FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	PAX Technology Limited
Address:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Hong Kong China

Manufacturer or Supplier:	PAX Computer Technology (Shenzhen) Co., Ltd.
Address:	401 and 402, Building 3, Shenzhen Software Park, Nanshan District, Shenzhen City, Guangdong Province, P.R.C.
Product:	Smart Mobile Payment Terminal
Brand Name:	PAX
Model Name:	A920
FCC ID:	V5PA920MG
Date of tests:	Jan. 07, 2022 ~ Mar. 04, 2022

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

☒ **ANSI C63.10-2013**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang	Approved by Luke Lu
Engineer / Mobile Department	Manager / Mobile Department
Date: Mar. 04, 2022	Date: Mar. 04, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22010007RF01	Original release	Mar. 04, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**
15.207	AC Power Conducted Emission	Compliance
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

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

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Smart Mobile Payment Terminal
BRAND NAME	PAX
MODEL NAME	A920
NOMINAL VOLTAGE	5Vdc (adapter) 3.7Vdc (Li-ion, battery)
MODULATION	CCK, OFDM
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n20: up to 65 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20)
MAX. OUTPUT POWER	WLAN: 136.77mW (Maximum)
ANTENNA TYPE	PIFA Antenna with 0.8dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: unshielded without ferrite, 1.0meter

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	/	IS900	Capacity：3.7vdc 5250mAh
AC Adapter	/	GLH50D2000HW	I/P:100-240Vac, 0.4A O/P: 5Vdc, 2A
USB Cable	/	/	Signal Line, 1.0meter

2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	1	OFDM	MCS0

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0

POWER LINE CONDUCTED EMISSION TEST

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	11	OFDM	MCS0

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	CCK	1.0
802.11g	1 to 11	1, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 11	OFDM	MCS0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	5V By Adapter	Carl Xie
RE≥1G	23deg. C, 70%RH	5V By Adapter	Carl Xie
PLC	25deg. C, 52%RH	5V By Adapter	Lily Zhao
APCM	25deg. C, 60%RH	5V By Adapter	Lily Zhao

2.3 Duty Cycle of Test Signal

Please Refer to Appendix Of this test report.

WORST-CASE DATA:

Measured Duty Cycle		
Mode		Duty Cycle [%]
		ANT1
WIFI 2.4GHz	11B	97.98
	11G	87.16
	11N20	86.26

Note:

Duty cycle of test signal is < 98%, duty factor shall be considered.

2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2013

Note：

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thnikpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Mar. 03,21	Mar. 02,22
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Mar. 02,22	Mar. 01,23
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 22,21	Feb. 21,22
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 21,22	Feb. 20,23

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

3.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

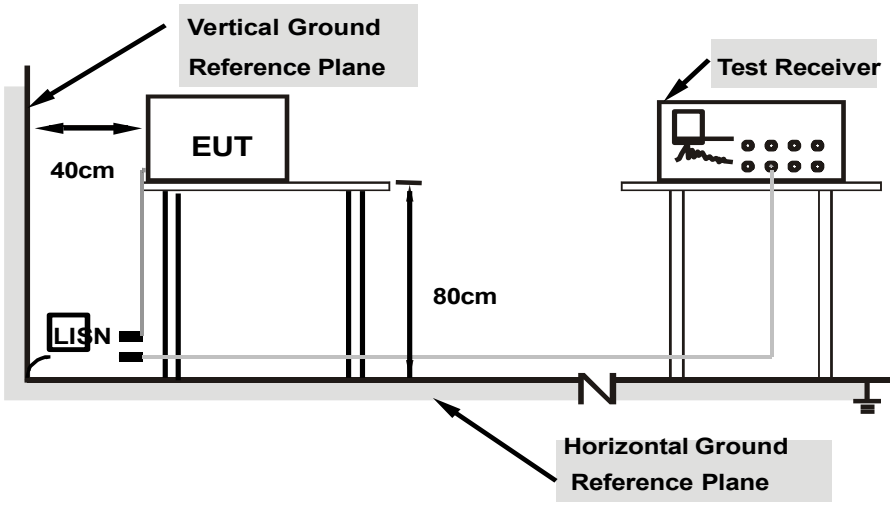
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

a. Turned on the power and connected of all equipment.
b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

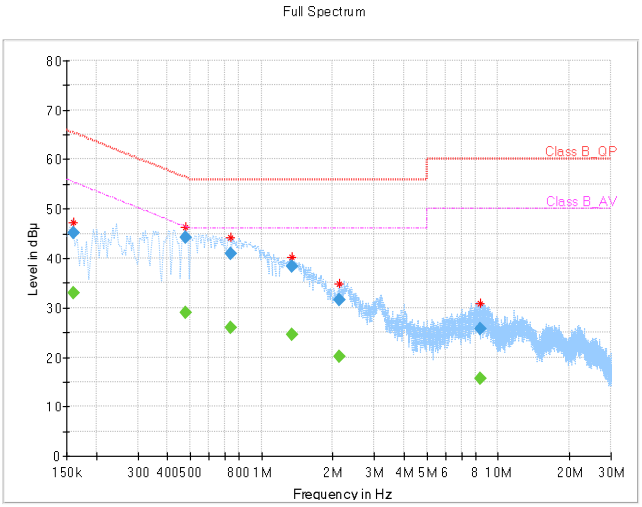
3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 55%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.160000	---	32.97	55.46	22.49	L1	ON	9.7
0.160000	45.15	---	65.46	20.31	L1	ON	9.7
0.480000	---	29.09	46.34	17.25	L1	ON	9.7
0.480000	44.21	---	56.34	12.13	L1	ON	9.7
0.744000	---	25.99	46.00	20.01	L1	ON	9.7
0.744000	40.95	---	56.00	15.05	L1	ON	9.7
1.340000	---	24.48	46.00	21.52	L1	ON	9.7
1.340000	38.48	---	56.00	17.52	L1	ON	9.7
2.140000	---	20.19	46.00	25.81	L1	ON	9.7
2.140000	31.48	---	56.00	24.52	L1	ON	9.7
8.448000	---	15.72	50.00	34.28	L1	ON	9.7
8.448000	25.81	---	60.00	34.19	L1	ON	9.7

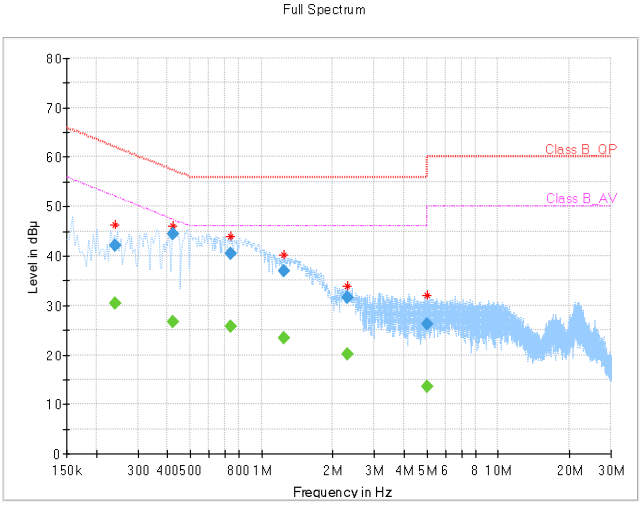
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value - Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 55%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.240000	---	30.44	52.10	21.66	N	ON	9.7
0.240000	42.22	---	62.10	19.88	N	ON	9.7
0.424000	---	26.69	47.37	20.68	N	ON	9.7
0.424000	44.42	---	57.37	12.95	N	ON	9.7
0.744000	---	25.79	46.00	20.21	N	ON	9.7
0.744000	40.36	---	56.00	15.64	N	ON	9.7
1.240000	---	23.31	46.00	22.69	N	ON	9.8
1.240000	37.05	---	56.00	18.95	N	ON	9.8
2.316000	---	20.12	46.00	25.88	N	ON	9.8
2.316000	31.69	---	56.00	24.31	N	ON	9.8
5.028000	---	13.56	50.00	36.44	N	ON	9.8
5.028000	26.12	---	60.00	33.88	N	ON	9.8

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value - Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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).

FREQUENCIES (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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Aug. 21,21	Aug. 20,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 26, 21	Aug. 25, 22
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Chamber.

3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

3.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. 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 from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

Note:

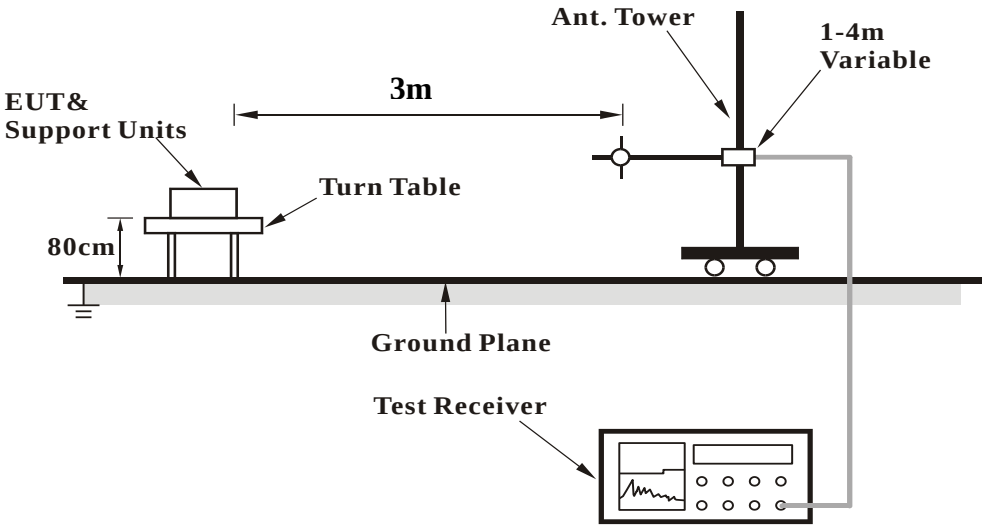
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

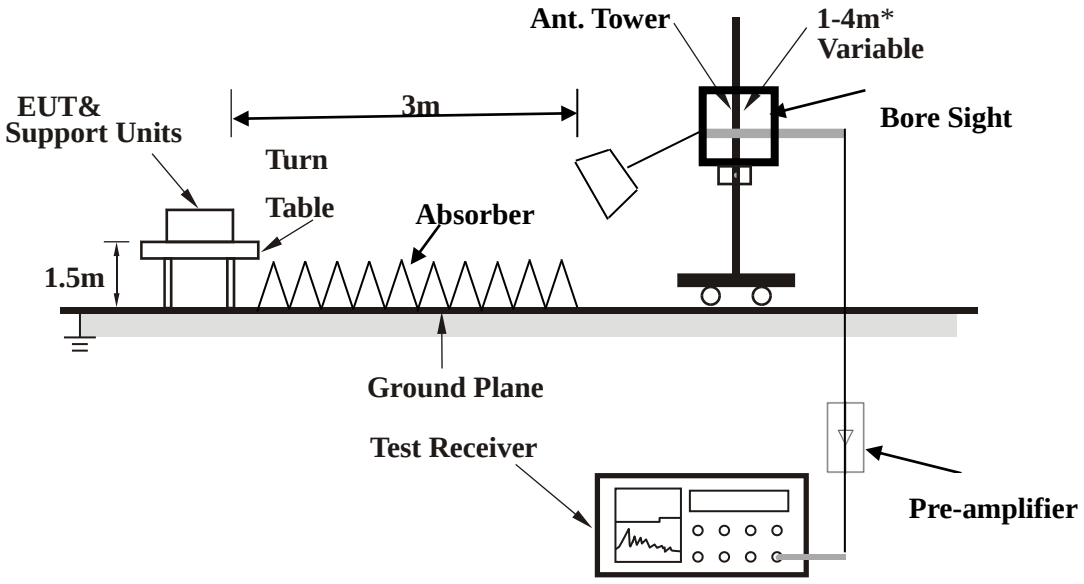
No deviation

3.2.5 TEST SETUP

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.2.6 EUT OPERATING CONDITIONS

a. Set the EUT under full load condition and placed them on a testing table.

b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

c. The necessary accessories enable the EUT in full functions.

3.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA :

30 MHz – 1GHz data:

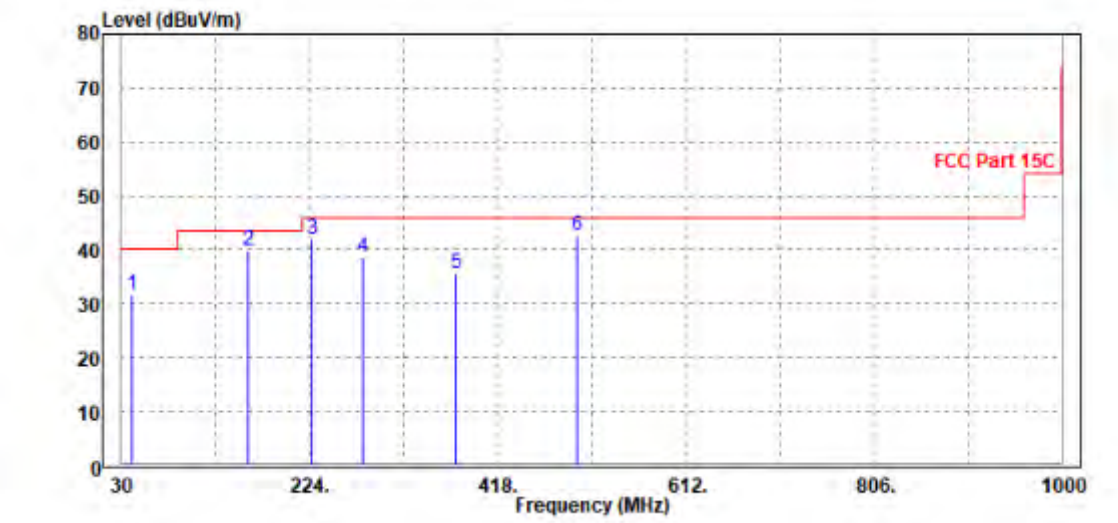
802.11n (20MHz)

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
41.64	31.62	55.62	40	-8.38	12.64	0.84	37.48	200	143	QP
159.98	39.81	64.04	43.5	-3.69	10.9	1.6	36.73	200	59	QP
226.91	42.07	64.58	46	-3.93	12.18	1.91	36.6	150	145	QP
279.29	38.6	59.52	46	-7.4	13.67	2.12	36.71	100	260	QP
375.32	35.64	53.8	46	-10.36	16.18	2.47	36.81	100	247	QP
500.45	42.59	57.95	46	-3.41	18.71	2.93	37	200	133	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.

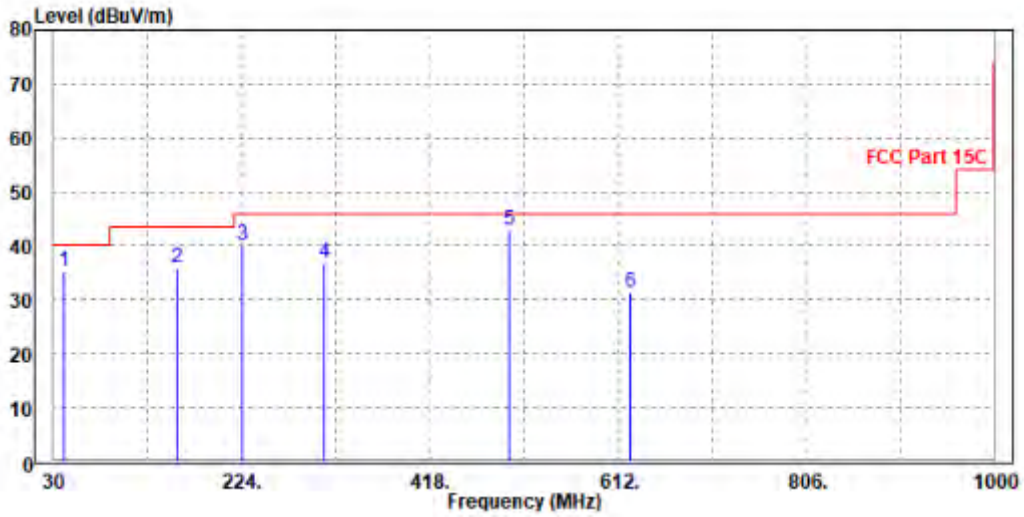


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
40.67	35.22	59.9	40	-4.78	11.99	0.83	37.5	150	290	QP
158.04	35.82	59.76	43.5	-7.68	11.21	1.6	36.75	150	287	QP
224.97	40.04	62.09	46	-5.96	12.65	1.9	36.6	100	77	QP
309.36	36.68	55.99	46	-9.32	15.21	2.24	36.76	100	78	QP
500.45	42.88	57.84	46	-3.12	19.11	2.93	37	150	296	QP
624.61	31.25	44.12	46	-14.75	21.24	3.3	37.41	150	360	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.



ABOVE 1GHz WORST-CASE DATA:

Note: For higher frequency, the emission is too low to be detected.

802.11b:

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	55.43	64.19	74	-18.57	31.75	5.86	46.37	100	290	Peak
2390	50.25	59.01	54	-3.75	31.75	5.86	46.37	100	290	Average
2412	103.58	112.24	-	-	31.82	5.89	46.37	200	233	Peak
2412	102.26	110.92	-	-	31.82	5.89	46.37	200	233	Average
2483.5	52.15	60.48	74	-21.85	32.05	5.99	46.37	100	144	Peak
2483.5	44.49	52.82	54	-9.51	32.05	5.99	46.37	100	144	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	56.45	64.82	74	-17.55	32.14	5.86	46.37	100	267	Peak
2390	49.67	58.04	54	-4.33	32.14	5.86	46.37	100	267	Average
2412	102.13	110.42	-	-	32.19	5.89	46.37	200	154	Peak
2412	101.08	109.37	-	-	32.19	5.89	46.37	200	154	Average
2483.5	52.93	60.95	74	-21.07	32.36	5.99	46.37	100	144	Peak
2483.5	44.82	52.84	54	-9.18	32.36	5.99	46.37	100	144	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	55.55	64.31	74	-18.45	31.75	5.86	46.37	150	263	Peak
2390	49.44	58.2	54	-4.56	31.75	5.86	46.37	150	263	Average
2437	103.34	111.88	-	-	31.9	5.93	46.37	200	154	Peak
2437	101.91	110.45	-	-	31.9	5.93	46.37	200	154	Average
2483.5	52.06	60.39	74	-21.94	32.05	5.99	46.37	100	186	Peak
2483.5	45.45	53.78	54	-8.55	32.05	5.99	46.37	100	186	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	55.59	63.96	74	-18.41	32.14	5.86	46.37	150	264	Peak
2390	48.85	57.22	54	-5.15	32.14	5.86	46.37	150	264	Average
2437	100.95	109.14	-	-	32.25	5.93	46.37	200	156	Peak
2437	99.6	107.79	-	-	32.25	5.93	46.37	200	156	Average
2483.5	52.19	60.21	74	-21.81	32.36	5.99	46.37	100	308	Peak
2483.5	45.08	53.1	54	-8.92	32.36	5.99	46.37	100	308	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
   2. 2437MHz: Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.89	60.65	74	-22.11	31.75	5.86	46.37	200	222	Peak
2390	44.43	53.19	54	-9.57	31.75	5.86	46.37	200	222	Average
2462	98.63	107.06	-	-	31.98	5.96	46.37	100	135	Peak
2462	97.47	105.9	-	-	31.98	5.96	46.37	100	35	Average
2483.5	52.76	61.09	74	-21.24	32.05	5.99	46.37	100	233	Peak
2483.5	45.04	53.37	54	-8.96	32.05	5.99	46.37	100	233	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.81	61.18	74	-21.19	32.14	5.86	46.37	150	255	Peak
2390	44.58	52.95	54	-9.42	32.14	5.86	46.37	150	255	Average
2462	96.88	104.98	-	-	32.31	5.96	46.37	100	208	Peak
2462	95.55	103.65	-	-	32.31	5.96	46.37	200	208	Average
2483.5	52.5	60.52	74	-21.5	32.36	5.99	46.37	100	238	Peak
2483.5	45.15	53.17	54	-8.85	32.36	5.99	46.37	100	238	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	62.1	70.86	74	-11.9	31.75	5.86	46.37	150	300	Peak
2390	50.61	59.37	54	-3.39	31.75	5.86	46.37	150	300	Average
2412	99.6	108.26	-	-	31.82	5.89	46.37	100	113	Peak
2412	91.76	100.42	-	-	31.82	5.89	46.37	100	113	Average
2483.5	52.06	60.39	74	-21.94	32.05	5.99	46.37	200	156	Peak
2483.5	44.49	52.82	54	-9.51	32.05	5.99	46.37	200	156	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	61.67	70.04	74	-12.33	32.14	5.86	46.37	100	160	Peak
2390	50.39	58.76	54	-3.61	32.14	5.86	46.37	100	160	Average
2412	99.8	108.09	-	-	32.19	5.89	46.37	200	267	Peak
2412	91.94	100.23	-	-	32.19	5.89	46.37	200	267	Average
2483.5	52.54	60.56	74	-21.46	32.36	5.99	46.37	100	300	Peak
2483.5	45.03	53.05	54	-8.97	32.36	5.99	46.37	100	300	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.33	60.09	74	-22.67	31.75	5.86	46.37	100	132	Peak
2390	44.89	53.65	54	-9.11	31.75	5.86	46.37	100	132	Average
2437	100.24	108.78	-	-	31.9	5.93	46.37	200	309	Peak
2437	92.63	101.17	-	-	31.9	5.93	46.37	200	309	Average
2483.5	52.52	60.85	74	-21.48	32.05	5.99	46.37	100	345	Peak
2483.5	44.82	53.15	54	-9.18	32.05	5.99	46.37	100	345	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.83	60.2	74	-22.17	32.14	5.86	46.37	100	333	Peak
2390	45.12	53.49	54	-8.88	32.14	5.86	46.37	100	333	Average
2437	100.81	109	-	-	32.25	5.93	46.37	200	222	Peak
2437	92.63	100.82	-	-	32.25	5.93	46.37	200	222	Average
2483.5	52.76	60.78	74	-21.24	32.36	5.99	46.37	100	300	Peak
2483.5	45.55	53.57	54	-8.45	32.36	5.99	46.37	100	300	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
   2. 2437MHz: Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.85	60.61	74	-22.15	31.75	5.86	46.37	150	255	Peak
2390	44.18	52.94	54	-9.82	31.75	5.86	46.37	150	255	Average
2462	100.65	109.08	-	-	31.98	5.96	46.37	100	133	Peak
2462	92.85	101.28	-	-	31.98	5.96	46.37	100	133	Average
2483.5	59.49	67.82	74	-14.51	32.05	5.99	46.37	150	200	Peak
2483.5	48.5	56.83	54	-5.5	32.05	5.99	46.37	150	200	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.75	60.12	74	-22.25	32.14	5.86	46.37	150	222	Peak
2390	44.73	53.1	54	-9.27	32.14	5.86	46.37	150	222	Average
2462	99.04	107.14	-	-	32.31	5.96	46.37	100	145	Peak
2462	91.7	99.8	-	-	32.31	5.96	46.37	100	145	Average
2483.5	57.73	65.75	74	-16.27	32.36	5.99	46.37	150	279	Peak
2483.5	47.84	55.86	54	-6.16	32.36	5.99	46.37	150	279	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	60.98	69.74	74	-13.02	31.75	5.86	46.37	200	230	Peak
2390	50.81	59.57	54	-3.19	31.75	5.86	46.37	200	230	Average
2412	98.4	107.06	-	-	31.82	5.89	46.37	100	145	Peak
2412	91.09	99.75	-	-	31.82	5.89	46.37	100	145	Average
2483.5	52.78	61.11	74	-21.22	32.05	5.99	46.37	150	267	Peak
2483.5	45.07	53.4	54	-8.93	32.05	5.99	46.37	150	267	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	64.59	72.96	74	-9.41	32.14	5.86	46.37	200	236	Peak
2390	50.9	59.27	54	-3.1	32.14	5.86	46.37	200	236	Average
2412	98.28	106.57	-	-	32.19	5.89	46.37	100	149	Peak
2412	90.78	99.07	-	-	32.19	5.89	46.37	100	149	Average
2483.5	53.71	61.73	74	-20.29	32.36	5.99	46.37	150	285	Peak
2483.5	45.33	53.35	54	-8.67	32.36	5.99	46.37	150	285	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.79	61.55	74	-21.21	31.75	5.86	46.37	150	295	Peak
2390	44.93	53.69	54	-9.07	31.75	5.86	46.37	150	295	Average
2437	98.52	107.06	–	–	31.9	5.93	46.37	200	260	Peak
2437	91.13	99.67	–	–	31.9	5.93	46.37	200	260	Average
2483.5	53.19	61.52	74	-20.81	32.05	5.99	46.37	200	206	Peak
2483.5	44.94	53.27	54	-9.06	32.05	5.99	46.37	200	206	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	53.47	61.84	74	-20.53	32.14	5.86	46.37	150	244	Peak
2390	45.81	54.18	54	-8.19	32.14	5.86	46.37	150	244	Average
2437	97.88	106.07	–	–	32.25	5.93	46.37	200	168	Peak
2437	90.94	99.13	–	–	32.25	5.93	46.37	200	168	Average
2483.5	52.41	60.43	74	-21.59	32.36	5.99	46.37	150	232	Peak
2483.5	44.79	52.81	54	-9.21	32.36	5.99	46.37	150	232	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
   2. 2437MHz: Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	53.48	62.24	74	-20.52	31.75	5.86	46.37	100	265	Peak
2390	42.97	51.73	54	-11.03	31.75	5.86	46.37	100	265	Average
2462	92.15	100.58	–	–	31.98	5.96	46.37	150	209	Peak
2462	86.93	95.36	–	–	31.98	5.96	46.37	150	209	Average
2483.5	63.81	72.14	74	-10.19	32.05	5.99	46.37	150	188	Peak
2483.5	50.75	59.08	54	-3.25	32.05	5.99	46.37	150	188	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	54.17	62.54	74	-19.83	32.14	5.86	46.37	150	334	Peak
2390	45.82	54.19	54	-8.18	32.14	5.86	46.37	150	334	Average
2462	93.47	101.57	–	–	32.31	5.96	46.37	150	136	Peak
2462	86.19	94.29	–	–	32.31	5.96	46.37	150	136	Average
2483.5	62.94	70.96	74	-11.06	32.36	5.99	46.37	200	309	Peak
2483.5	50.71	58.73	54	-3.29	32.36	5.99	46.37	200	309	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.

3.3 6 dB BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 25,21	Feb. 24,22
Power Meter	ANRITSU	ML2495A	1506002	Feb. 24,22	Feb. 23,23
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 25,21	Feb. 24,22
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 24,22	Feb. 23,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 25,21	Feb. 24,22
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 24,22	Feb. 23,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 26,21	Aug. 25,22

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

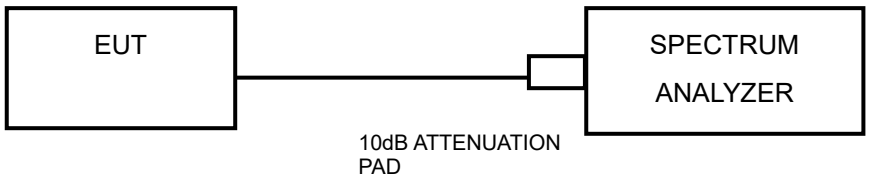
3.3.3 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

3.3.5 TEST SETUP



3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.3.7 TEST RESULTS

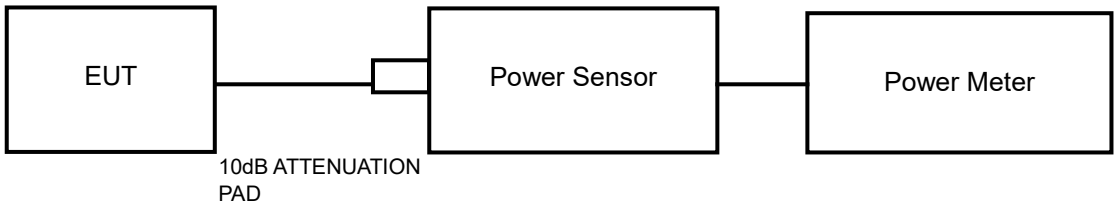
Please Refer to Appendix Of this test report.

3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.

3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

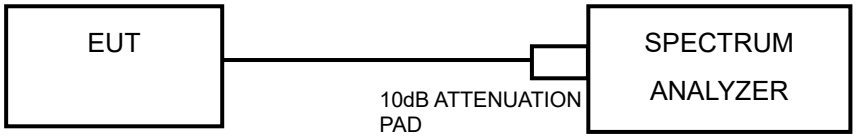
Please Refer to Appendix Of this test report.

3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW ≥ 3 x RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.5.7 TEST RESULTS

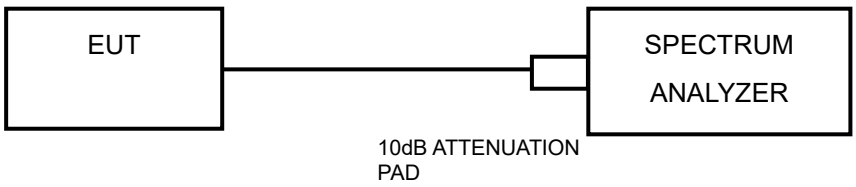
Please Refer to Appendix Of this test report.

3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix Of this test report.

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

Please Refer to Appendix Of this test report.

6 Appendix

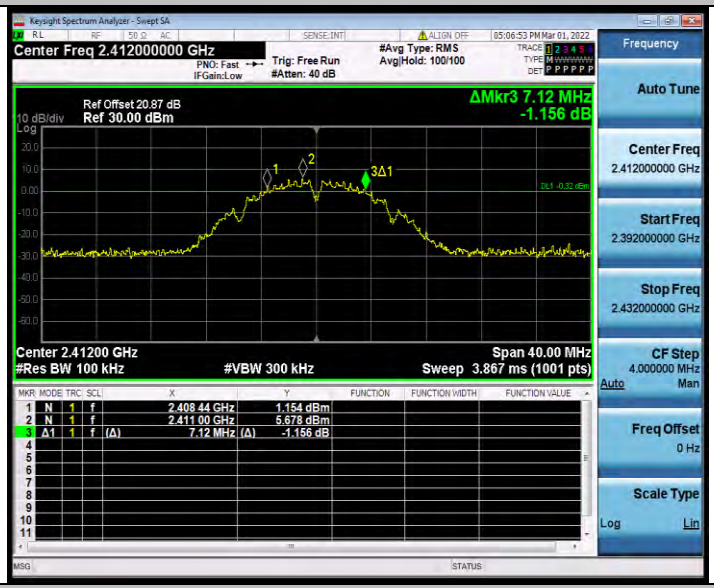
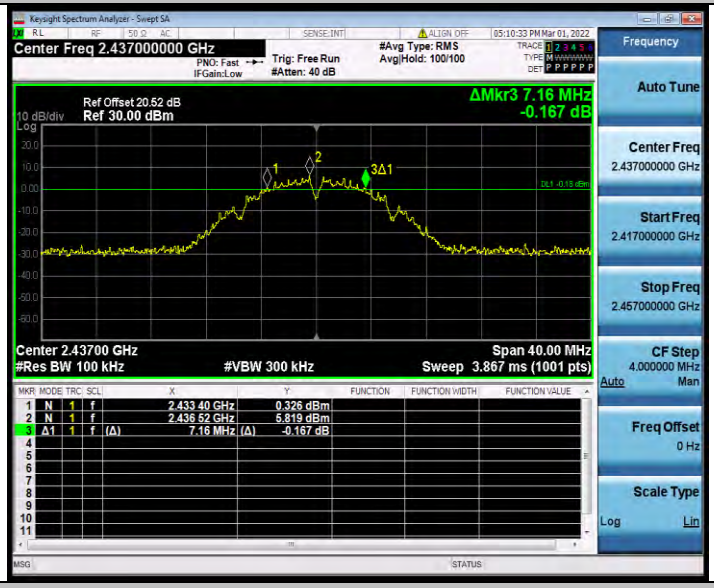
2.4G WLAN

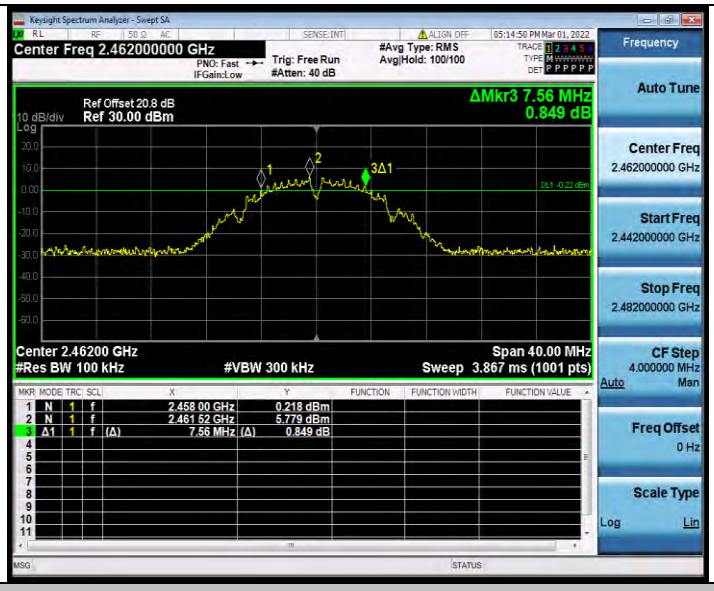
DTS BANDWIDTH

TEST RESULT

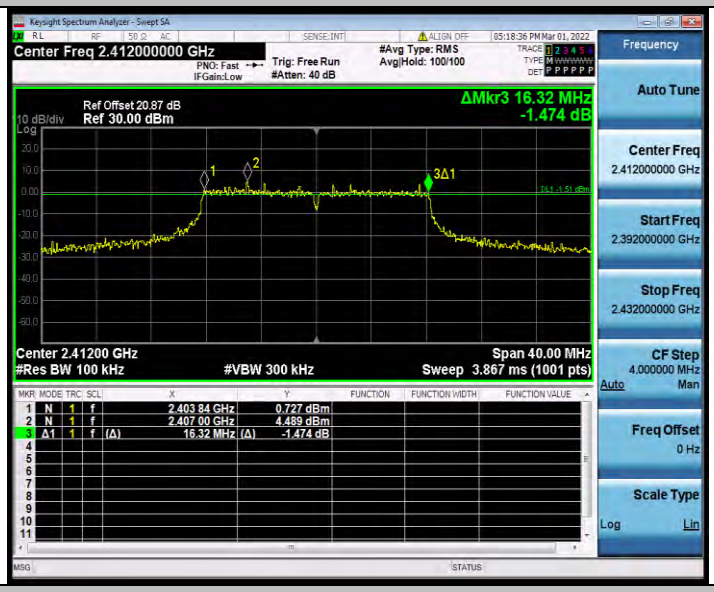
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.120	2408.440	2415.560	0.5	PASS
		2437	7.160	2433.400	2440.560	0.5	PASS
		2462	7.560	2458.000	2465.560	0.5	PASS
11G	Ant1	2412	16.320	2403.840	2420.160	0.5	PASS
		2437	16.360	2428.800	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	17.560	2403.200	2420.760	0.5	PASS
		2437	17.560	2428.200	2445.760	0.5	PASS
		2462	17.600	2453.200	2470.800	0.5	PASS

TEST GRAPHS

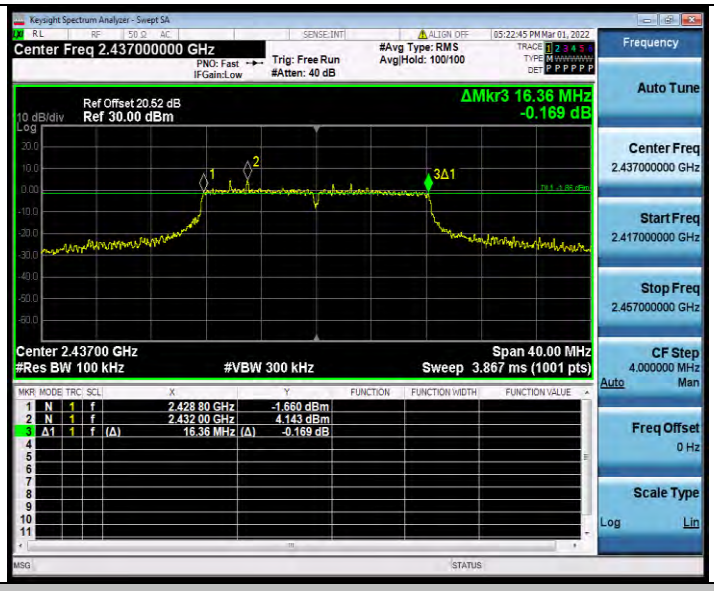
11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462



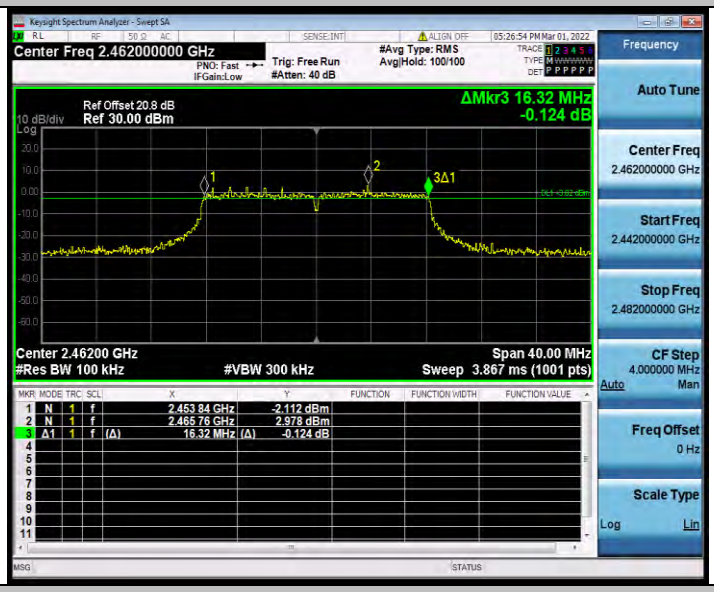
11G_Ant1_2412



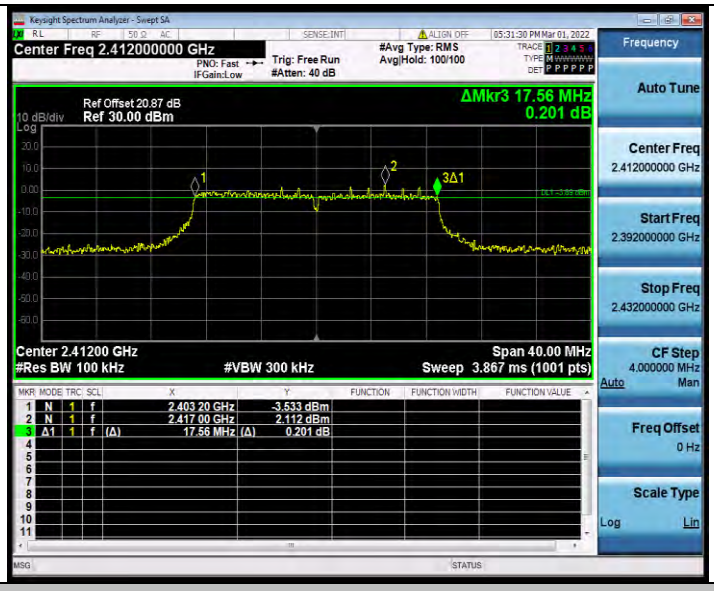
11G_Ant1_2437



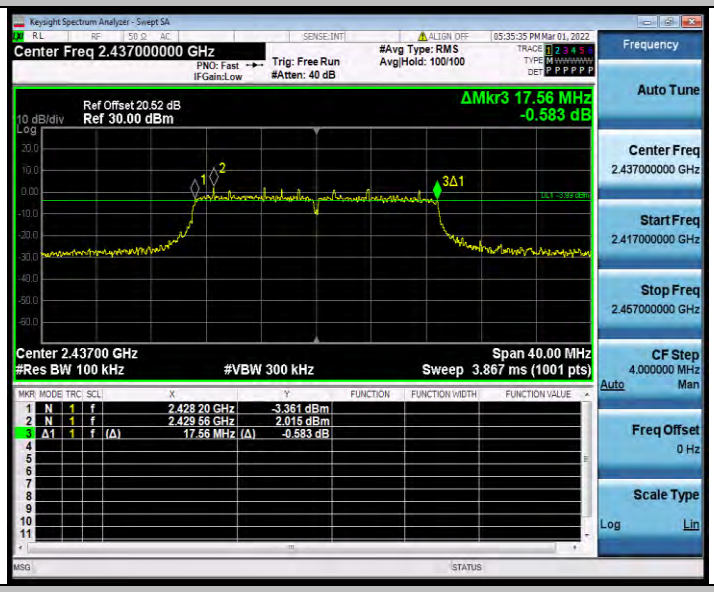
11G_Ant1_2462



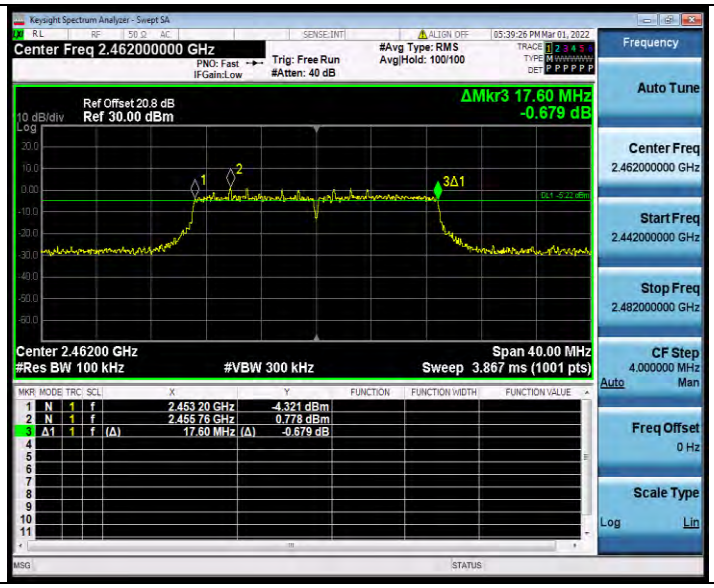
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
05:39:26 PM Mar 01, 2022
Ref Offset 20.8 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 17.60 MHz
-0.679 dB
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.867 ms (1001 pts)
1 N 1 f 2.453 20 GHz -4.321 dBm
2 N 1 f 2.455 76 GHz 0.778 dBm
3 Δ1 1 f (Δ) 17.60 MHz (Δ) -0.679 dB
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.442000000 GHz
Stop Freq
2.482000000 GHz
CF Step
4.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	13.964	2404.999	2418.963	---	---
		2437	13.959	2430.013	2443.972	---	---
		2462	13.805	2455.113	2468.918	---	---
11G	Ant1	2412	18.216	2402.732	2420.948	---	---
		2437	18.040	2427.970	2446.010	---	---
		2462	17.559	2453.193	2470.752	---	---
11N20SISO	Ant1	2412	18.588	2402.672	2421.260	---	---
		2437	18.468	2427.758	2446.226	---	---
		2462	18.553	2452.678	2471.231	---	---

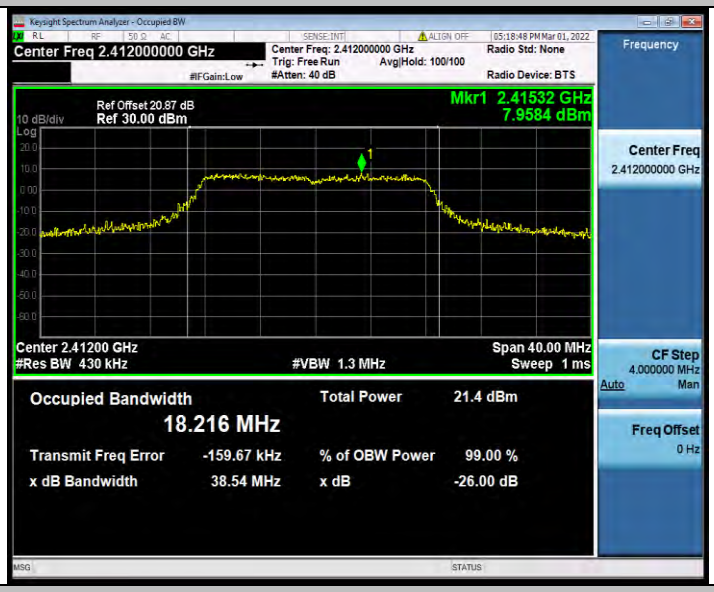
TEST GRAPHS

11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462

11G_Ant1_2412



11G_Ant1_2437

11G_Ant1_2462

11N20SISO_Ant1_2412

11N20SISO_Ant1_2437

11N20SISO_Ant1_2462


Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.462000000 GHz
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 20.8 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.45672 GHz
4.6487 dBm
Center Freq
2.462000000 GHz
Center 2.46200 GHz
#Res BW 430 kHz
#VBW 1.3 MHz
Span 40.00 MHz
Sweep 1 ms
CF Step
4.000000 MHz
Auto
Man
Freq Offset
0 Hz
Occupied Bandwidth
18.553 MHz
Total Power
18.4 dBm
Transmit Freq Error
-45.329 kHz
% of OBW Power
99.00 %
x dB Bandwidth
37.50 MHz
x dB
-26.00 dB
MSG
STATUS

MAXIMUM CONDUCTED OUTPUT POWER

TestMode	Antenna	Channel	Peak power [dBm]	Peak power [mw]	Limit [dBm]	Verdict	Power Setting
11B	Ant1	2412	14.55	28.51	≤30	PASS	12.5
		2437	15.31	33.96	≤30	PASS	12.5
		2462	13.91	24.60	≤30	PASS	12.5
11G	Ant1	2412	20.10	102.33	≤30	PASS	15
		2437	21.05	127.35	≤30	PASS	15
		2462	21.36	136.77	≤30	PASS	15
11N20	Ant1	2412	18.24	66.68	≤30	PASS	9
		2437	18.35	68.39	≤30	PASS	9
		2462	17.63	57.94	≤30	PASS	9

Test Result Average Power

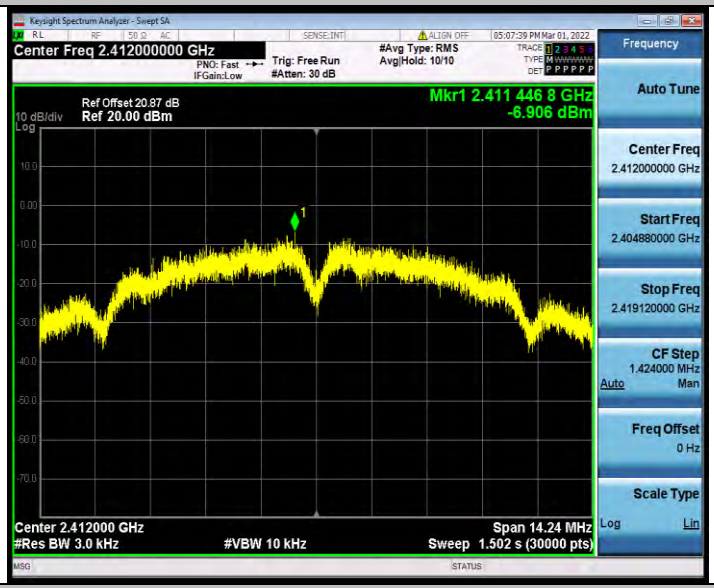
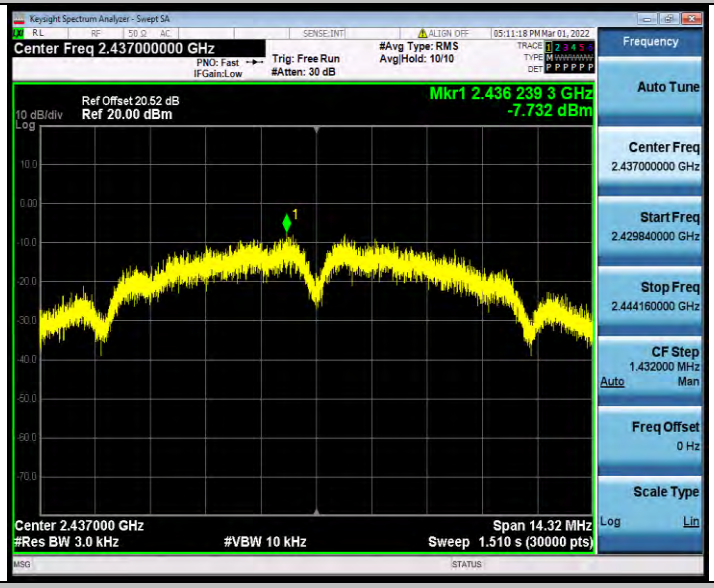
TestMode	Antenna	Channel	Average power [dBm]	Limit [dBm]	Verdict	Power Setting
11B	Ant1	2412	11.15	/	PASS	12.5
		2437	11.90	/	PASS	12.5
		2462	10.64	/	PASS	12.5
11G	Ant1	2412	13.45	/	PASS	15
		2437	13.42	/	PASS	15
		2462	12.71	/	PASS	15
11N20	Ant1	2412	8.69	/	PASS	9
		2437	8.81	/	PASS	9
		2462	7.05	/	PASS	9

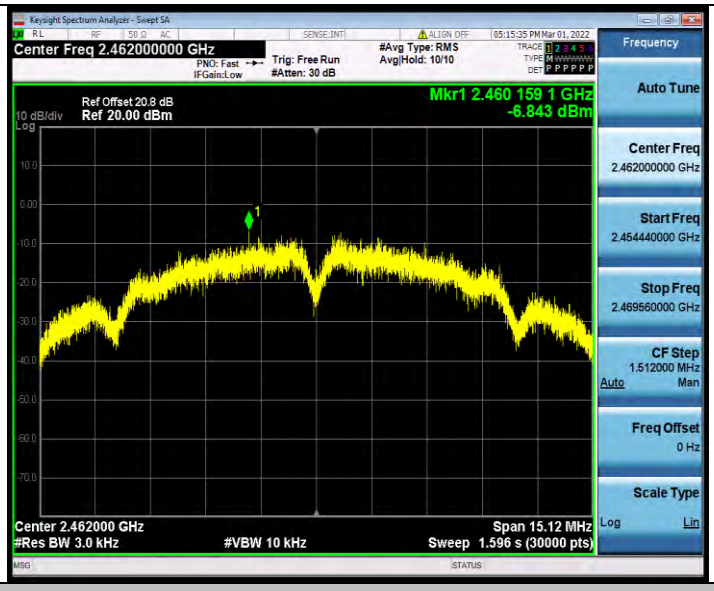
MAXIMUM POWER SPECTRAL DENSITY

TEST RESULT

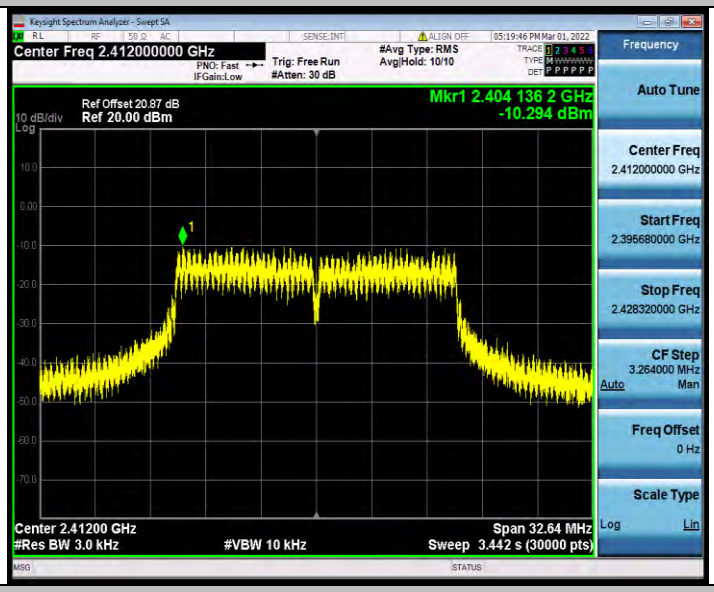
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-6.91	≤8.00	PASS
		2437	-7.73	≤8.00	PASS
		2462	-6.84	≤8.00	PASS
11G	Ant1	2412	-10.29	≤8.00	PASS
		2437	-10.13	≤8.00	PASS
		2462	-9.54	≤8.00	PASS
11N20SISO	Ant1	2412	-11.97	≤8.00	PASS
		2437	-12.06	≤8.00	PASS
		2462	-12.72	≤8.00	PASS

TEST GRAPHS

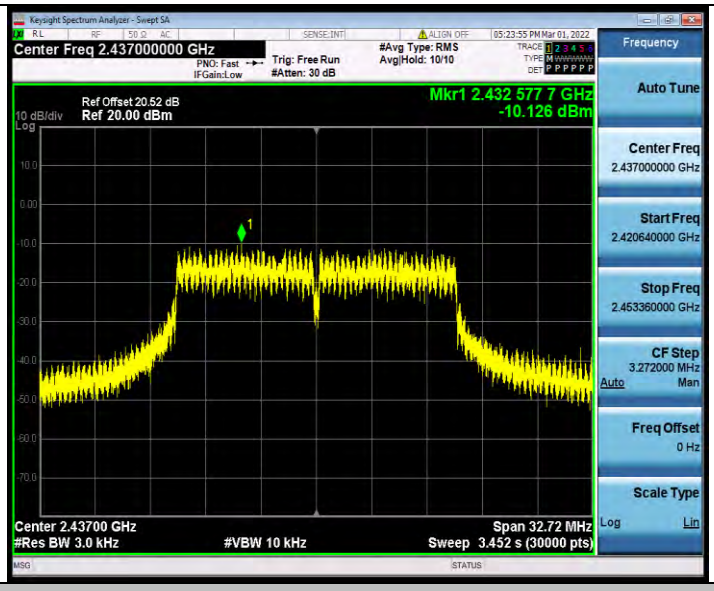
11B_Ant1_2412

11B_Ant1_2437

11B_Ant1_2462



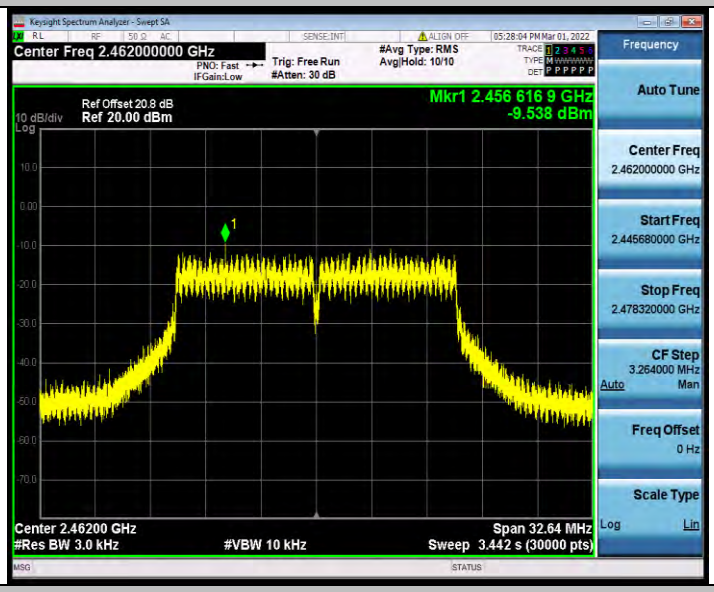
11G_Ant1_2412



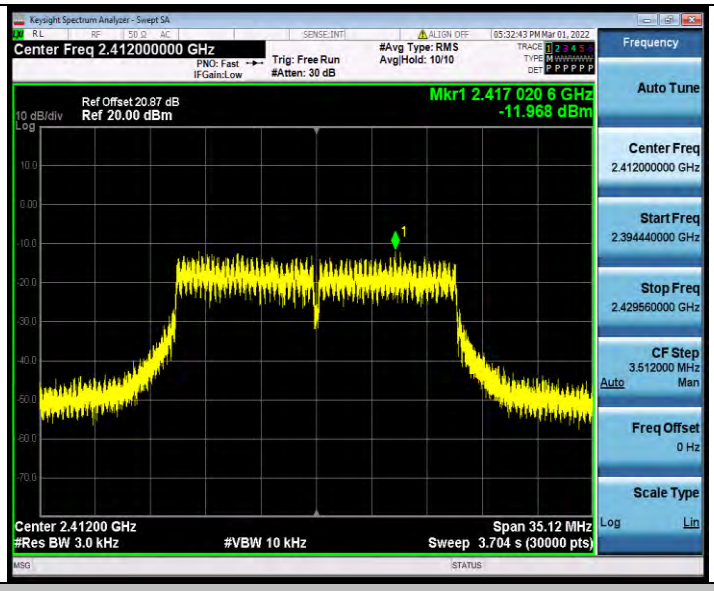
11G_Ant1_2437



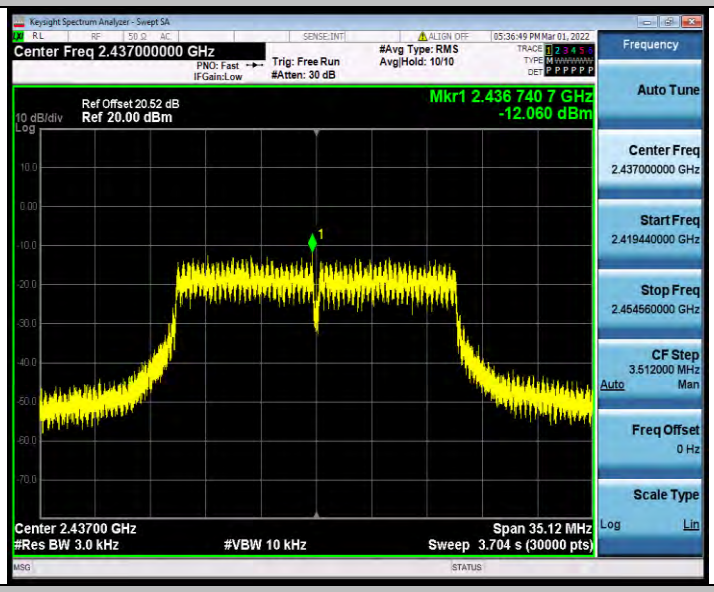
11G_Ant1_2462



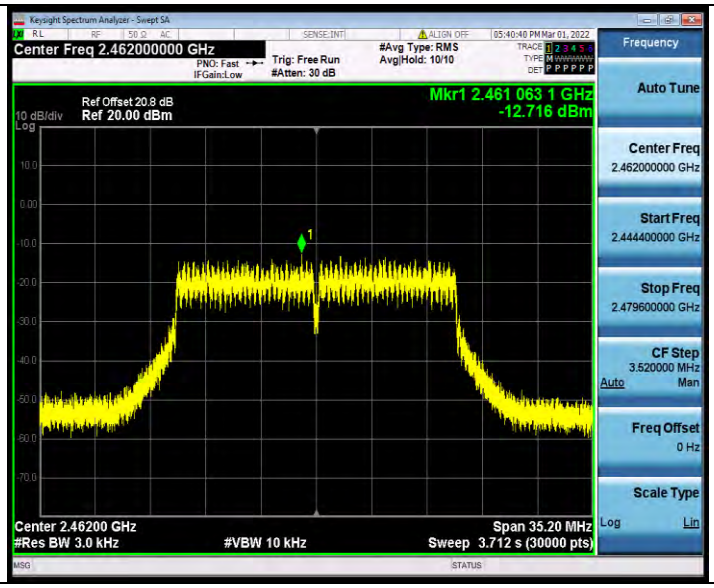
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
05:40:40 PM Mar 01, 2022
Ref Offset 20.8 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.461 063 1 GHz
-12.716 dBm
Center 2.46200 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 35.20 MHz
Sweep 3.712 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.444400000 GHz
Stop Freq
2.479600000 GHz
CF Step
3.520000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

BAND EDGE MEASUREMENTS

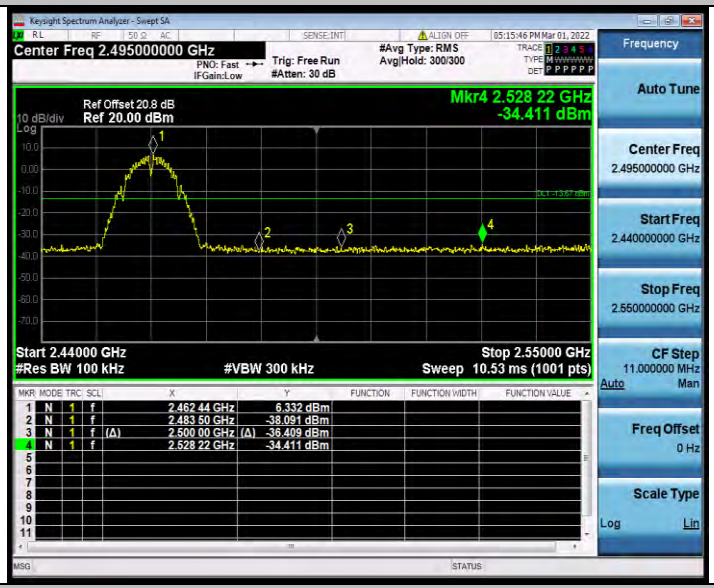
TEST RESULT

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	6.45	-34.74	≤-13.55	PASS
		High	2462	6.33	-34.41	≤-13.67	PASS
11G	Ant1	Low	2412	4.78	-21.55	≤-15.22	PASS
		High	2462	3.26	-34.78	≤-16.74	PASS
11N20SISO	Ant1	Low	2412	2.55	-26.37	≤-17.45	PASS
		High	2462	1.22	-34.31	≤-18.78	PASS

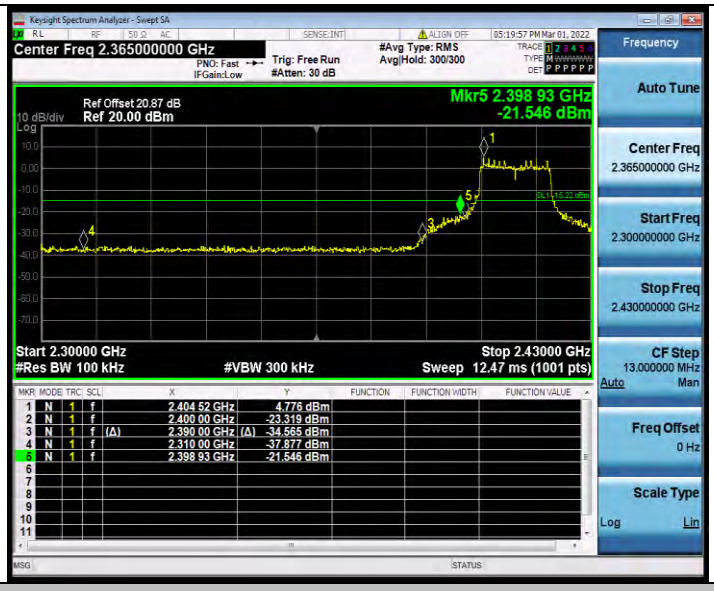
TEST GRAPHS

11B_Ant1_Low_2412

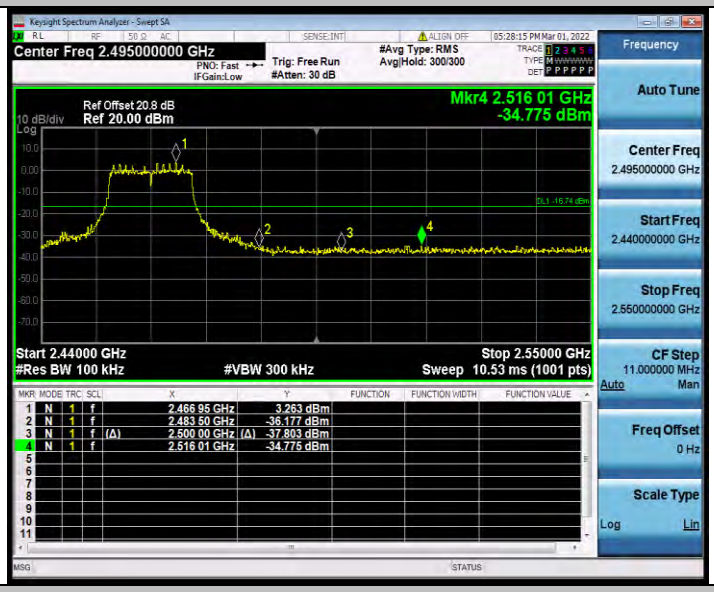
11B_Ant1_High_2462



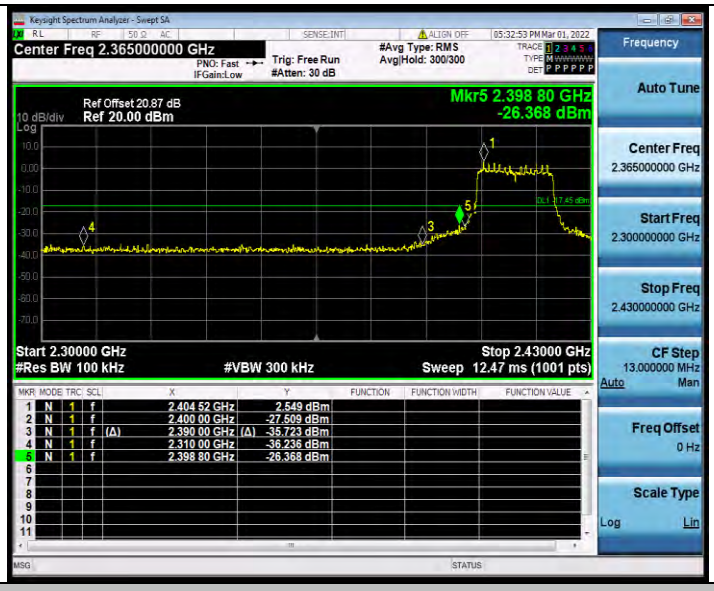
11G_Ant1_Low_2412



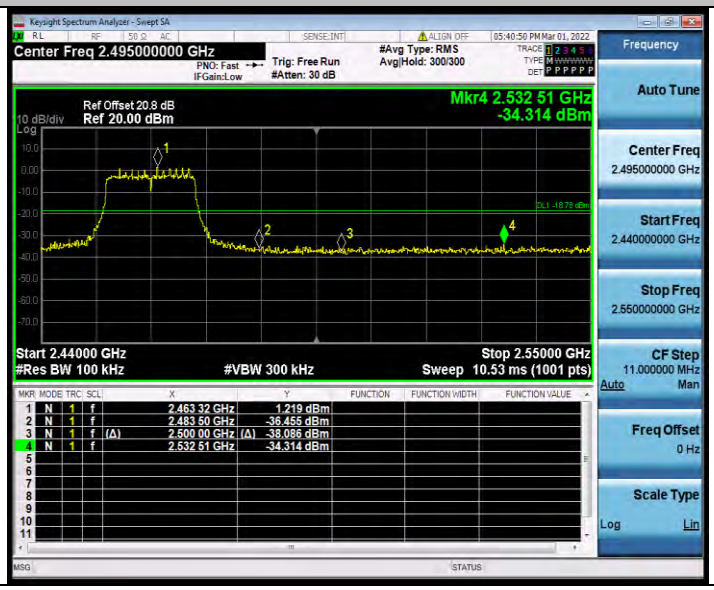
11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462

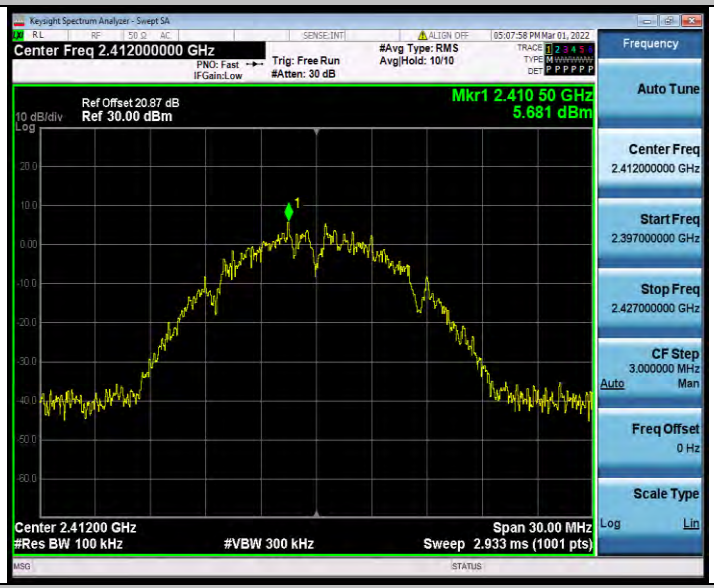
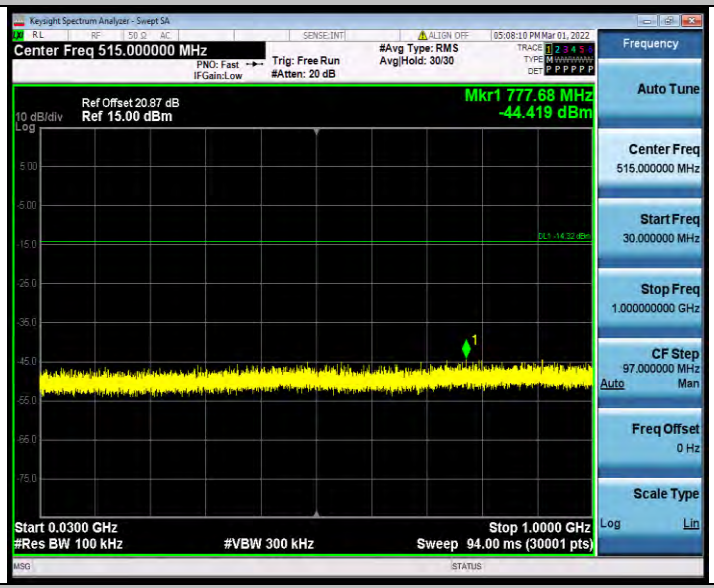


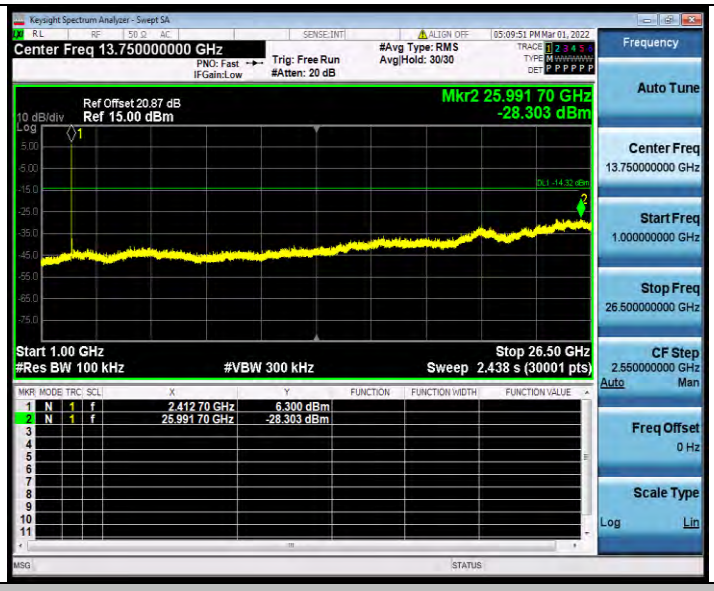
CONDUCTED SPURIOUS EMISSION

TEST RESULT

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.68	5.68	---	PASS
			30~1000	5.68	-44.42	≤-14.32	PASS
			1000~26500	5.68	-28.3	≤-14.32	PASS
		2437	Reference	4.35	4.35	---	PASS
			30~1000	4.35	-44.33	≤-15.65	PASS
			1000~26500	4.35	-28.6	≤-15.65	PASS
		2462	Reference	5.09	5.09	---	PASS
			30~1000	5.09	-44.27	≤-14.91	PASS
			1000~26500	5.09	-28.08	≤-14.91	PASS
11G	Ant1	2412	Reference	3.50	3.50	---	PASS
			30~1000	3.50	-43.66	≤-16.5	PASS
			1000~26500	3.50	-28.33	≤-16.5	PASS
		2437	Reference	3.96	3.96	---	PASS
			30~1000	3.96	-43.71	≤-16.04	PASS
			1000~26500	3.96	-27.12	≤-16.04	PASS
		2462	Reference	-0.64	-0.64	---	PASS
			30~1000	-0.64	-44.36	≤-20.64	PASS
			1000~26500	-0.64	-27.98	≤-20.64	PASS
11N20SISO	Ant1	2412	Reference	2.58	2.58	---	PASS
			30~1000	2.58	-44.46	≤-17.42	PASS
			1000~26500	2.58	-27.38	≤-17.42	PASS
		2437	Reference	1.25	1.25	---	PASS
			30~1000	1.25	-44.64	≤-18.75	PASS
			1000~26500	1.25	-28.89	≤-18.75	PASS
		2462	Reference	-2.76	-2.76	---	PASS
			30~1000	-2.76	-44.76	≤-22.76	PASS
			1000~26500	-2.76	-28.27	≤-22.76	PASS

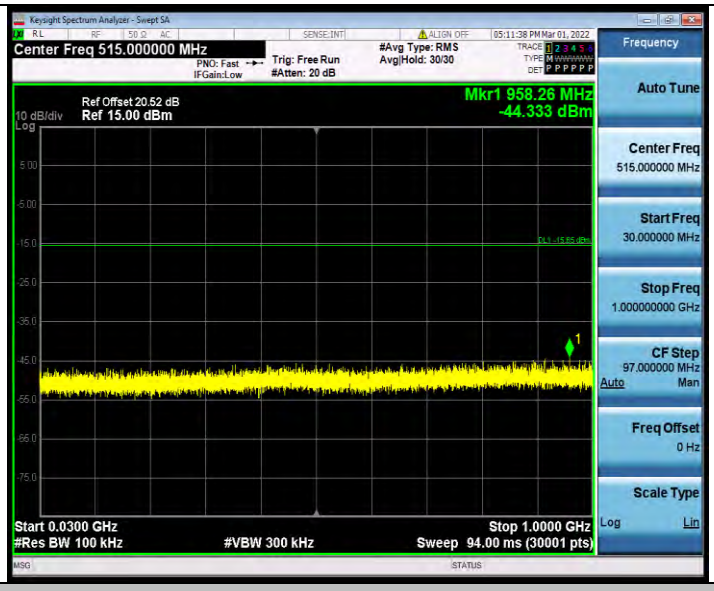
TEST GRAPHS

11B_Ant1_2412_0~Reference

11B_Ant1_2412_30~1000

11B_Ant1_2412_1000~26500

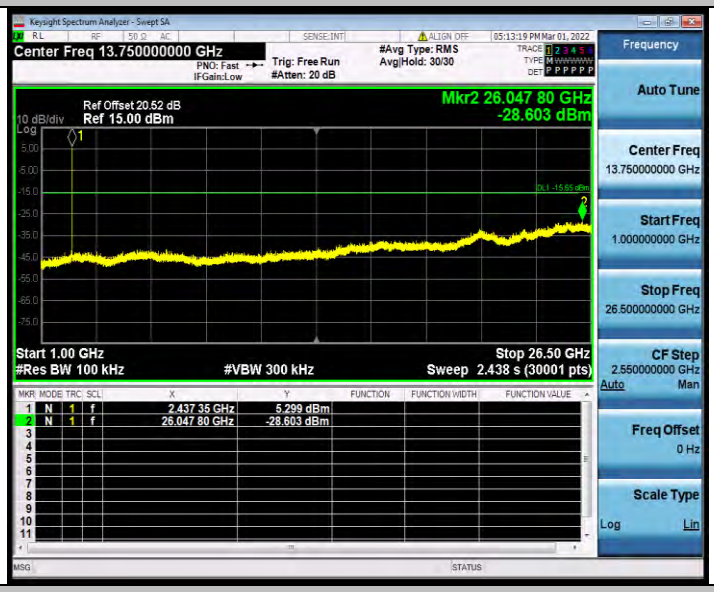


11B_Ant1_2437_0~Reference

11B_Ant1_2437_30~1000

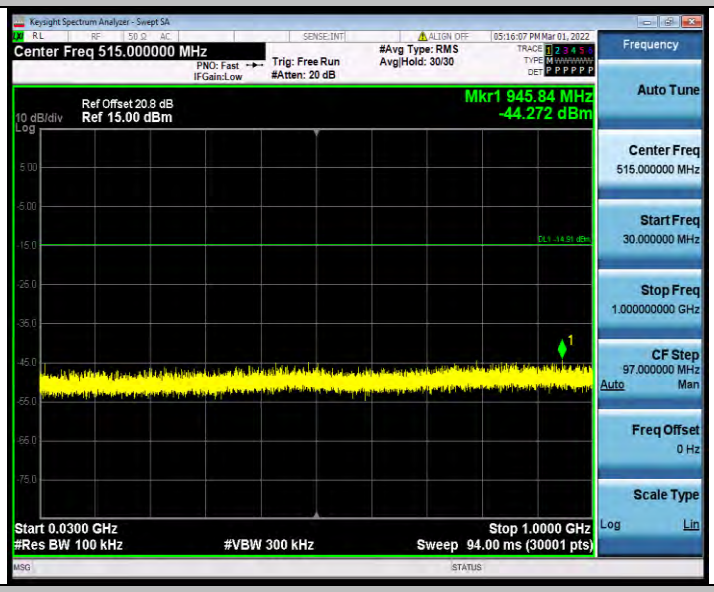


11B_Ant1_2437_1000~26500



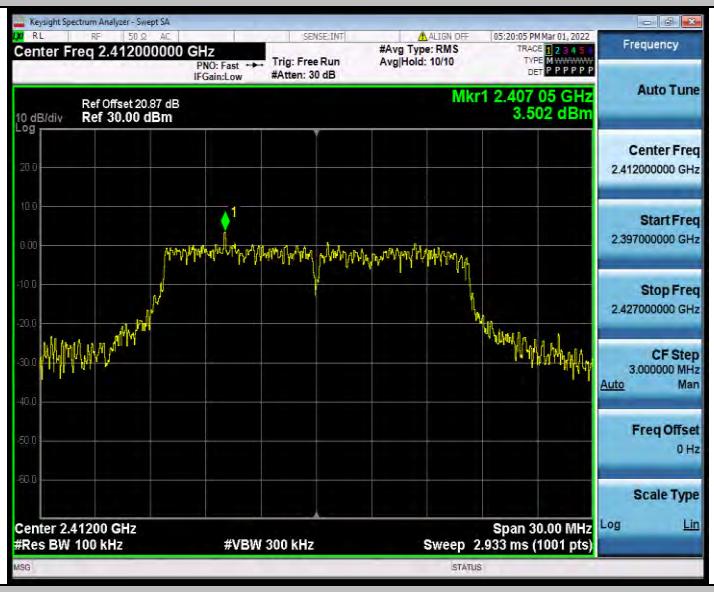
11B_Ant1_2462_0~Reference

11B_Ant1_2462_30~1000

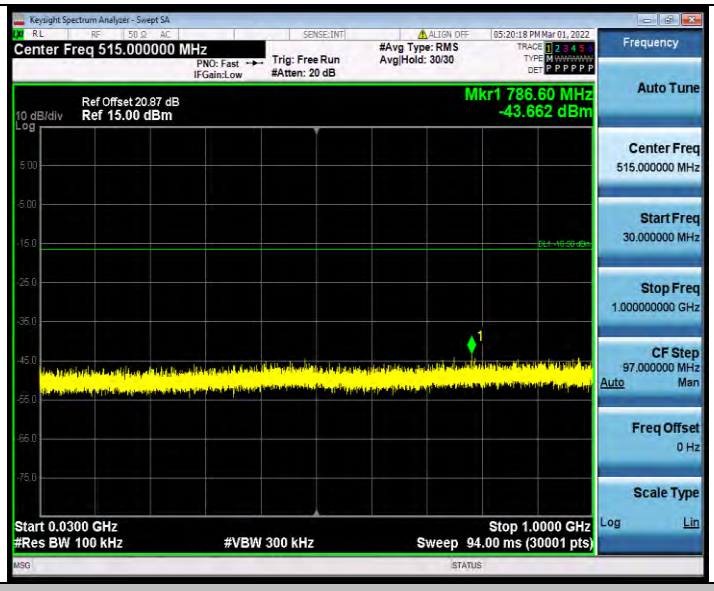


11B_Ant1_2462_1000~26500

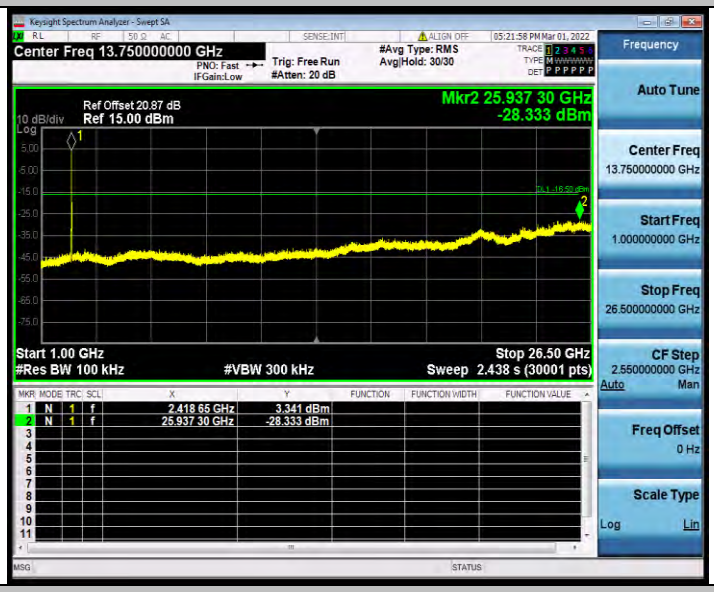
11G_Ant1_2412_0~Reference



11G_Ant1_2412_30~1000

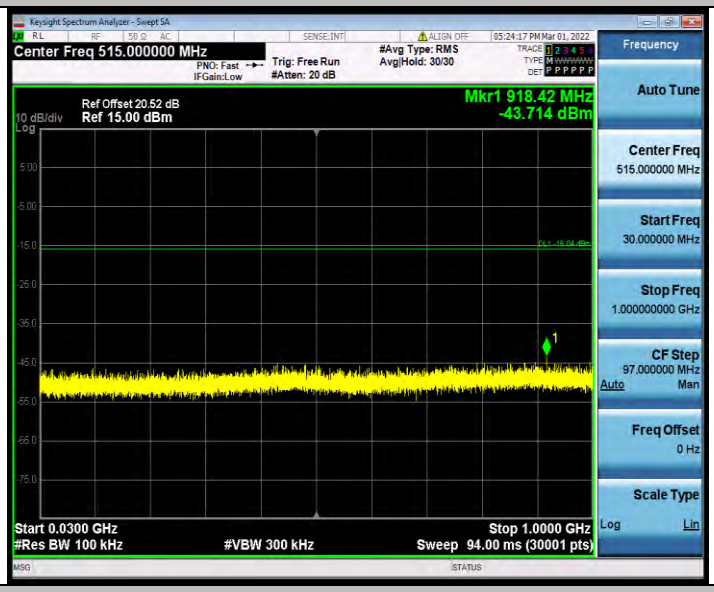


11G_Ant1_2412_1000~26500

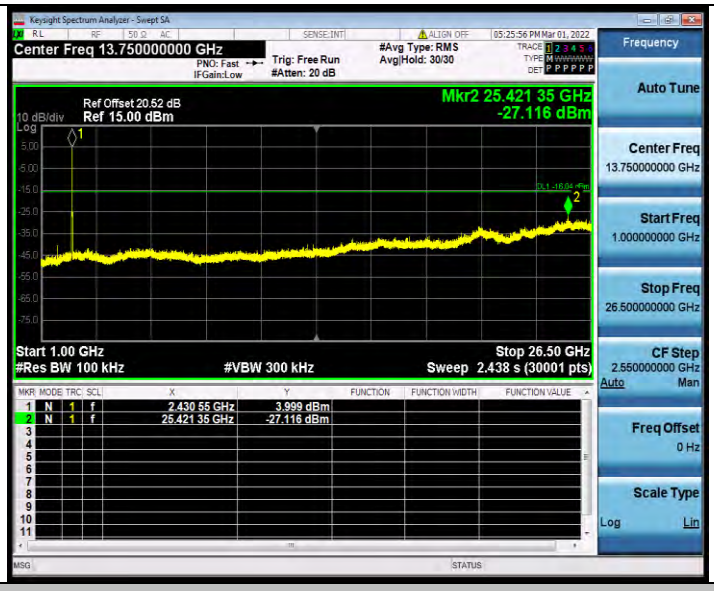


11G_Ant1_2437_0~Reference

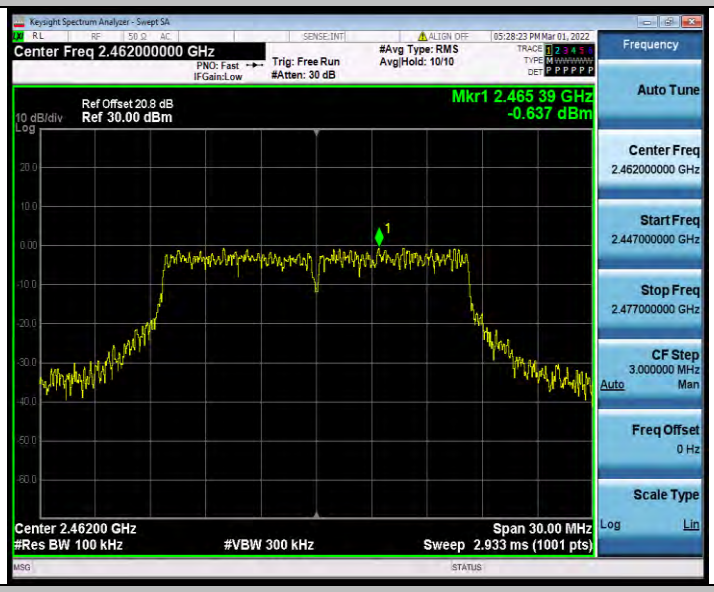
11G_Ant1_2437_30~1000



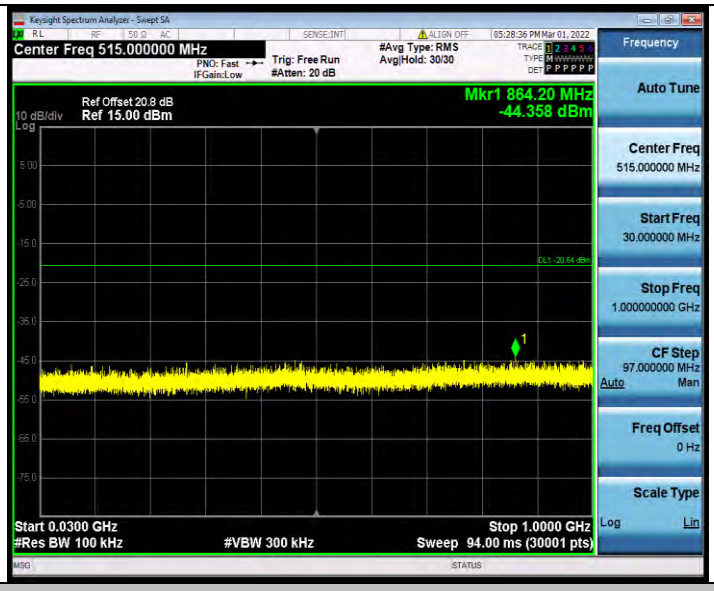
11G_Ant1_2437_1000~26500



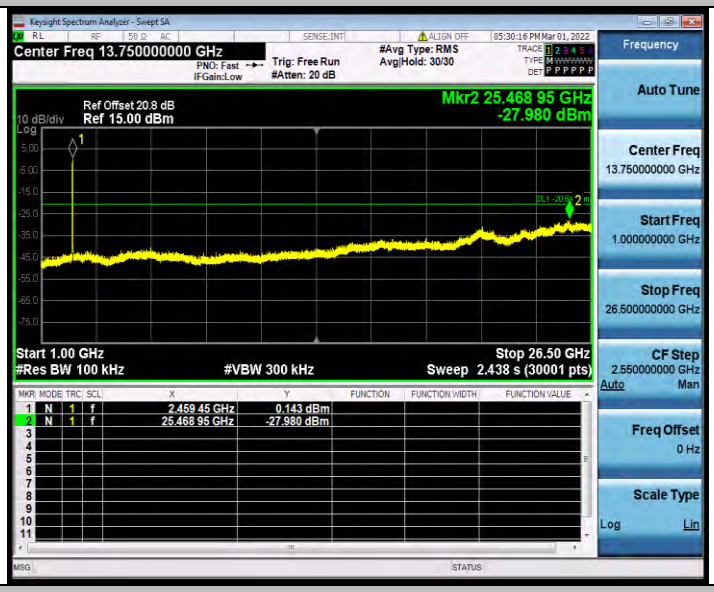
11G_Ant1_2462_0~Reference



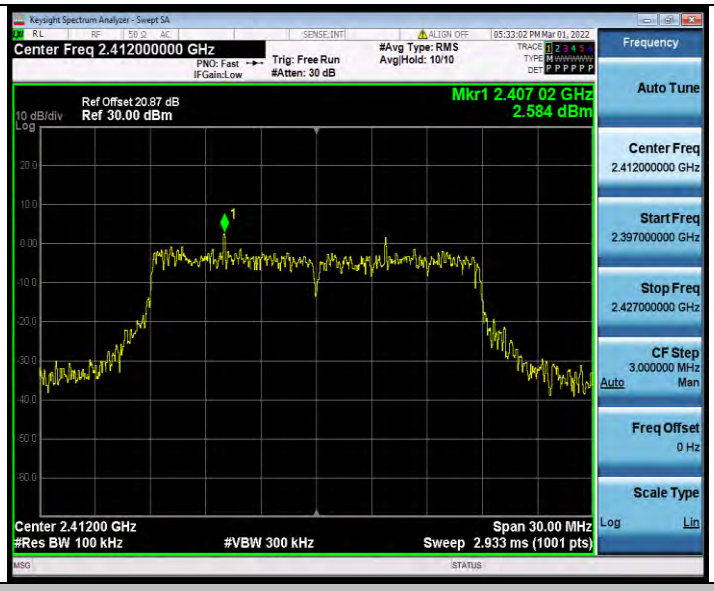
11G_Ant1_2462_30~1000



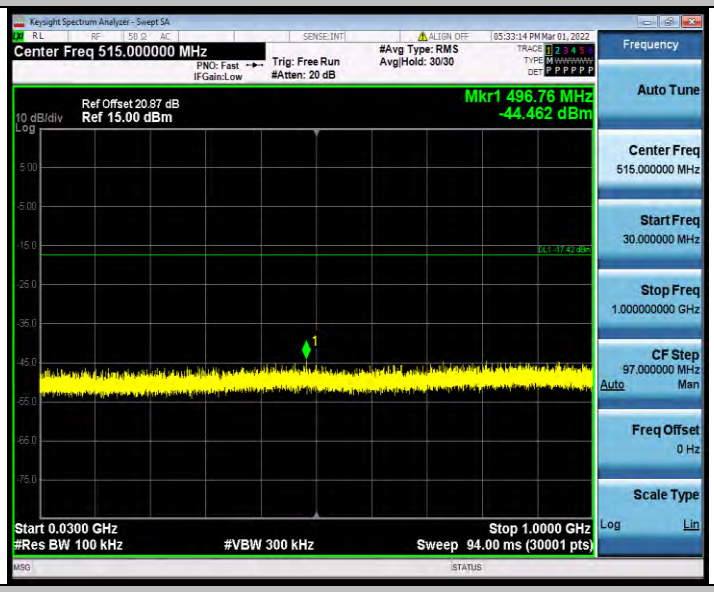
11G_Ant1_2462_1000~26500



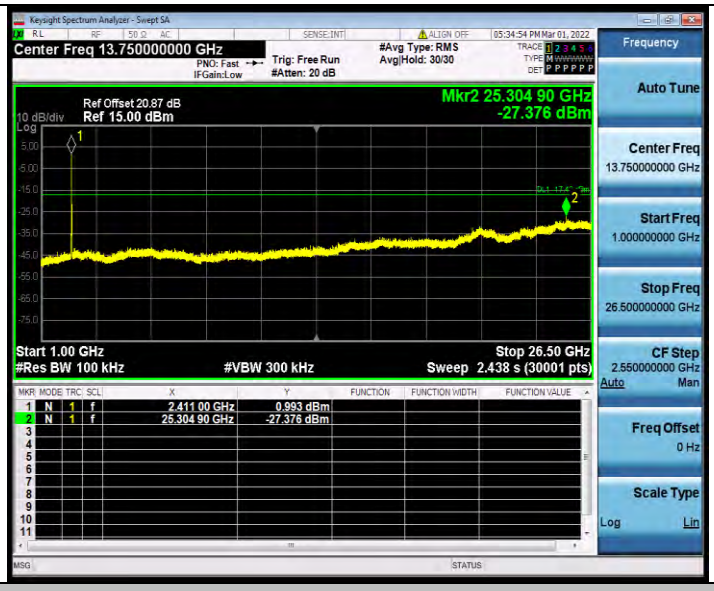
11N20SISO_Ant1_2412_0~Reference



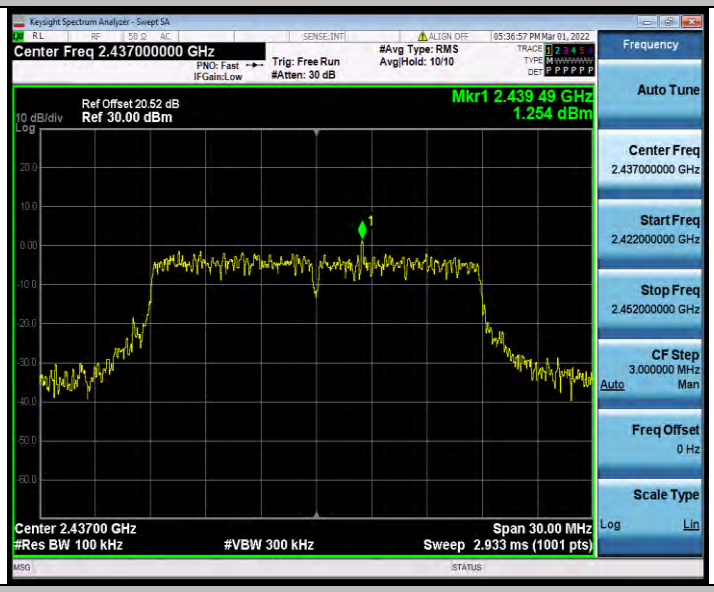
11N20SISO_Ant1_2412_30~1000



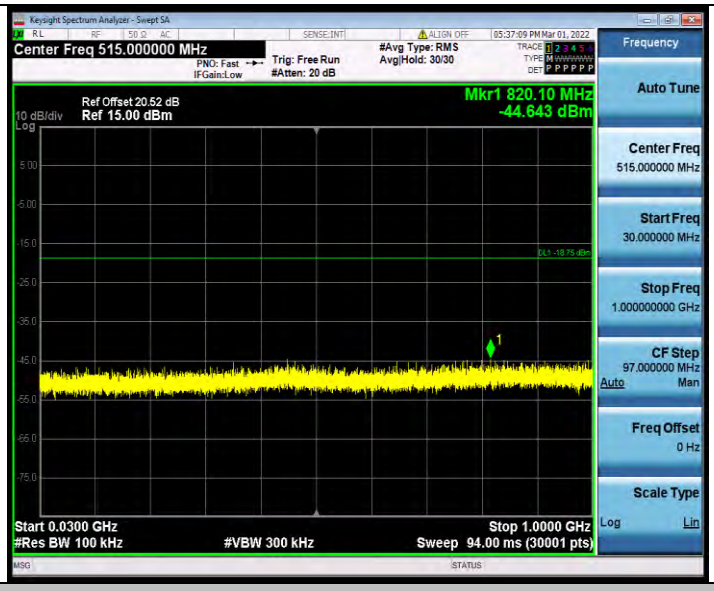
11N20SISO_Ant1_2412_1000~26500



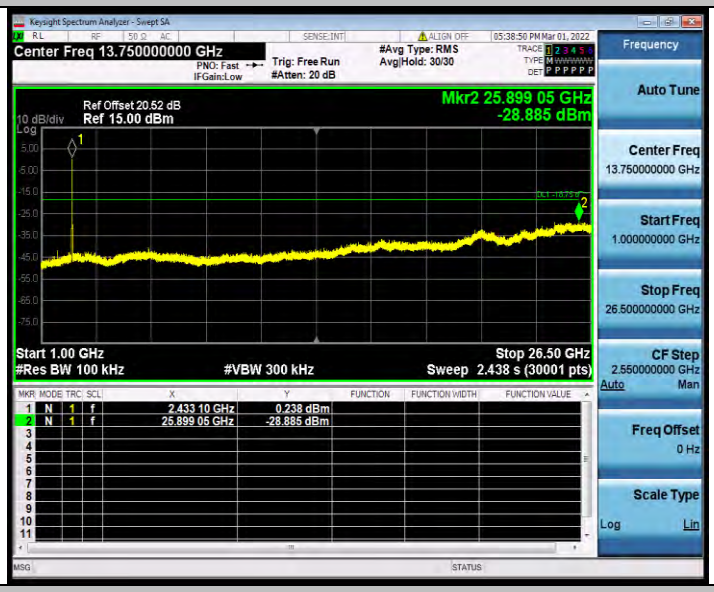
11N20SISO_Ant1_2437_0~Reference



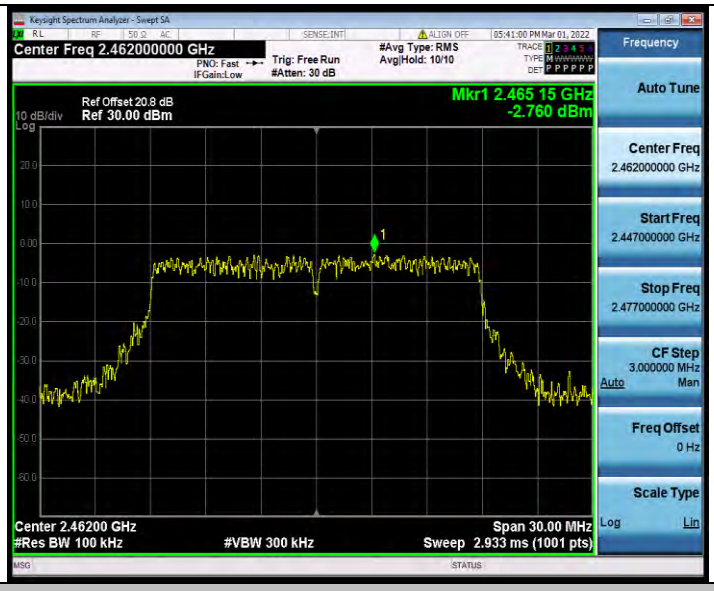
11N20SISO_Ant1_2437_30~1000



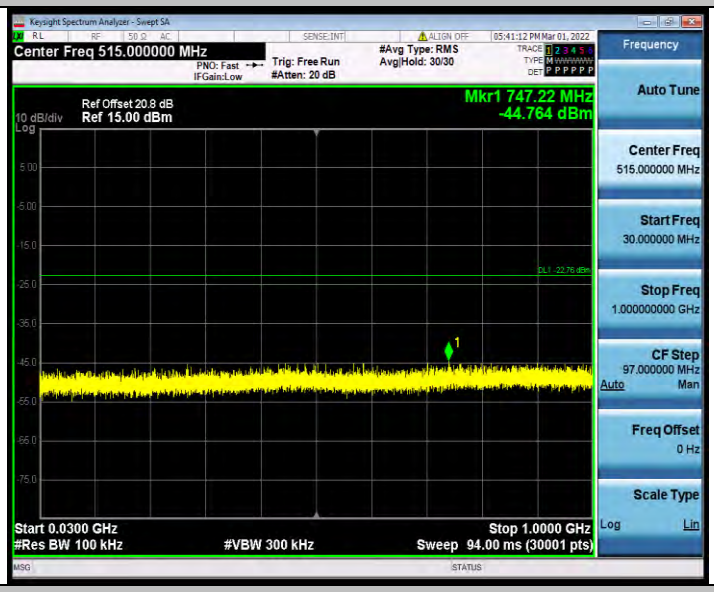
11N20SISO_Ant1_2437_1000~26500



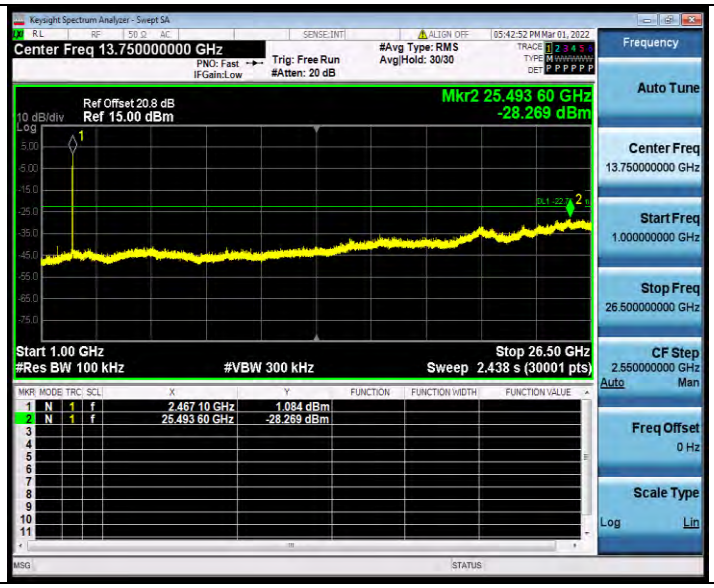
11N20SISO_Ant1_2462_0~Reference



11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500


Keysight Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 30/30
05:42:52 PM Mar 01, 2022
Ref Offset 20.8 dB
10 dB/div
Ref 15.00 dBm
Log
Mkr2 25.493 60 GHz
-28.269 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.467 10 GHz 1.084 dBm
2 N 1 f 25.493 60 GHz -28.269 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

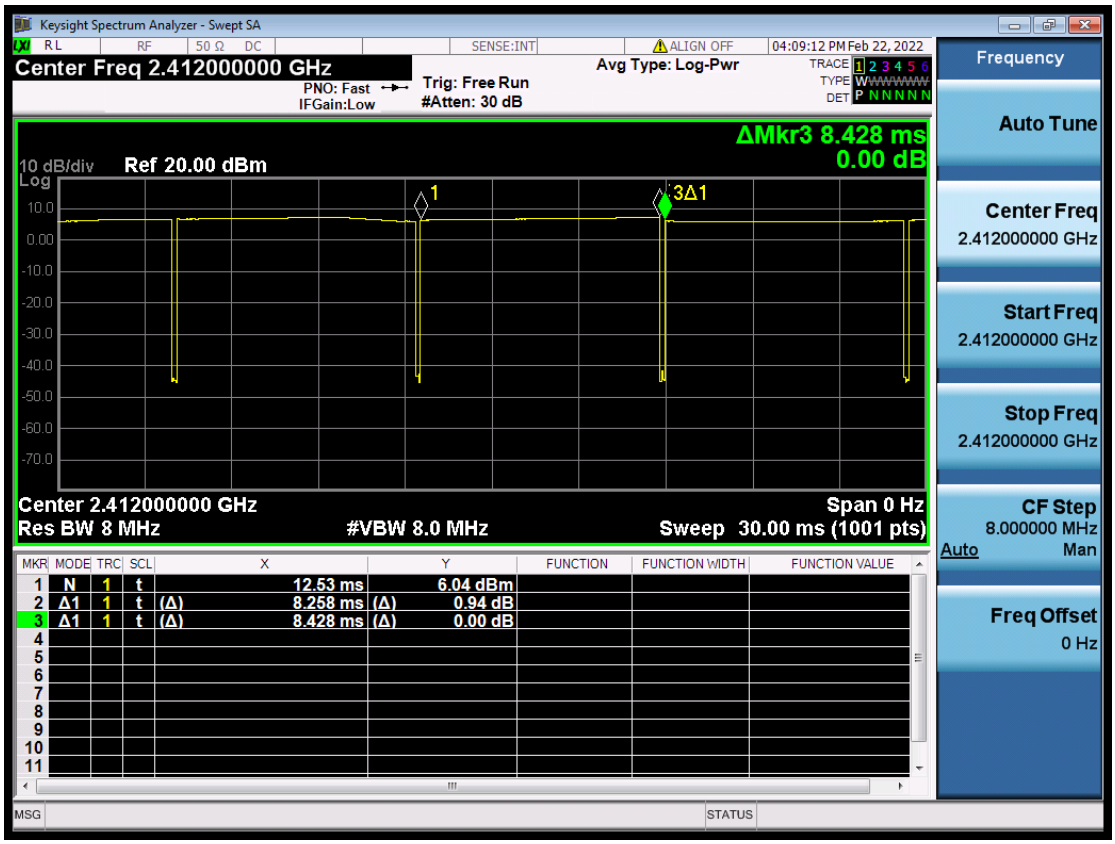
DUTY CYCLE

TEST RESULT

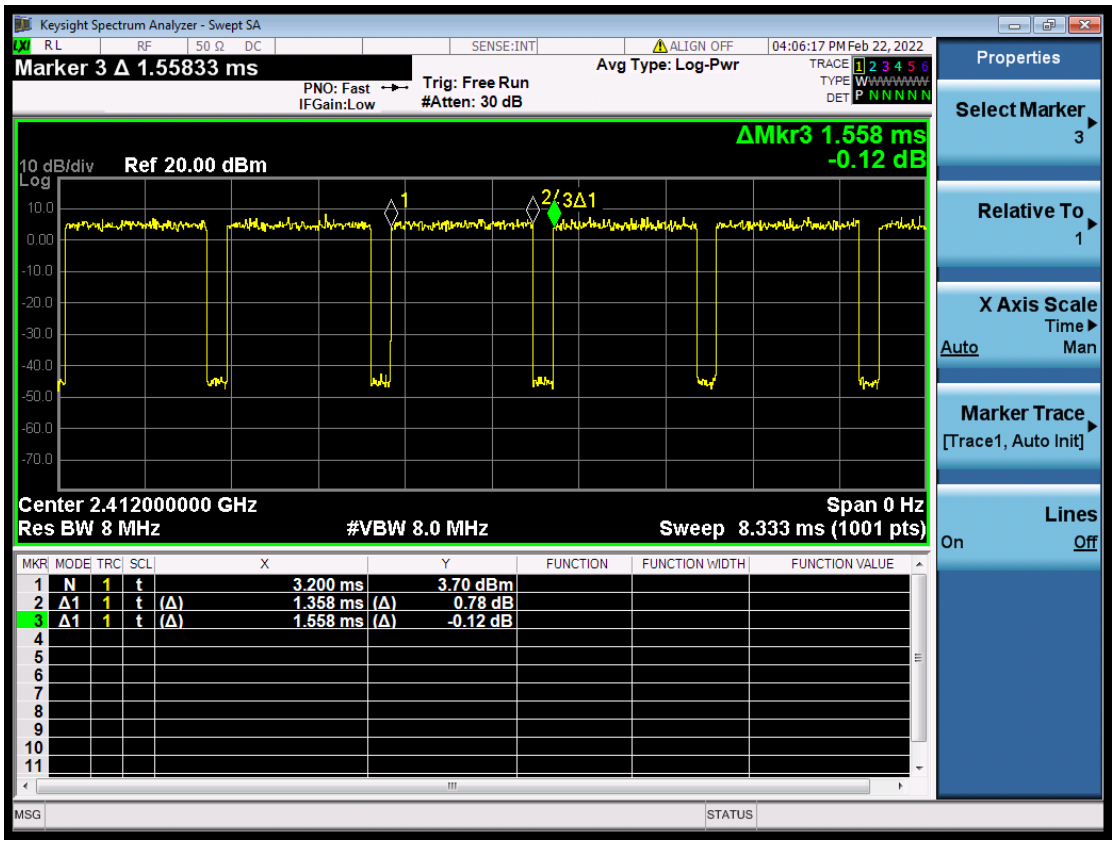
TestMode	Antenna	Frequency[MHz]	Duty Cycle [%]
11B	Ant1	2412	97.98
11G	Ant1	2412	87.16
11N20SISO	Ant1	2412	86.26

TEST GRAPHS

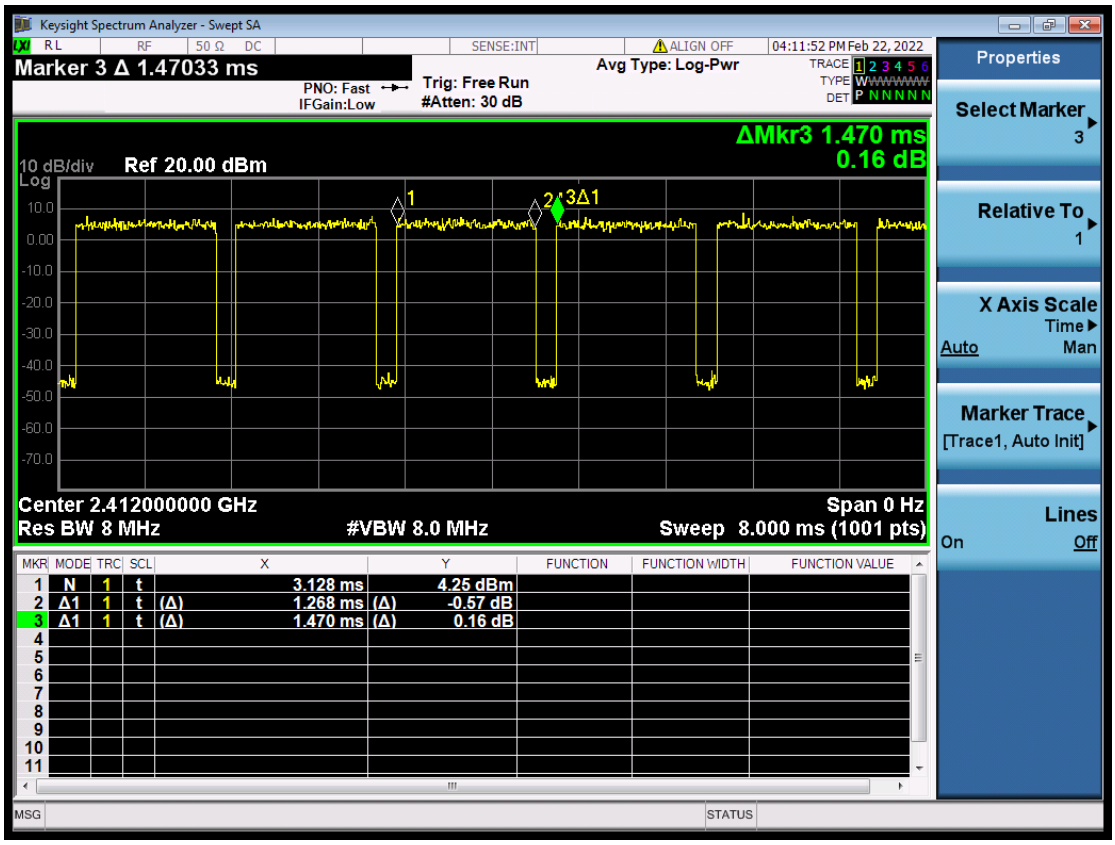
11B_Ant1_2412



11G_Ant1_2412



11N20SISO_Ant1_2412


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω DC
SENSE:INT
ALIGN OFF
04:11:52 PM Feb 22, 2022
Marker 3 Δ 1.47033 ms
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE WWWWW
DET P N N N N
ΔMkr3 1.470 ms
0.16 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.412000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 8.000 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 3.128 ms 4.25 dBm
2 Δ1 1 t (Δ) 1.268 ms (Δ) -0.57 dB
3 Δ1 1 t (Δ) 1.470 ms (Δ) 0.16 dB
4
5
6
7
8
9
10
11
MSG
STATUS
Properties
Select Marker
3
Relative To
1
X Axis Scale
Time
Auto
Man
Marker Trace
[Trace1, Auto Init]
Lines
On
Off

---END---