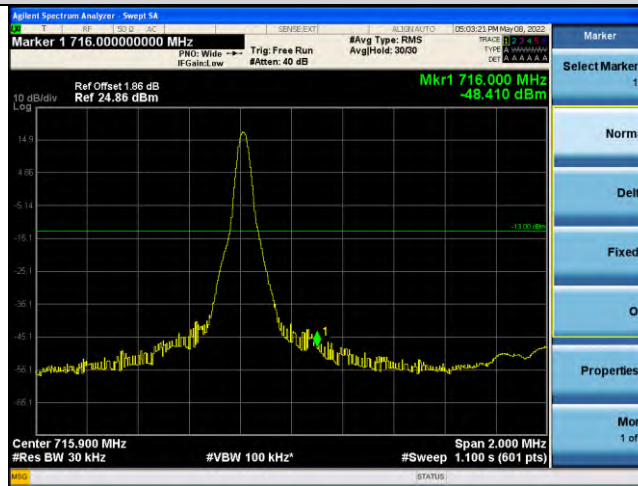
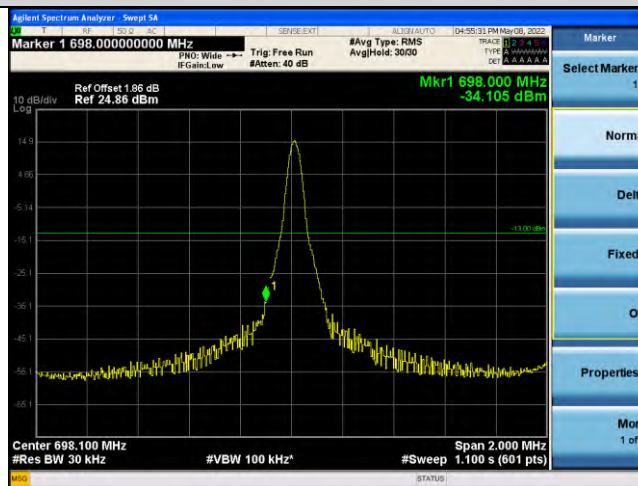


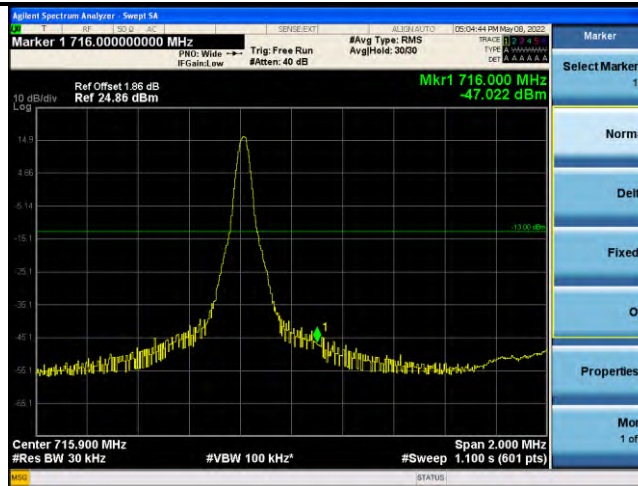
Band85-Stand-Alone-NaN-BPSK-134004-1@0-3.75kHz--34.84-PASS



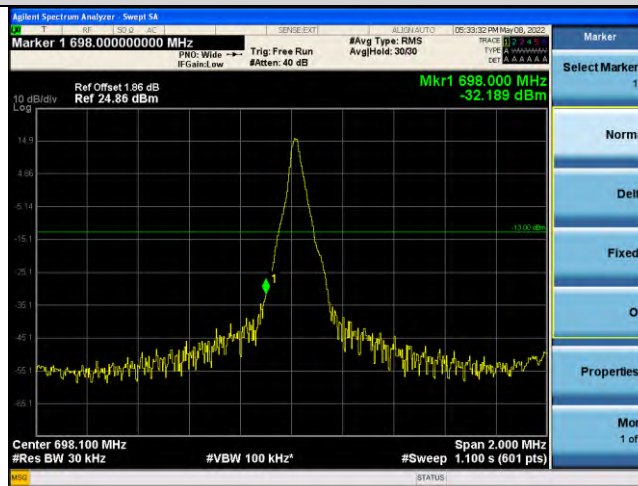
Band85-Stand-Alone-NaN-BPSK-134004-1@47-3.75kHz--48.41-PASS



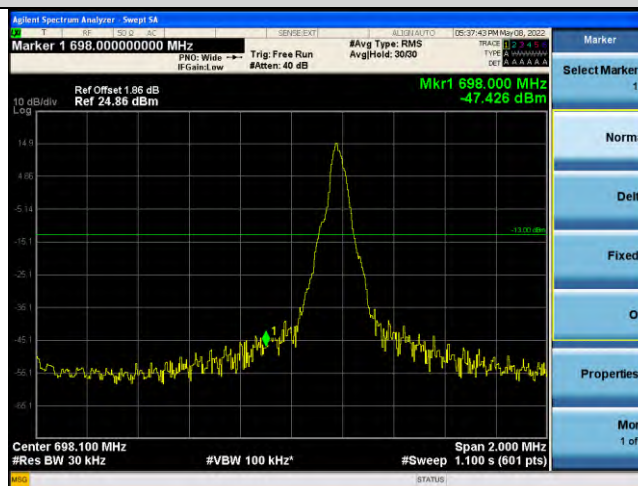
Band85-Stand-Alone-NaN-BPSK-134180-1@0-3.75kHz--34.11-PASS



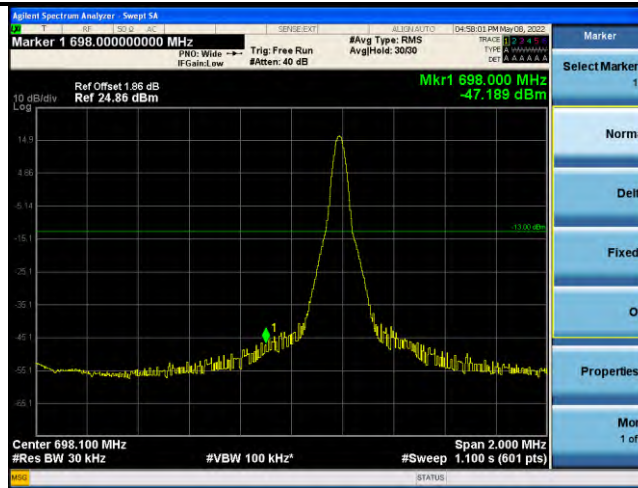
Band85-Stand-Alone-NaN-BPSK-134180-1 @47-3.75kHz--47.02-PASS



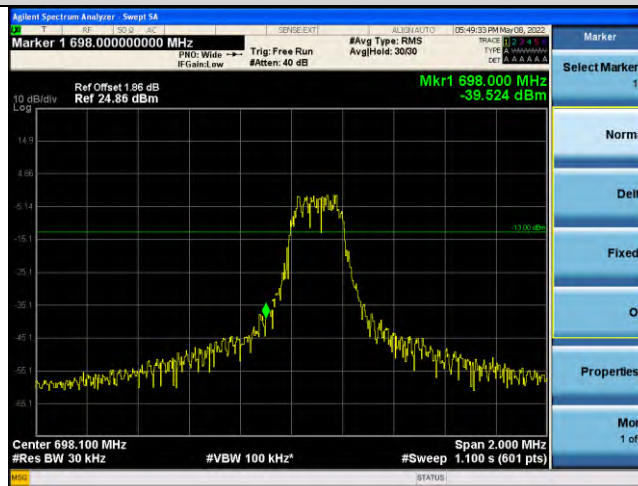
Band85-Stand-Alone-NaN-QPSK-134004-1 @0-3.75kHz--32.19-PASS



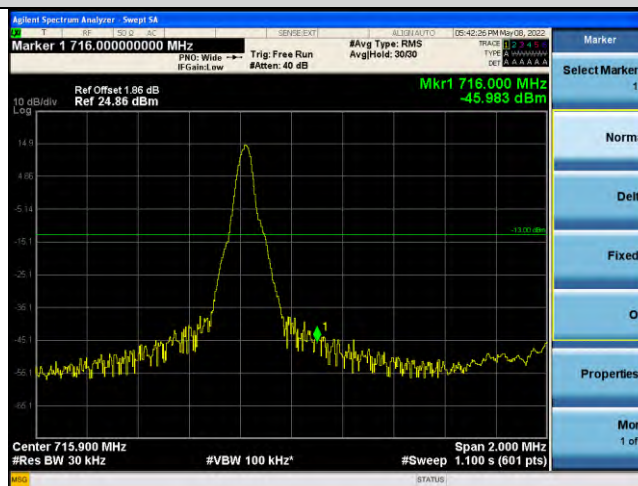
Band85-Stand-Alone-NaN-QPSK-134004-1 @47-3.75kHz--47.43-PASS



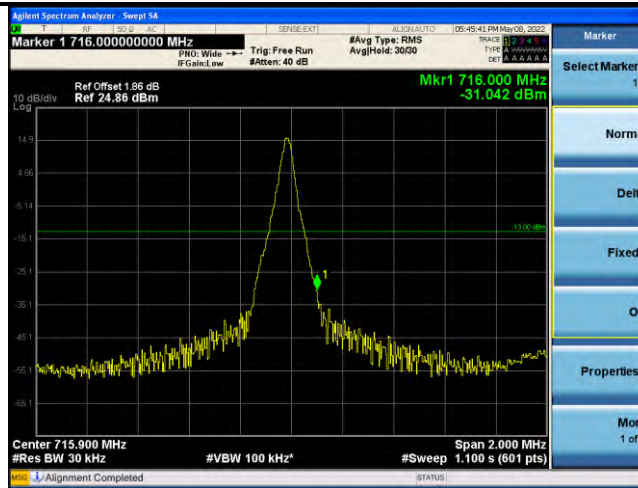
Band85-Stand-Alone-NaN-QPSK-134180-1@0-3.75kHz--47.19-PASS



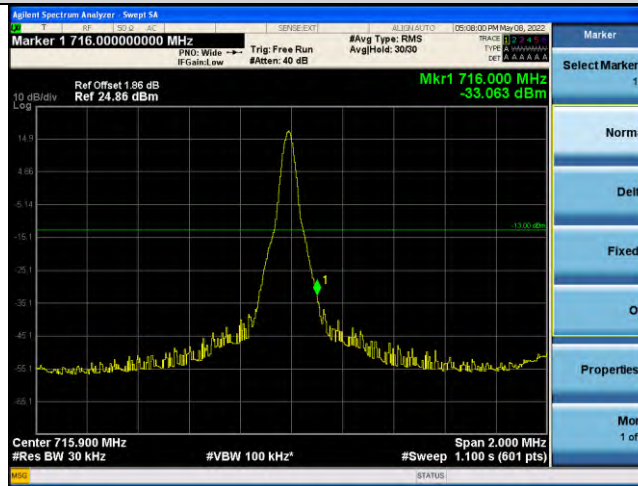
Band85-Stand-Alone-NaN-QPSK-134180-1@47-3.75kHz--39.52-PASS



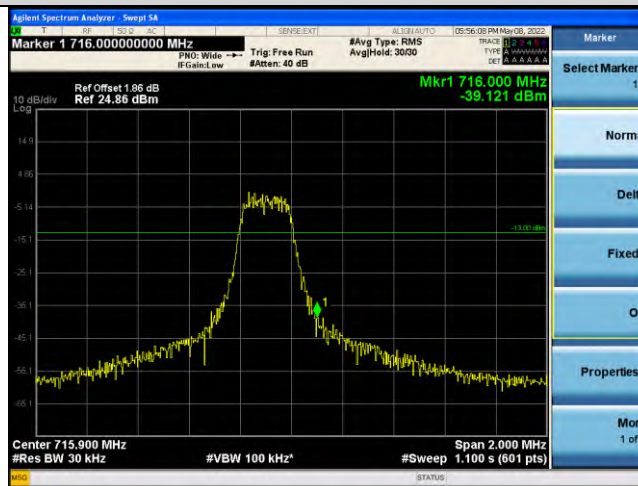
Band85-Stand-Alone-NaN-BPSK-134004-1@0-15kHz--45.98-PASS



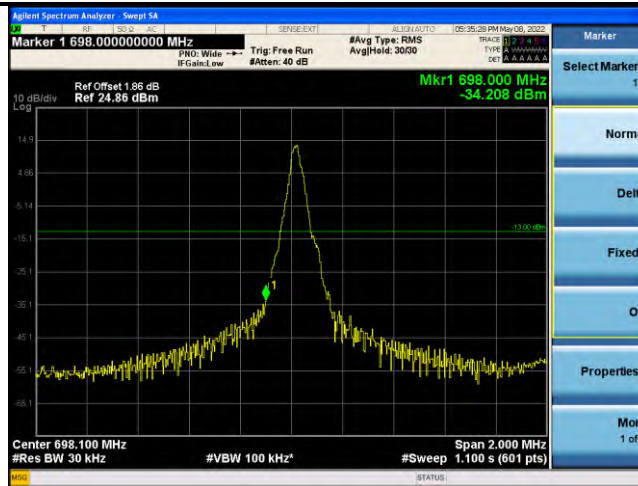
Band85-Stand-Alone-NaN-BPSK-134004-1 @ 11-15kHz--31.04-PASS



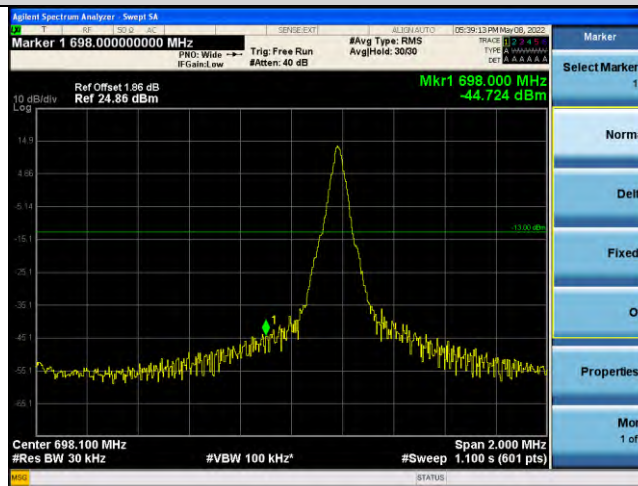
Band85-Stand-Alone-NaN-BPSK-134004-12 @ 0-15kHz--33.06-PASS



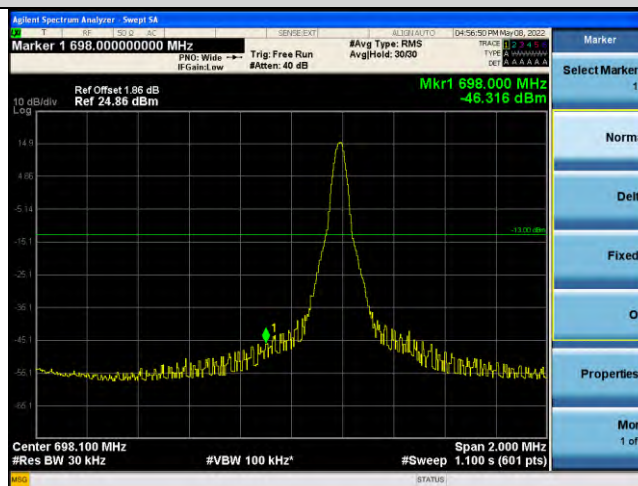
Band85-Stand-Alone-NaN-BPSK-134180-1 @ 0-15kHz--39.12-PASS



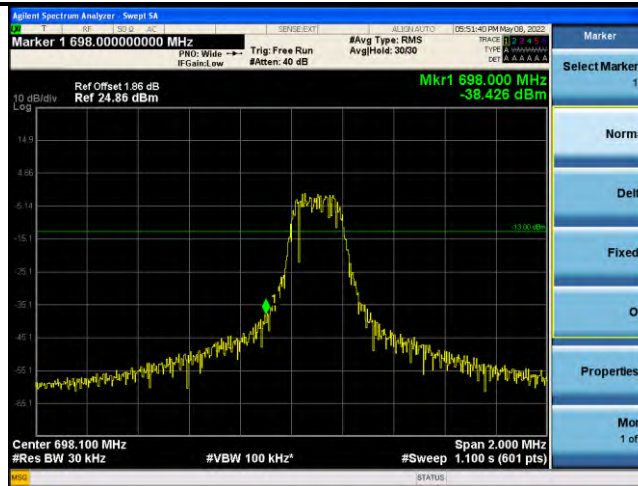
Band85-Stand-Alone-NaN-BPSK-134180-1 @ 11-15kHz--34.21-PASS



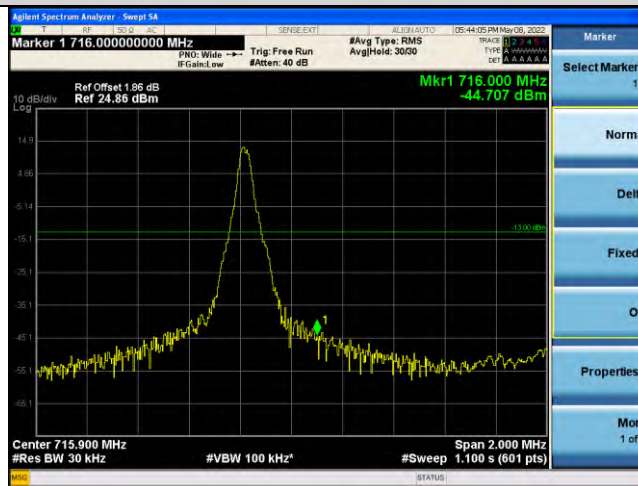
Band85-Stand-Alone-NaN-BPSK-134180-12 @ 0-15kHz--44.72-PASS



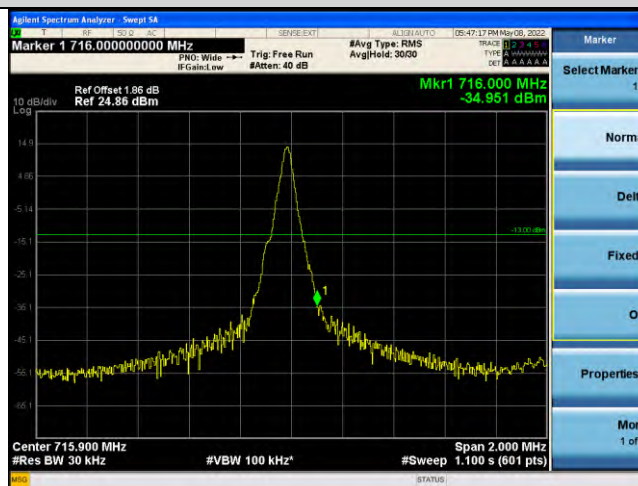
Band85-Stand-Alone-NaN-QPSK-134004-1 @ 0-15kHz--46.32-PASS



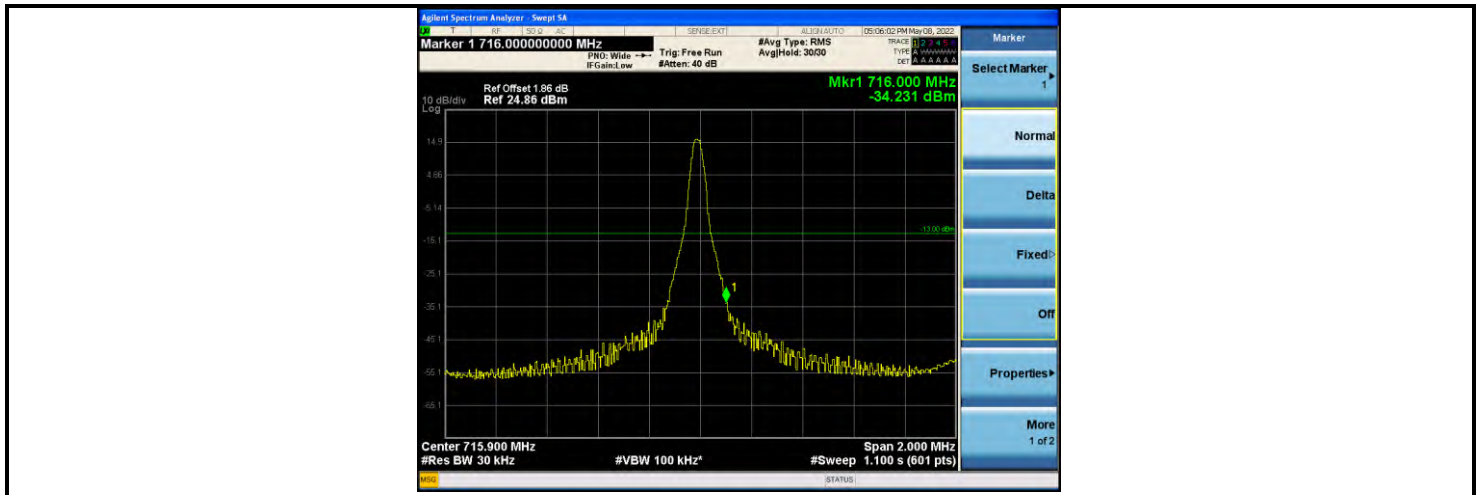
Band85-Stand-Alone-NaN-QPSK-134004-1 @ 11-15kHz--38.43-PASS



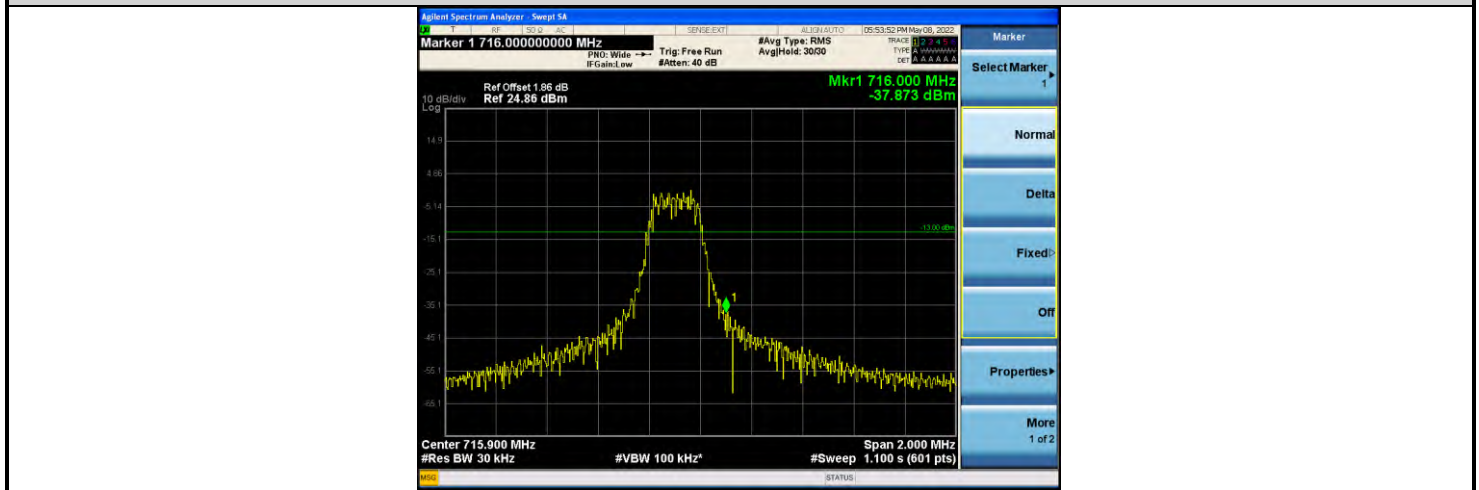
Band85-Stand-Alone-NaN-QPSK-134004-12 @ 0-15kHz--44.71-PASS



Band85-Stand-Alone-NaN-QPSK-134180-1 @ 0-15kHz--34.95-PASS



Band85-Stand-Alone-Na-N-QPSK-134180-1 @ 11-15kHz--34.23-PASS



Band85-Stand-Alone-Na-N-QPSK-134180-12 @ 0-15kHz--37.87-PASS

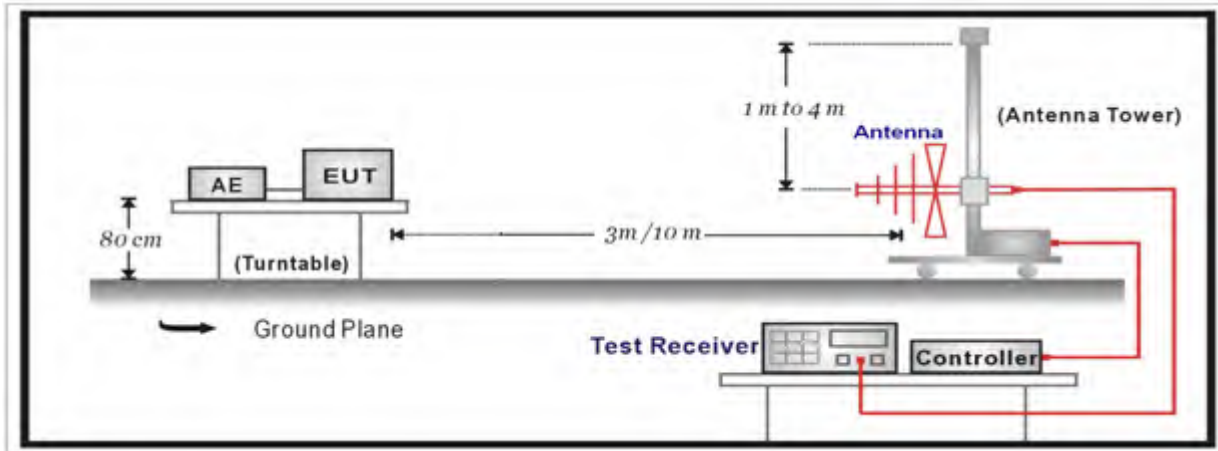
Note: All modes of operation were investigated, only the worst case results were shown in the report.

4.7 Radiated Emissions	VERDICT: PASS
-------------------------------	----------------------

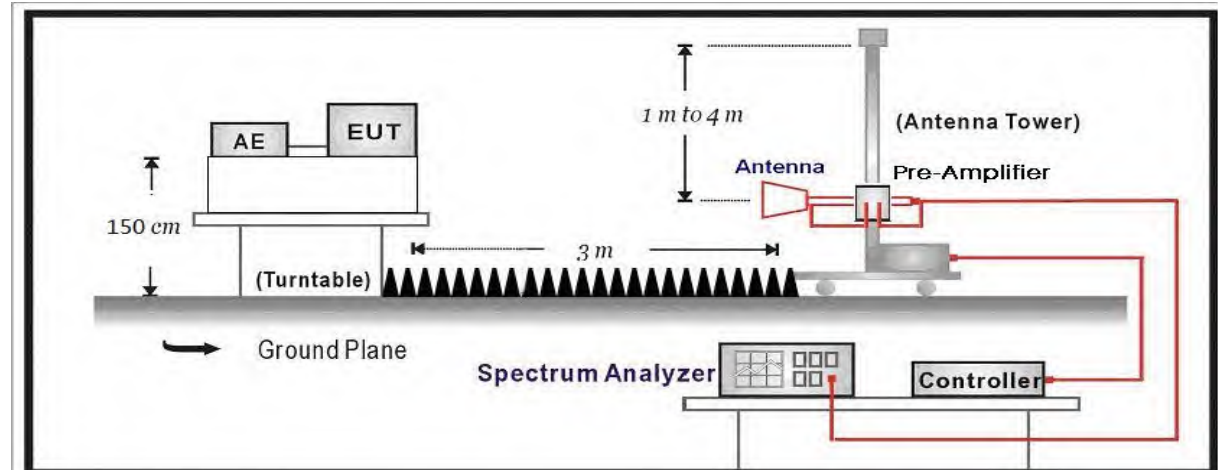
4.7.1 Limit	
NB-IoT Band	Standard
5/18/19/26	FCC §22.917: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
	FCC §90.691: For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.
2/25	FCC §24.238: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
12/13/17 /85	FCC §27.53(g): For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.
	FCC §27.53(c): On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
4/66	FCC §27.53(h): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

4.7.2 Test Setup

30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.7.3 Test Procedure

	Reference Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.26	5.5	Radiated emissions testing

The spectrum was scanned from 9 kHz to the 10th harmonic of the highest frequency generated within the equipment.

Emissions below 18 GHz were measured at a 3 meter test distance.

The EUT was tested in three orthogonal axes and in all possible test configurations and poisoning when measurement antenna is oriented in both horizontal and vertical polarization, the worst case emissions was showed in the report.

Radiated emissions were used the substitution method described in ANSI/TIA-603-E-2016.

Radiated emissions were measured with 100kHz RBW below 1GHz and 1MHz RBW above 1GHz.

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $X + 10 \log (P)$ dB. P in watts. The specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., $10 \log P - \{X + 10 \log P\}$], resulting in an absolute level of -X dBW [or $(-X + 30)$ dBm].

4.7.4 Test Data

NB-IoT Band 2

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3700.4	H	-46.9	-13	-33.9
3700.4	V	-47.7	-13	-34.7
5550.6	H	-47.3	-13	-34.3
5550.6	V	-48.0	-13	-35.0
Middle channel				
3760.0	H	-47.1	-13	-34.1
3760.0	V	-47.1	-13	-34.1
5640.0	H	-47.4	-13	-34.4
5640.0	V	-47.3	-13	-34.3
Highest channel				
3819.6	H	-47.3	-13	-34.3
3819.6	V	-47.3	-13	-34.3
5729.4	H	-47.2	-13	-34.2
5729.4	V	-46.7	-13	-33.7

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 4

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3420.4	H	-47.4	-13	-34.4
3420.4	V	-47.2	-13	-34.2
5130.6	H	-47.8	-13	-34.8
5130.6	V	-47.7	-13	-34.7
Middle channel				
3465.0	H	-46.9	-13	-33.9
3465.0	V	-47.8	-13	-34.8
5197.5	H	-46.6	-13	-33.6
5197.5	V	-46.4	-13	-33.4
Highest channel				
3509.6	H	-46.9	-13	-33.9
3509.6	V	-46.9	-13	-33.9
5264.4	H	-47.3	-13	-34.3
5264.4	V	-47.5	-13	-34.5

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 5

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1648.4	H	-48.1	-13	-35.1
1648.4	V	-47.6	-13	-34.6
2472.6	H	-46.9	-13	-33.9
2472.6	V	-47.9	-13	-34.9
Middle channel				
1673.0	H	-46.9	-13	-33.9
1673.0	V	-47.6	-13	-34.6
2509.5	H	-46.6	-13	-33.6
2509.5	V	-47.5	-13	-34.5
Highest channel				
1697.6	H	-47.8	-13	-34.8
1697.6	V	-47.4	-13	-34.4
2546.4	H	-46.8	-13	-33.8
2546.4	V	-47.5	-13	-34.5

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 12

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1398.4	H	-46.3	-13	-33.3
1398.4	V	-46.6	-13	-33.6
2097.6	H	-47.5	-13	-34.5
2097.6	V	-46.5	-13	-33.5
Middle channel				
1415.0	H	-47.3	-13	-34.3
1415.0	V	-46.1	-13	-33.1
2122.5	H	-46.2	-13	-33.2
2122.5	V	-46.0	-13	-33.0
Highest channel				
1431.6	H	-47.9	-13	-34.9
1431.6	V	-46.3	-13	-33.3
2147.4	H	-47.6	-13	-34.6
2147.4	V	-47.9	-13	-34.9

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 13

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1554.4	H	-47.7	-13	-34.7
1554.4	V	-46.2	-13	-33.2
2331.6	H	-47.6	-13	-34.6
2331.6	V	-46.1	-13	-33.1
Middle channel				
1557.0	H	-46.1	-13	-33.1
1557.0	V	-46.5	-13	-33.5
2335.5	H	-46.5	-13	-33.5
2335.5	V	-46.7	-13	-33.7
Highest channel				
1557.6	H	-47.9	-13	-34.9
1557.6	V	-47.2	-13	-34.2
2336.4	H	-46.6	-13	-33.6
2336.4	V	-47.9	-13	-34.9

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 17

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1408.4	H	-46.9	-13	-33.9
1408.4	V	-47.5	-13	-34.5
2112.6	H	-46.2	-13	-33.2
2112.6	V	-47.5	-13	-34.5
Middle channel				
1420.0	H	-47.8	-13	-34.8
1420.0	V	-47.7	-13	-34.7
2130.0	H	-46.4	-13	-33.4
2130.0	V	-46.9	-13	-33.9
Highest channel				
1431.6	H	-47.7	-13	-34.7
1431.6	V	-47.6	-13	-34.6
2147.4	H	-46.7	-13	-33.7
2147.4	V	-47.6	-13	-34.6

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 18

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1630.4	H	-47.3	-13	-34.3
1630.4	V	-47.6	-13	-34.6
2445.6	H	-47.8	-13	-34.8
2445.6	V	-47.3	-13	-34.3
Middle channel				
1645.0	H	-47.5	-13	-34.5
1645.0	V	-46.1	-13	-33.1
2467.5	H	-46.2	-13	-33.2
2467.5	V	-46.1	-13	-33.1
Highest channel				
1659.6	H	-47.1	-13	-34.1
1659.6	V	-47.1	-13	-34.1
2489.4	H	-47.1	-13	-34.1
2489.4	V	-47.6	-13	-34.6

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 19

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1660.4	H	-47.9	-13	-34.9
1660.4	V	-47.6	-13	-34.6
2490.6	H	-47.0	-13	-34.0
2490.6	V	-48.0	-13	-35.0
Middle channel				
1675.0	H	-47.3	-13	-34.3
1675.0	V	-47.3	-13	-34.3
2512.5	H	-46.1	-13	-33.1
2512.5	V	-46.9	-13	-33.9
Highest channel				
1689.6	H	-46.8	-13	-33.8
1689.6	V	-47.2	-13	-34.2
2534.4	H	-46.8	-13	-33.8
2534.4	V	-47.7	-13	-34.7

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 25

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3700.4	H	-47.5	-13	-34.5
3700.4	V	-47.1	-13	-34.1
5550.6	H	-47.3	-13	-34.3
5550.6	V	-48.1	-13	-35.1
Middle channel				
3765.0	H	-47.6	-13	-34.6
3765.0	V	-47.9	-13	-34.9
5647.5	H	-46.1	-13	-33.1
5647.5	V	-47.1	-13	-34.1
Highest channel				
3829.6	H	-47.7	-13	-34.7
3829.6	V	-48.0	-13	-35.0
5744.4	H	-47.6	-13	-34.6
5744.4	V	-47.5	-13	-34.5

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 26 (Part 90)

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1628.4	H	-46.5	-13	-33.5
1628.4	V	-46.0	-13	-33.0
2442.6	H	-45.3	-13	-32.3
2442.6	V	-45.2	-13	-32.2
Middle channel				
1638.0	H	-45.8	-13	-32.8
1638.0	V	-47.4	-13	-34.4
2457.0	H	-45.4	-13	-32.4
2457.0	V	-45.7	-13	-32.7
Highest channel				
1647.6	H	-46.7	-13	-33.7
1647.6	V	-46.3	-13	-33.3
2471.4	H	-45.9	-13	-32.9
2471.4	V	-47.6	-13	-34.6

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 26 (Part 22)

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1648.4	H	-46.8	-13	-33.8
1648.4	V	-47.0	-13	-34.0
2472.6	H	-46.7	-13	-33.7
2472.6	V	-47.0	-13	-34.0
Middle channel				
1673.0	H	-46.0	-13	-33.0
1673.0	V	-46.1	-13	-33.1
2509.5	H	-45.3	-13	-32.3
2509.5	V	-46.7	-13	-33.7
Highest channel				
1697.6	H	-48.1	-13	-35.1
1697.6	V	-48.0	-13	-35.0
2546.4	H	-47.0	-13	-34.0
2546.4	V	-47.5	-13	-34.5

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 66

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3420.4	H	-47.0	-13	-34.0
3420.4	V	-47.6	-13	-34.6
5130.6	H	-47.3	-13	-34.3
5130.6	V	-47.6	-13	-34.6
Middle channel				
3490.0	H	-47.9	-13	-34.9
3490.0	V	-46.5	-13	-33.5
5235.0	H	-46.4	-13	-33.4
5235.0	V	-47.4	-13	-34.4
Highest channel				
3559.6	H	-48.0	-13	-35.0
3559.6	V	-47.1	-13	-34.1
5339.4	H	-46.7	-13	-33.7
5339.4	V	-47.7	-13	-34.7

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NB-IoT Band 85

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1396.4	H	-47.0	-13	-34.0
1396.4	V	-47.0	-13	-34.0
2094.6	H	-46.1	-13	-33.1
2094.6	V	-46.9	-13	-33.9
Middle channel				
1414.0	H	-46.8	-13	-33.8
1414.0	V	-46.3	-13	-33.3
2121.0	H	-47.2	-13	-34.2
2121.0	V	-47.4	-13	-34.4
Highest channel				
1431.6	H	-47.9	-13	-34.9
1431.6	V	-47.1	-13	-34.1
2147.4	H	-47.6	-13	-34.6
2147.4	V	-46.3	-13	-33.3

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

4.8 Test setup photo and EUT Photo

VERDICT: PASS

Remark: The test setup photo and EUT Photo please see appendix.

_____ The End _____