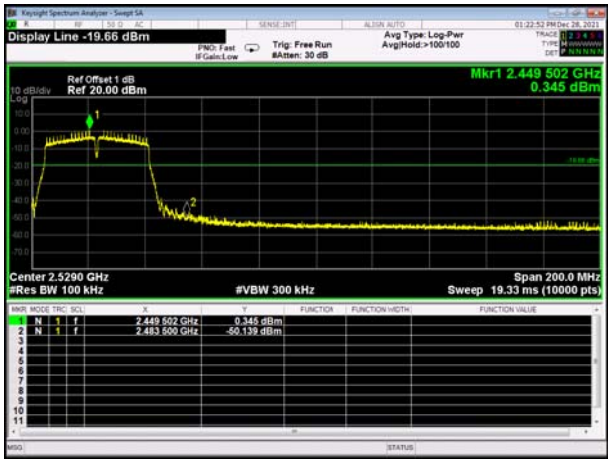


TX N (HT40) Mode _Ant 2

Bandedge-CH03

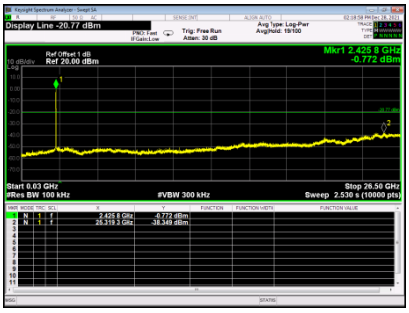


Bandedge-CH09

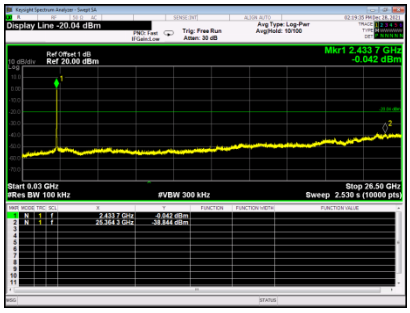


10th Harmonic of the fundamental frequency

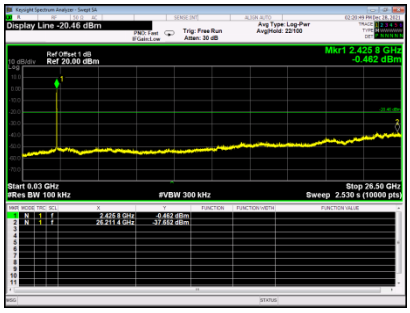
CH03



CH06



CH09



9POWER SPECTRAL DENSITY TEST

9.1LIMIT

FCC Part15, Subpart C (15.247)&RSS-247		
Section	Test Item	Limit
15.247(e) RSS-2475.2 (b)	Power Spectral Density	8 dBm (in any 3 kHz)

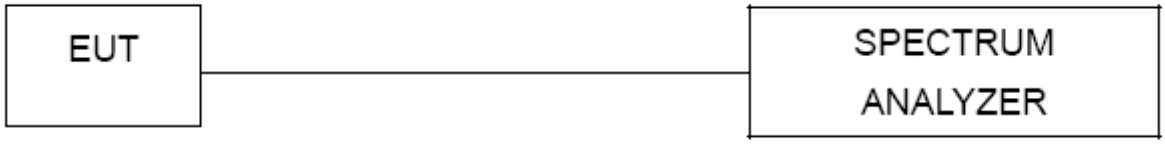
9.2TEST PROCEDURE AND SETTING

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = Auto.
c. The Power Spectral Density was performed in accordance with method11.10.2 of ANSI C63.10-2013.

9.3MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2022/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	N/A
3	RF Cable	Mi-cable	C10-01-01-1	100309	N/A

9.4TEST SETUP



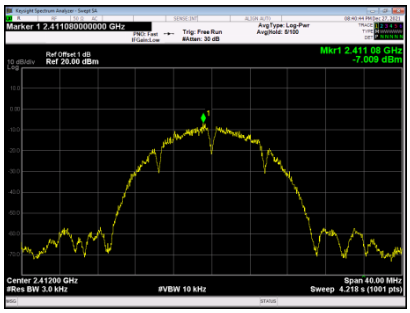
9.5EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.5 unless otherwise a special operating condition is specified in the follows during the testing.

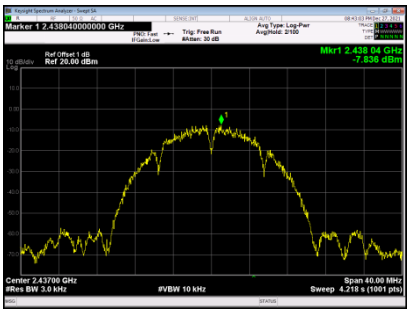
9.6TESTRESULTS

TX B Mode_Ant 1				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
01	2412	-7.009	8	PASS
06	2437	-7.836	8	PASS
11	2462	-8.305	8	PASS

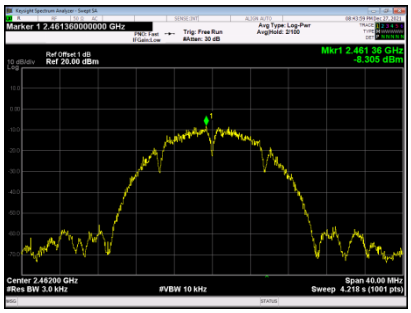
CH01



CH06

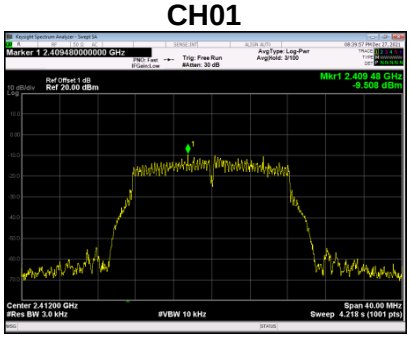


CH11

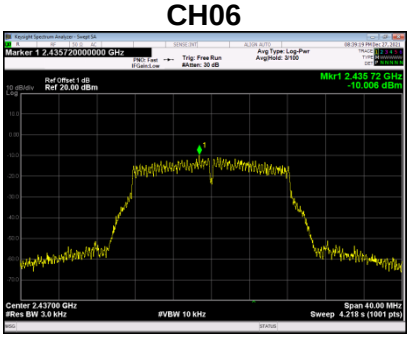


TX G Mode_Ant 1				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
01	2412	-9.508	8	PASS
06	2437	-10.006	8	PASS
11	2462	-9.609	8	PASS

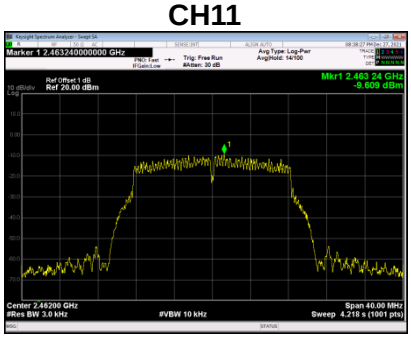
CH01



CH06

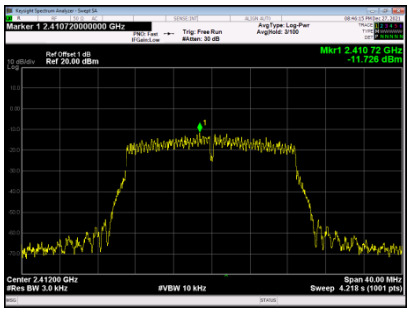


CH11

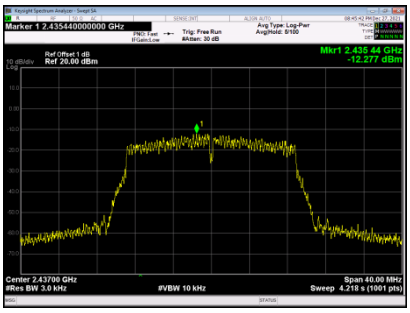


TX N (HT20) Mode_Ant 1				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
01	2412	-11.726	8	PASS
06	2437	-12.277	8	PASS
11	2462	-10.896	8	PASS

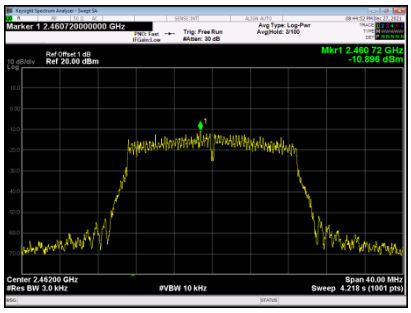
CH01



CH06

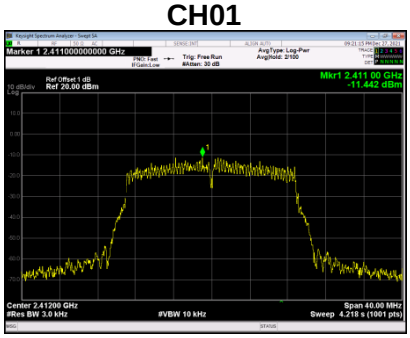


CH11

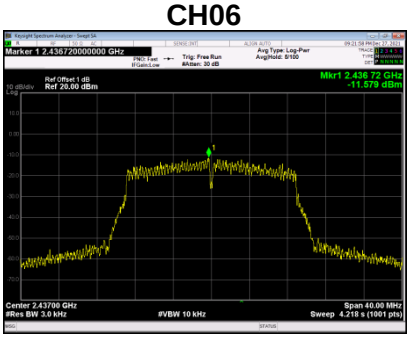


TX N (HT20) Mode_Ant 2				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
01	2412	-11.442	8	PASS
06	2437	-11.579	8	PASS
11	2462	-12.388	8	PASS

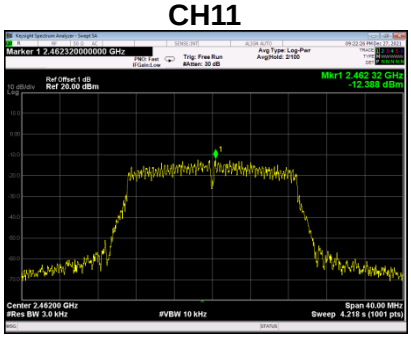
CH01



CH06



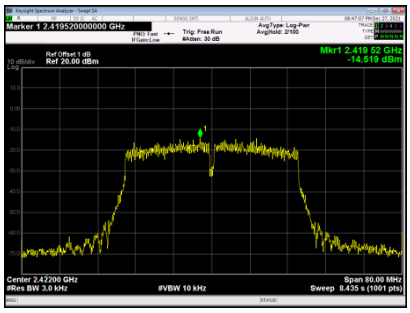
CH11



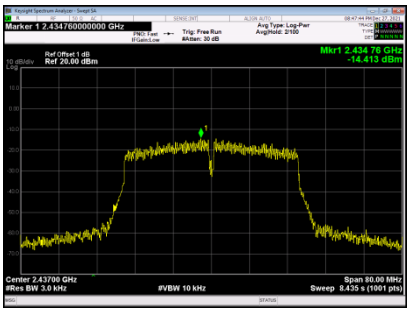
TX N (HT20) Mode_Total				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
01	2412	-8.571	8	PASS
06	2437	-8.904	8	PASS
11	2462	-8.568	8	PASS

TX N (HT40) Mode_Ant 1				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
03	2412	-14.519	8	PASS
06	2437	-14.413	8	PASS
09	2452	-14.392	8	PASS

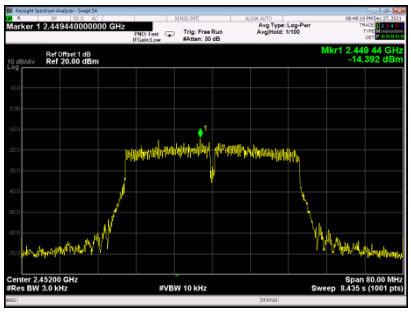
CH03



CH06

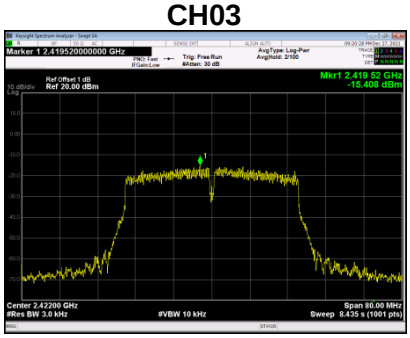


CH09

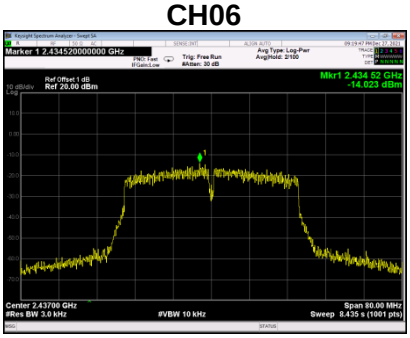


TX N (HT40) Mode_Ant 2				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
03	2412	-15.408	8	PASS
06	2437	-14.023	8	PASS
09	2452	-15.780	8	PASS

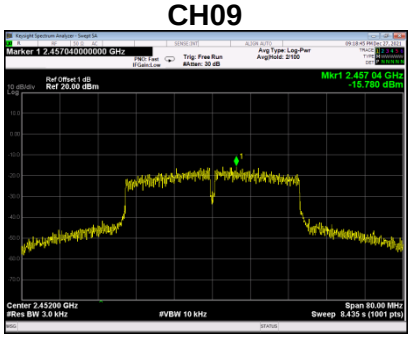
CH03



CH06



CH09



TX N (HT40) Mode_Total				
Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Limit: <dBm/3KHz	Result
03	2412	-11.930	8	PASS
06	2437	-11.203	8	PASS
09	2452	12.020	8	PASS

10FREQUENCY STABILITY MEASUREMENT

10.1LIMIT

RSS-Gen			
Section	Test Item	Limit	Frequency Range (MHz)
RSS-Gen 6.11	Frequency Stability	Specified in the user's manual	2412-2462

10.2TEST PROCEDURE AND SETTING

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

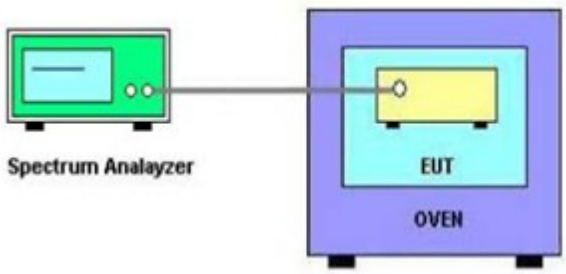
b. Spectrum Setting:

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	10kHz
Sweep Time	Auto

10.3MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2022/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	N/A
3	RF Cable	Mi-cable	C10-01-01-1	100309	N/A
4	Temperature conditioning	Guan Jian.HTH1000	-20-130℃	GJ1000-10D001	N/A
5	DC Power Supply	G.KE	IPR-10010D	010931954	N/A

10.4TEST SETUP



10.5EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

10.6 TEST RESULTS

	Temperature vs. Frequency Stability	
Voltage	Temperature	Measurement Frequency (MHz)
3.3V	(℃)	2412
	-20	2411.992089
	25	2411.989529
	50	2411.988989
2.2V	25	2411.990829
Max. Deviation (MHz)		-0.011011
Max. Deviation (ppm)		-4.565

Note: 2.2V is the end point voltage, and products below 2.2V will cease working.

END OF TEST REPORT