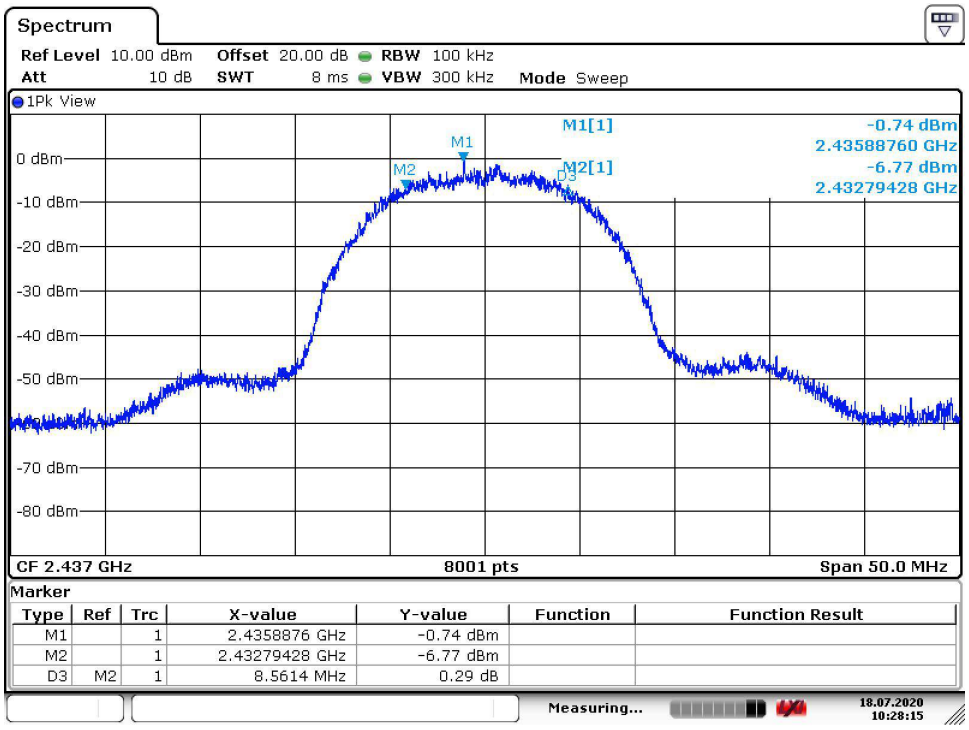
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11b

Mid Channel: 2437 6dB Bandwidth = 8.5614 MHz Result: Pass



Date: 18.JUL.2020 10:28:15

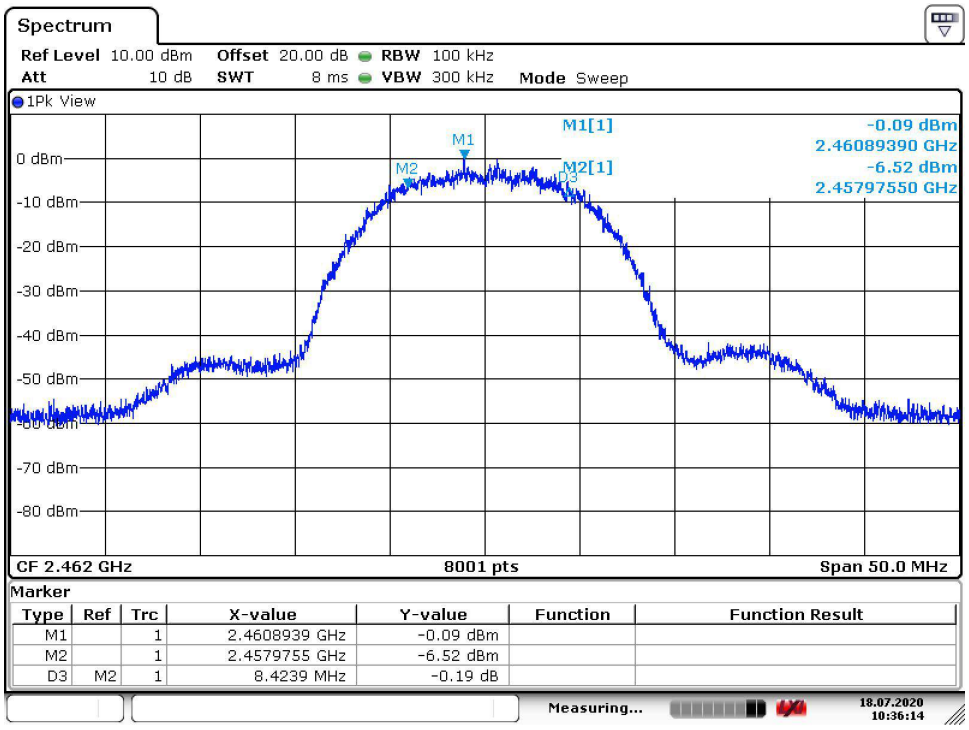
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11b

High Channel: 2462 6dB Bandwidth = 8.4239 MHz Result: Pass



Date: 18.JUL.2020 10:36:15

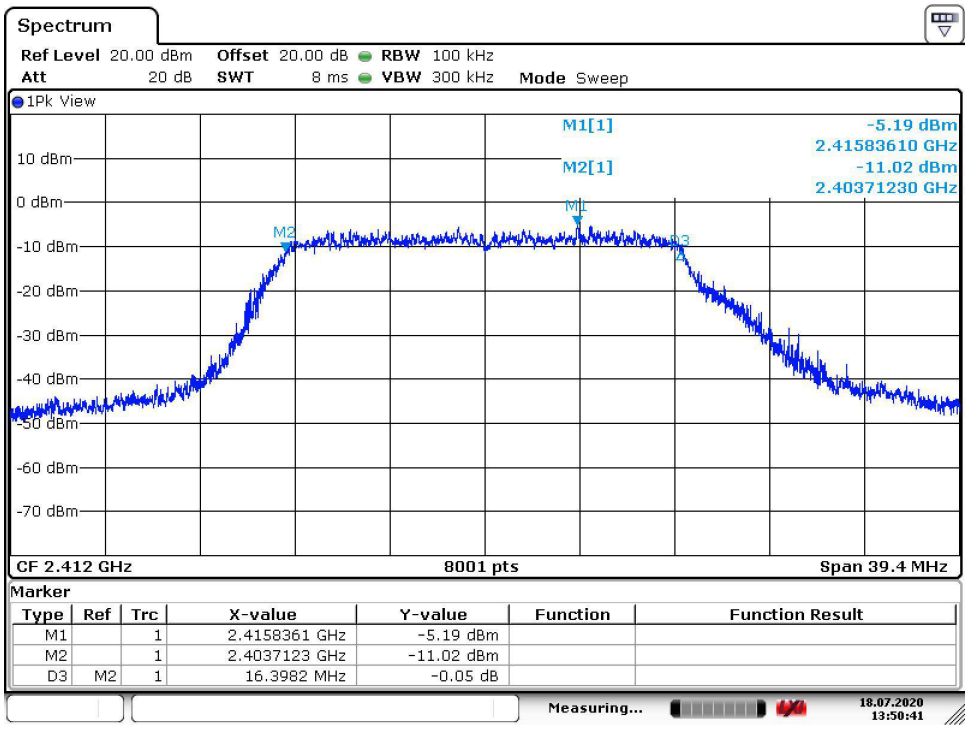
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11g

Low Channel: 2412 6dB Bandwidth = 16.3982 MHz Result: Pass



Date: 18.JUL.2020 13:50:41

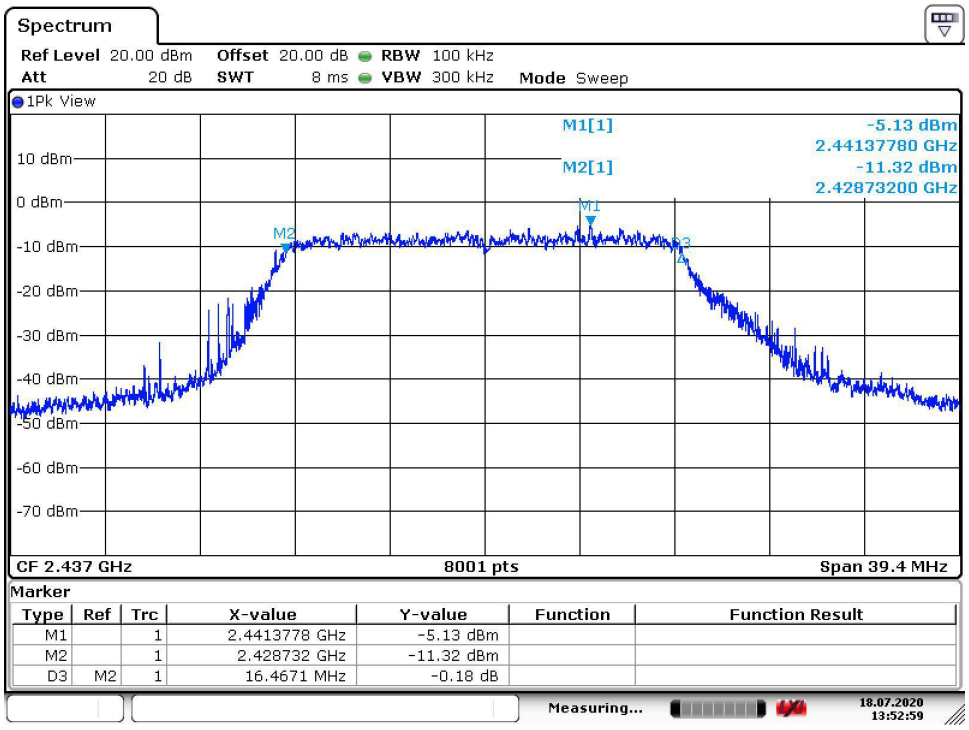
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11g

Mid Channel: 2437 6dB Bandwidth = 16.4671 MHz Result: Pass



Date: 18.JUL.2020 13:53:00

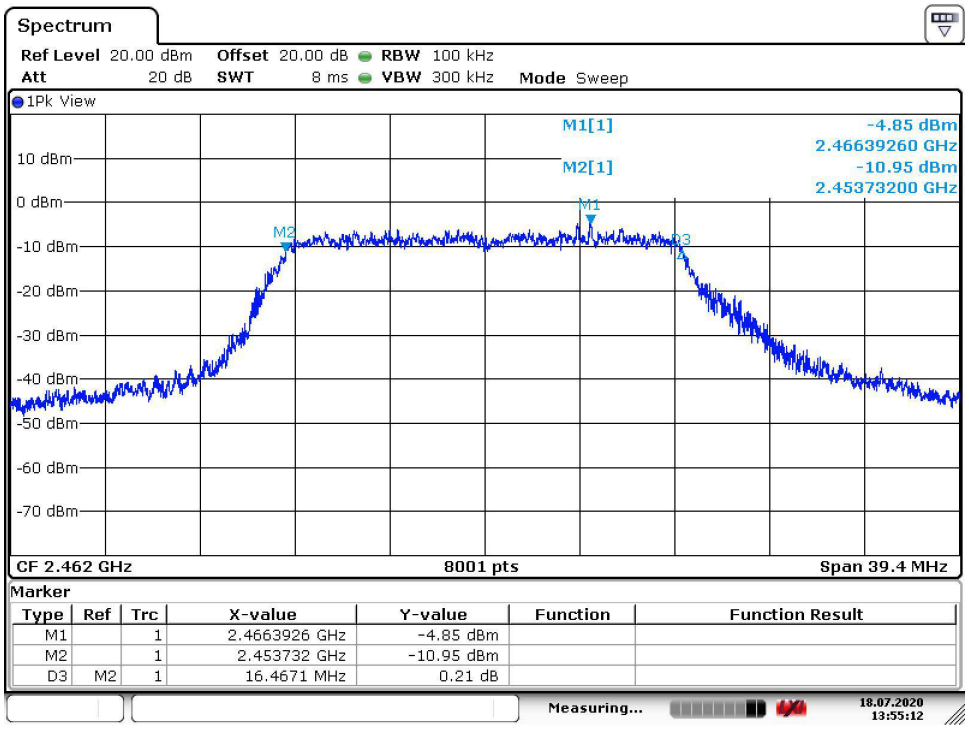
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11g

High Channel: 2462 6dB Bandwidth = 16.4671 MHz Result: Pass



Date: 18.JUL.2020 13:55:13

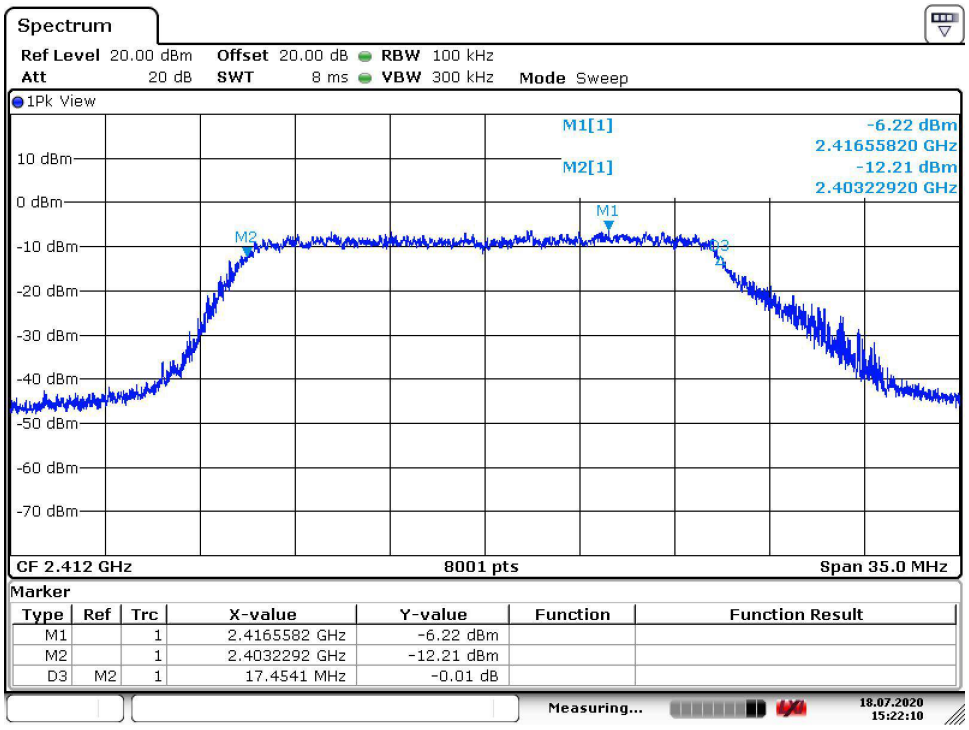
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11n

Low Channel: 2412 6dB Bandwidth = 17.4541 MHz Result: Pass



Date: 18.JUL.2020 15:22:11

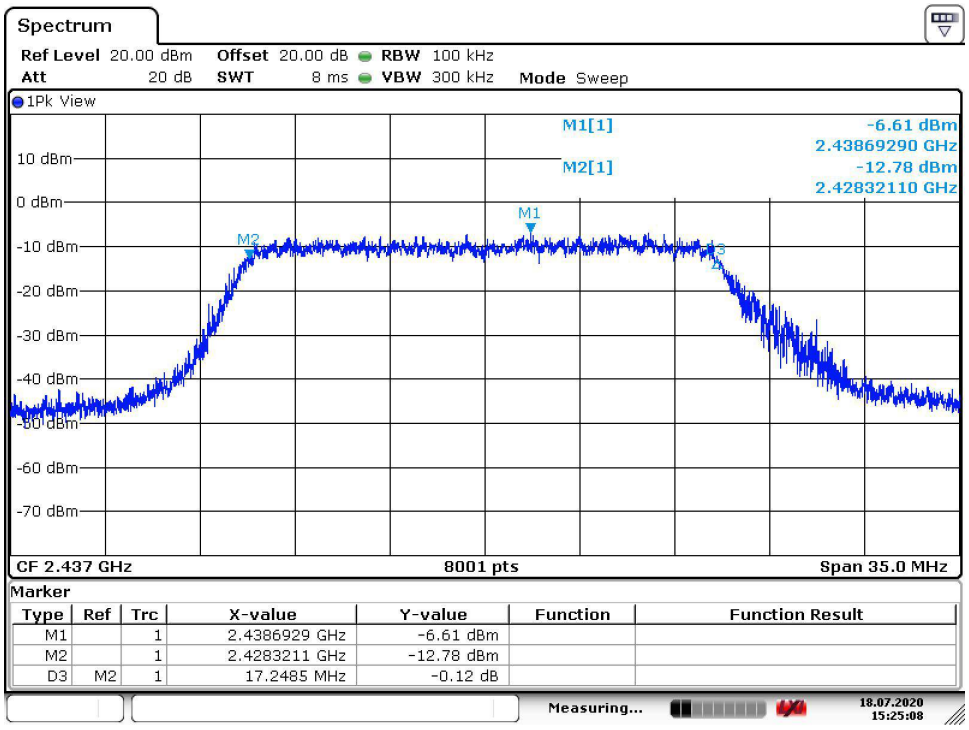
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11n

Mid Channel: 2437 6dB Bandwidth = 17.2485 MHz Result: Pass



Date: 18.JUL.2020 15:25:09

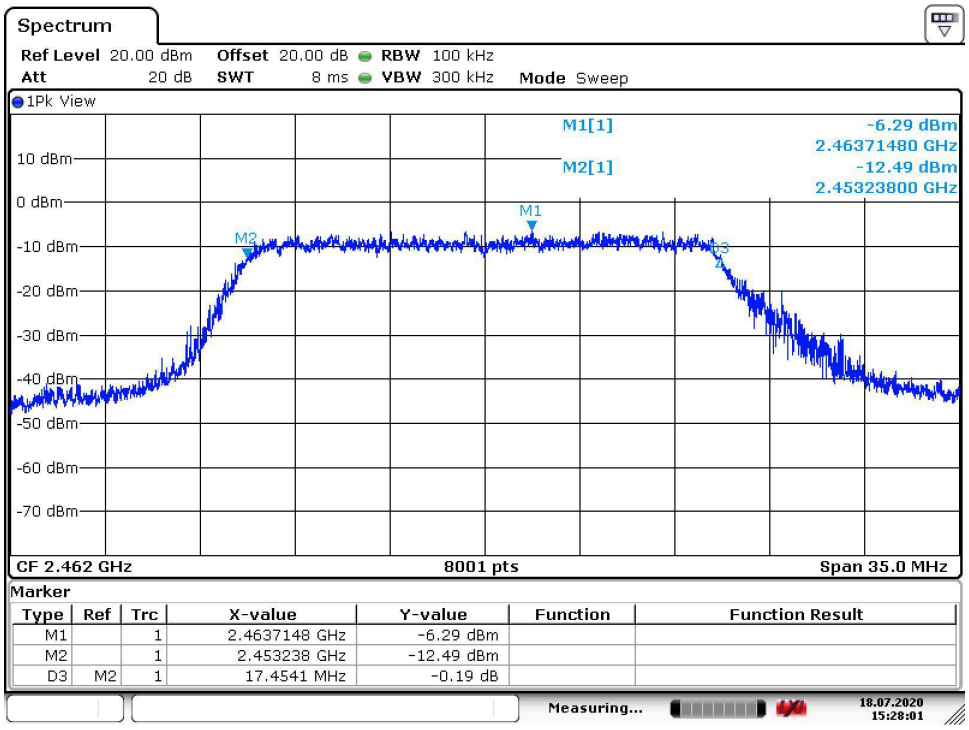
Client: IOSiX LLC Date: 18 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 6dB Bandwidth greater than 500kHz Tech: CL Payne

Modulation: 802.11n

High Channel: 2462 6dB Bandwidth = 17.4541 MHz Result: Pass



Date: 18.JUL.2020 15:28:01

Occupied bandwidth—power bandwidth (99%) measurement procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

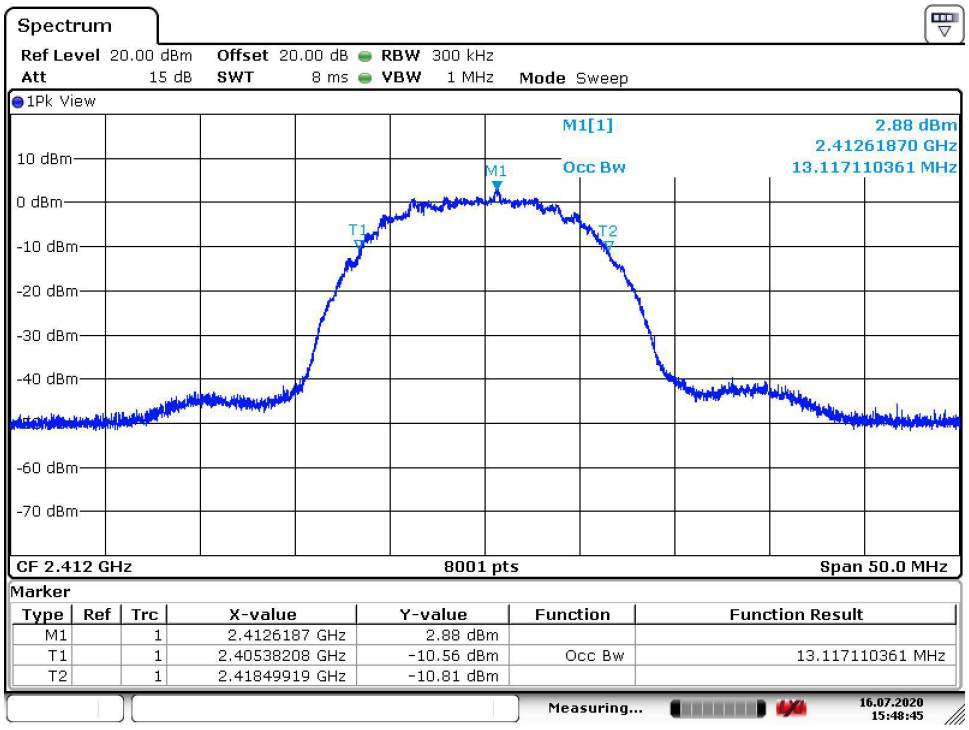
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11b

Low Channel: 2412 99% Occupied Bandwidth = 13.117110361 MHz



Date: 16.JUL.2020 15:48:45

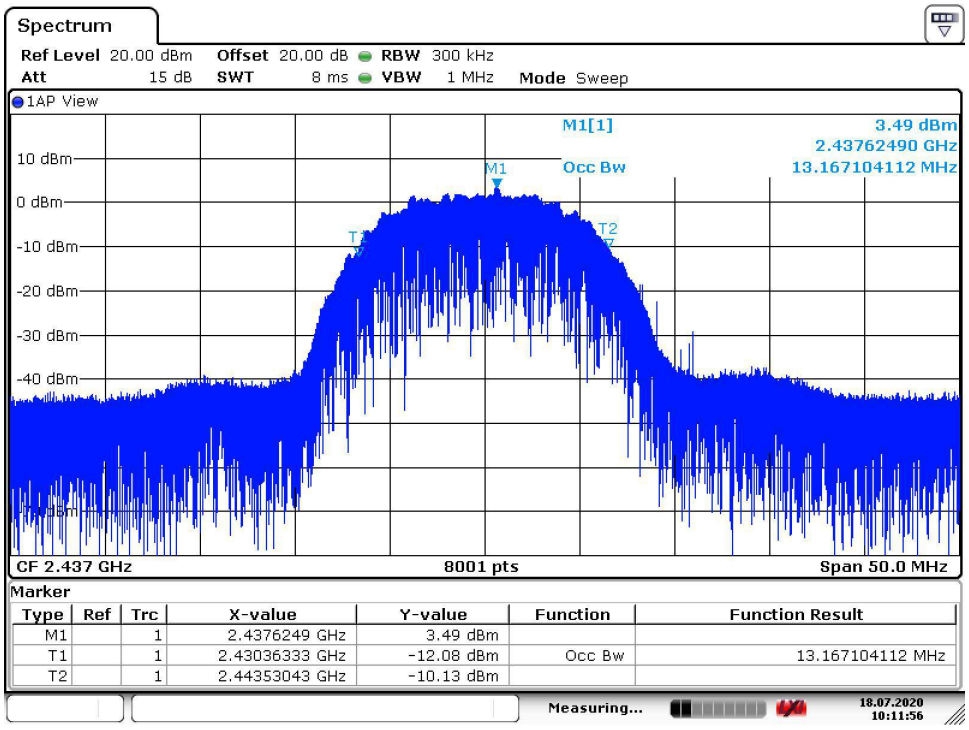
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11b

Mid Channel: 2437 99% Occupied Bandwidth = 13.167104112 MHz



Date: 18.JUL.2020 10:11:57

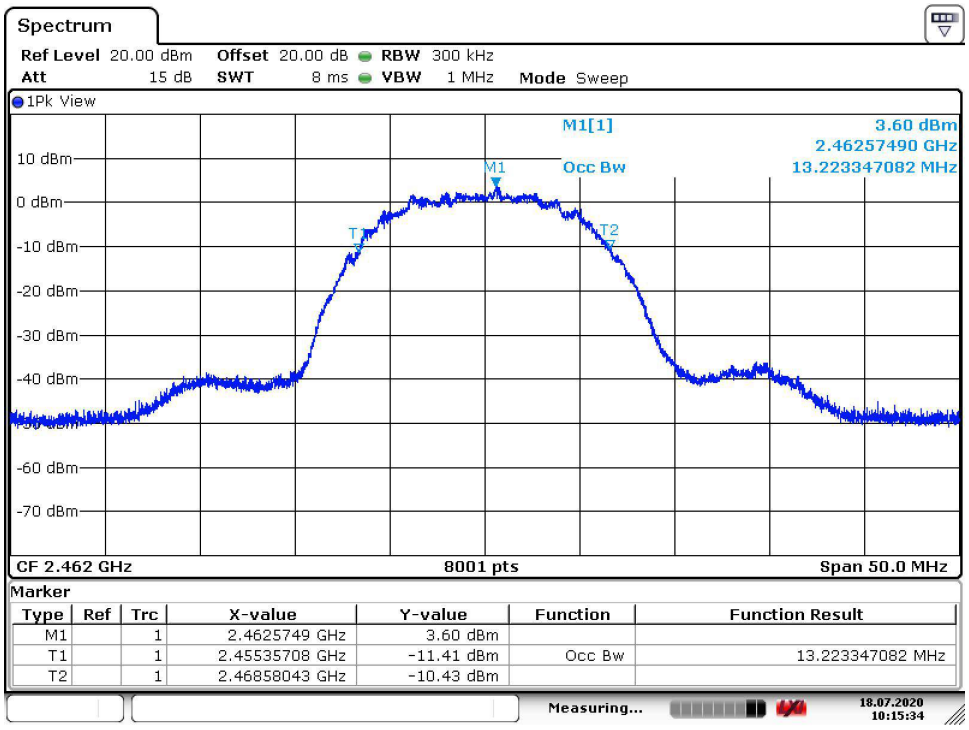
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11b

High Channel: 2462 99% Occupied Bandwidth = 13.223347082 MHz



Date: 18.JUL.2020 10:15:34

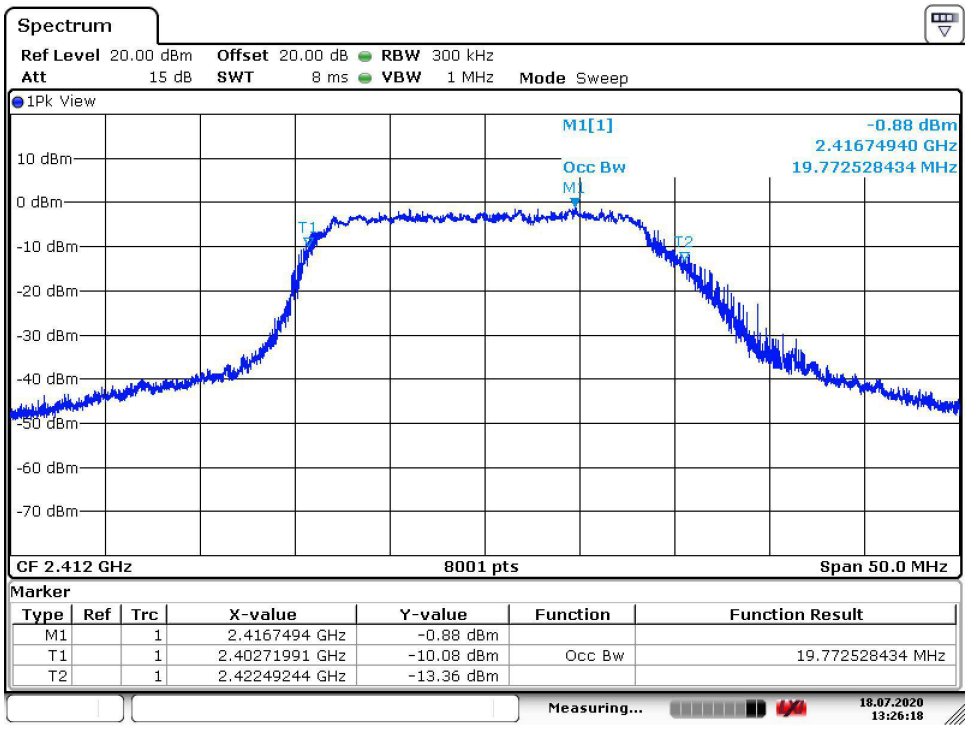
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11g

Low Channel: 2412 99% Occupied Bandwidth = 19.772528434 MHz



Date: 18.JUL.2020 13:26:19

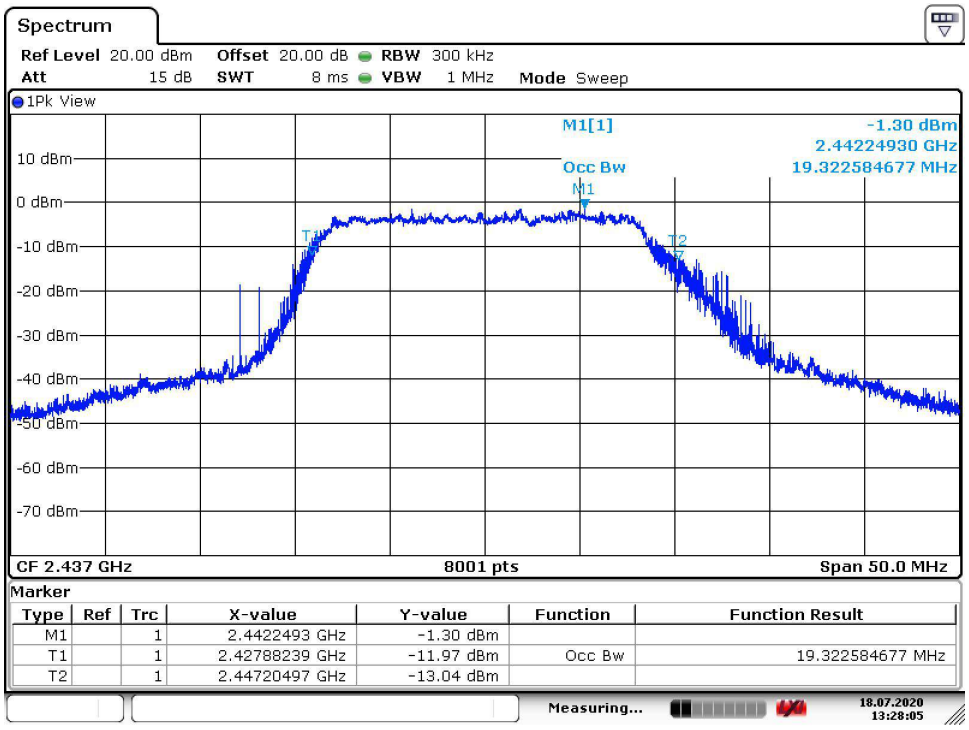
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11g

Mid Channel: 2437 99% Occupied Bandwidth = 19.3225846777 MHz



Date: 18.JUL.2020 13:28:06

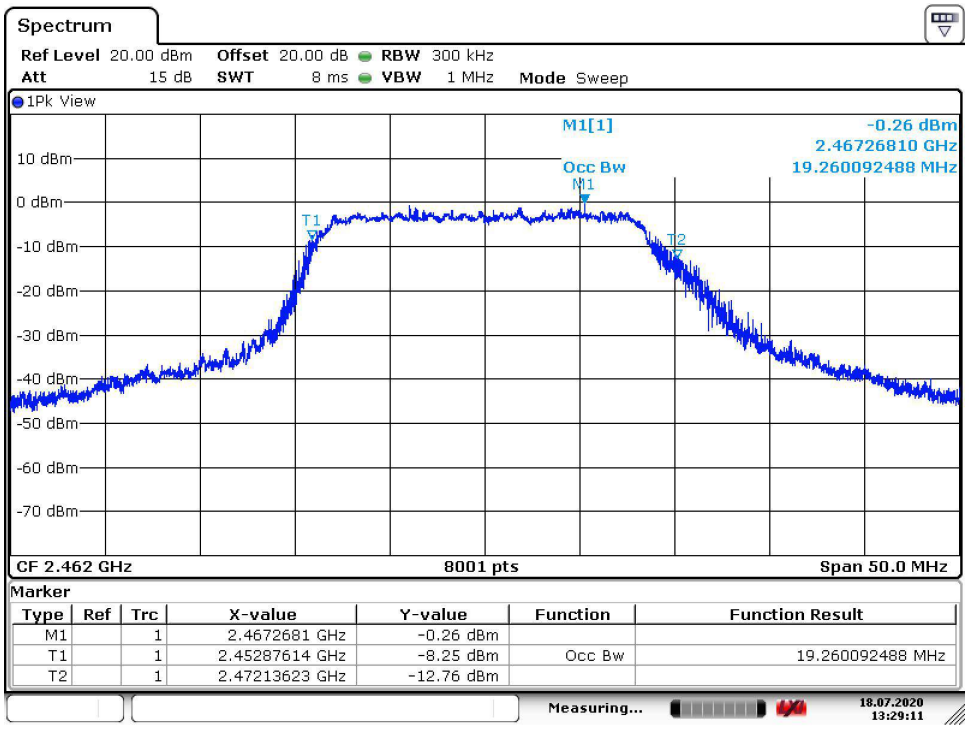
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11g

High Channel: 2462 99% Occupied Bandwidth = 19.260092488 MHz



Date: 18.JUL.2020 13:29:11

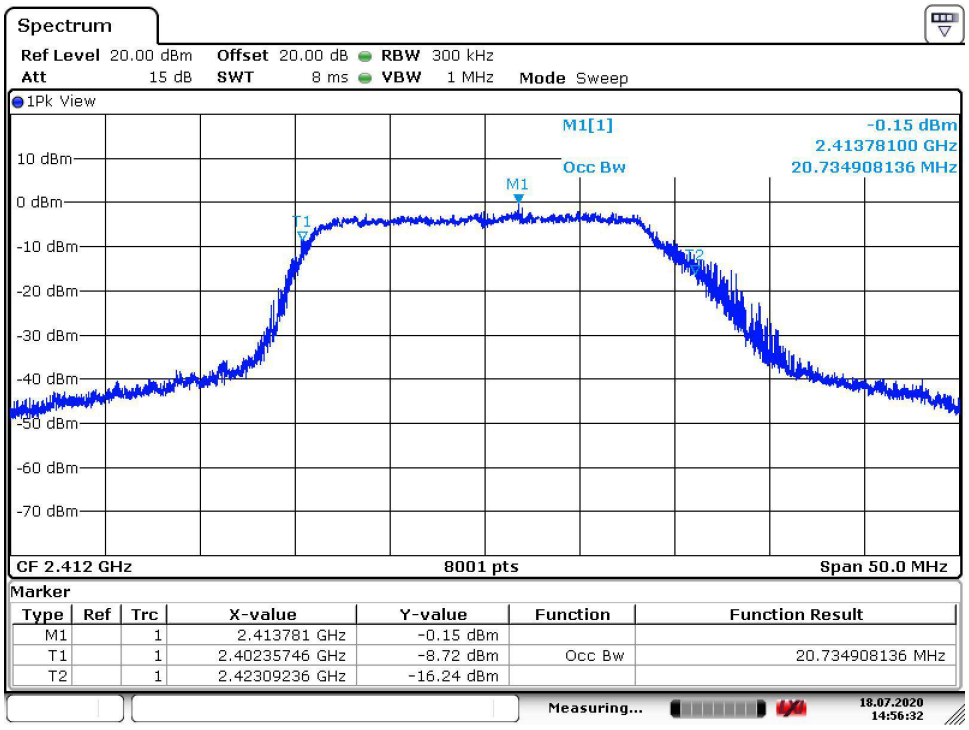
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11n20

Low Channel: 2412 99% Occupied Bandwidth = 20.734908136 MHz



Date: 18.JUL.2020 14:56:32

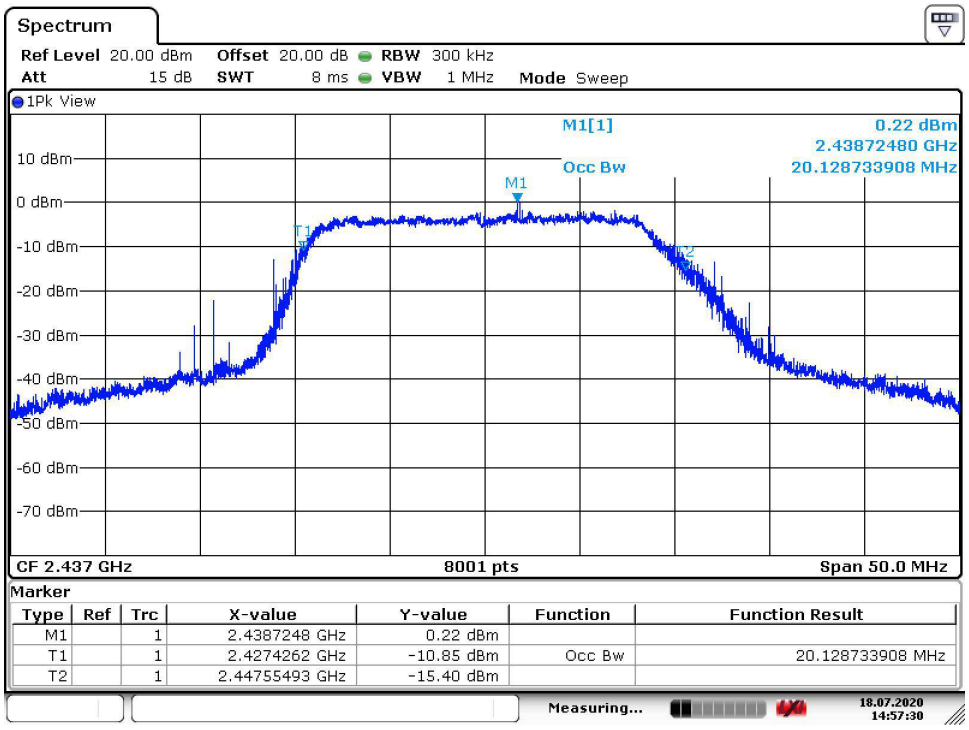
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11n20

Mid Channel: 2437 99% Occupied Bandwidth = 20.128733908 MHz



Date: 18.JUL.2020 14:57:31

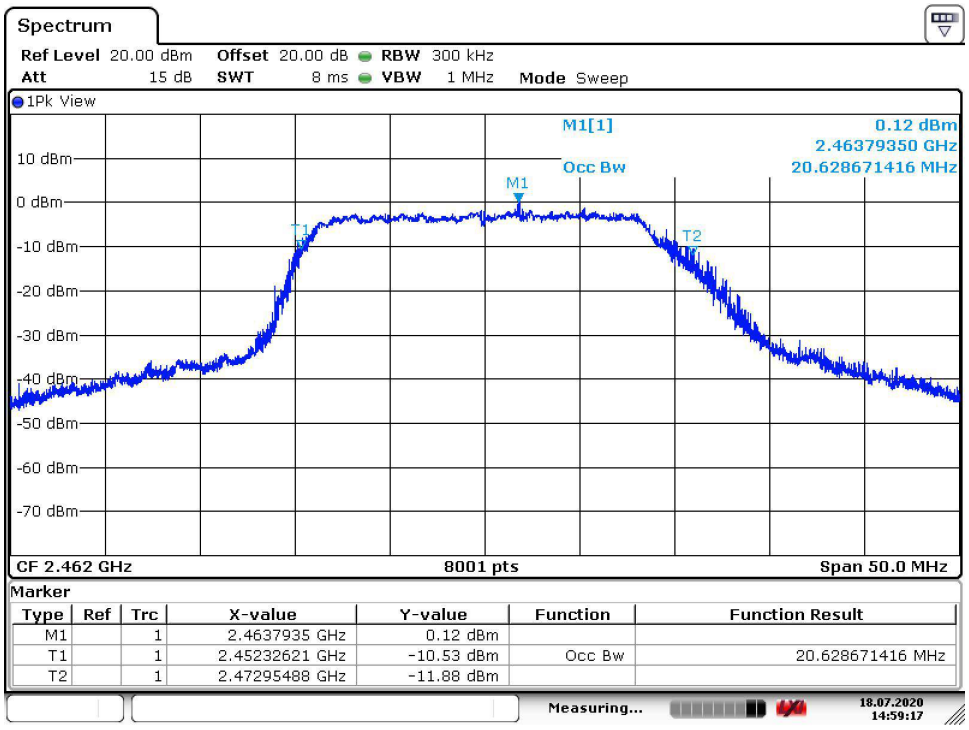
Client: IOSix LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: 99% Occupied Bandwidth Tech: CL Payne

Modulation: 802.11n20

High Channel: 2462 99% Occupied Bandwidth = 20.628671416 MHz



Date: 18.JUL.2020 14:59:17

15.247 (d) Conducted Spurious ANSI C63.10-2013 Clause 11.11.3

Conducted spurious emissions shall be measured for the transmit frequency, per 5.5 and 5.6, and at the maximum transmit powers.

Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The instrument shall span 30 MHz to 10 times the operating frequency in GHz, with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector. The band 30 MHz to the highest frequency may be split into smaller spans, as long as the entire spectrum is covered.

Requirement: FCC Part 15.247 Clause (d)

(d) 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 conducted power limits.

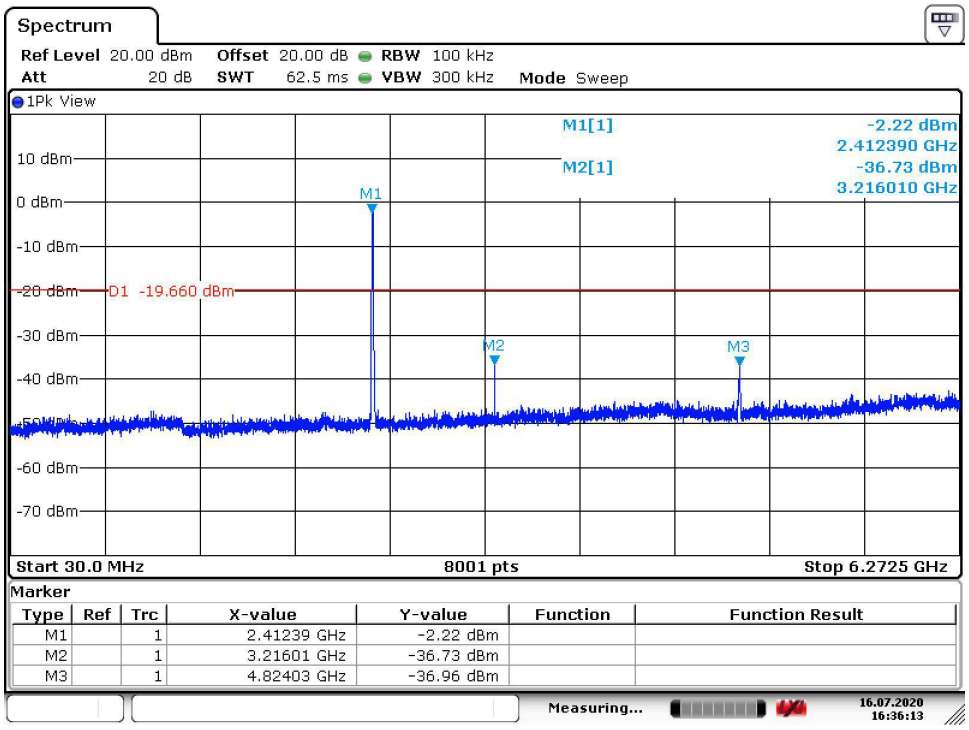
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Low Channel: 2412 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 16:36:13

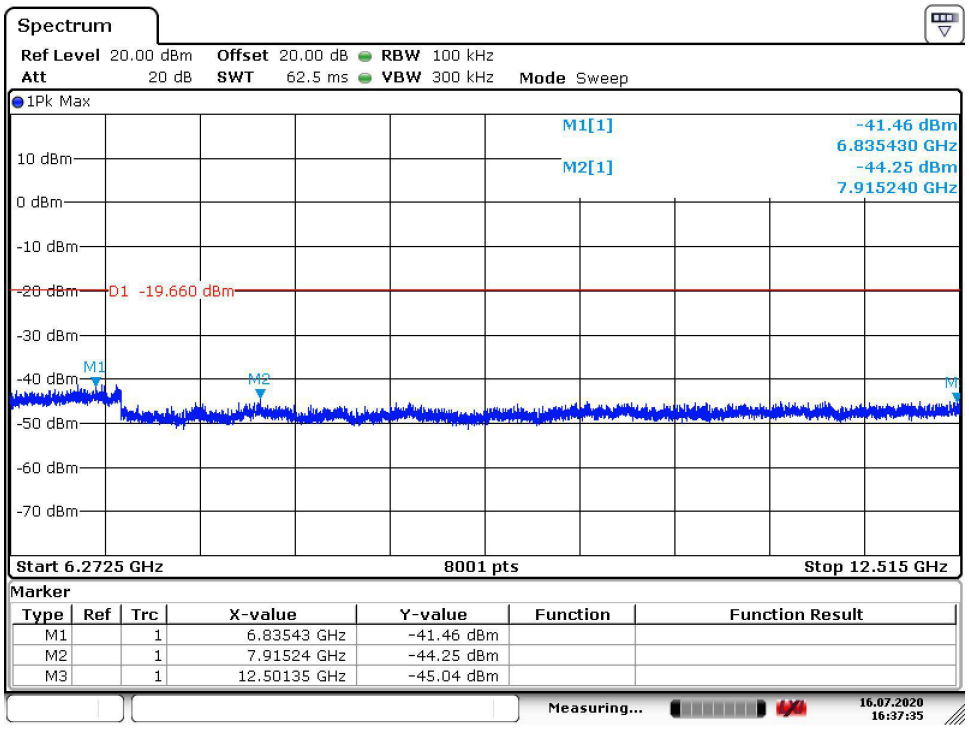
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Low Channel: 2412 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 16:37:36

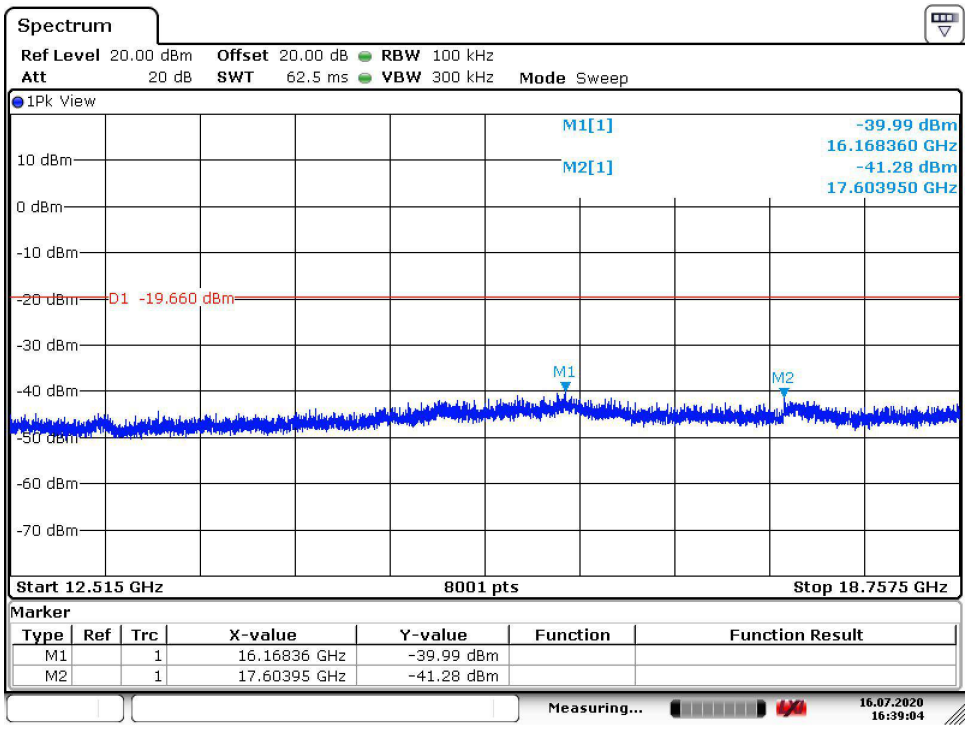
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Low Channel: 2412 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 16:39:05

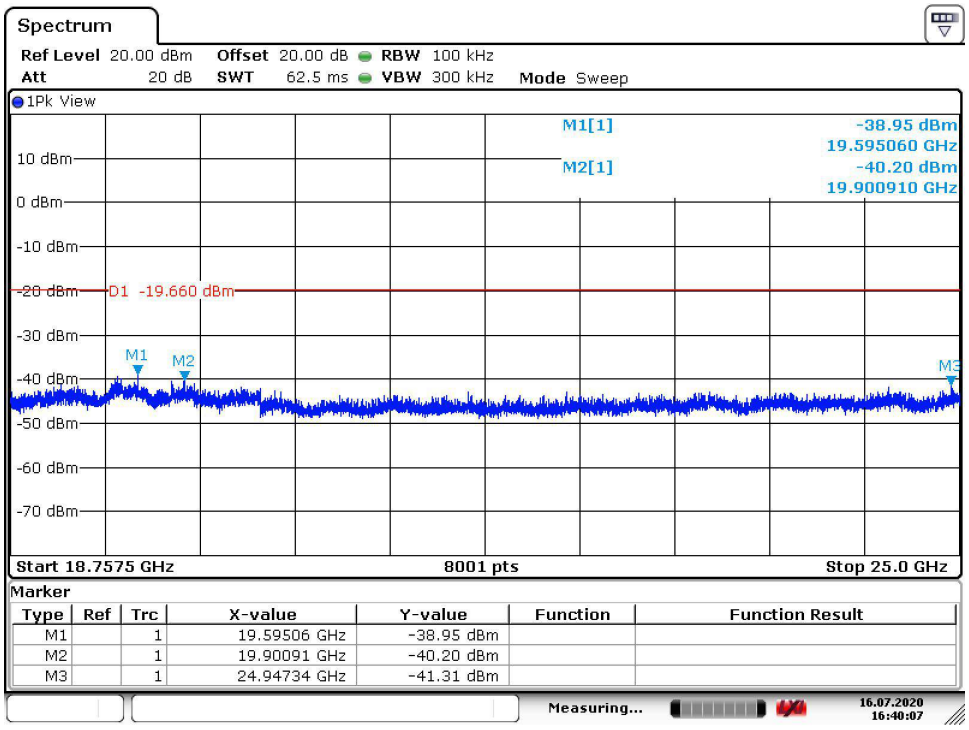
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Low Channel: 2412 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 16:40:07

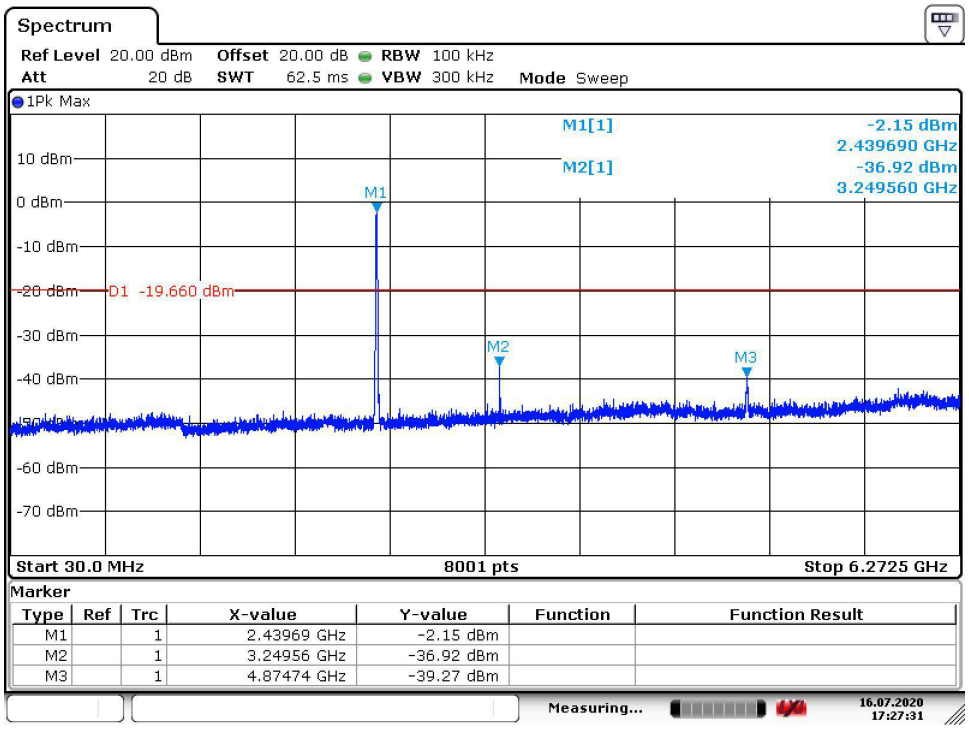
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Mid Channel: 2437 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:27:32

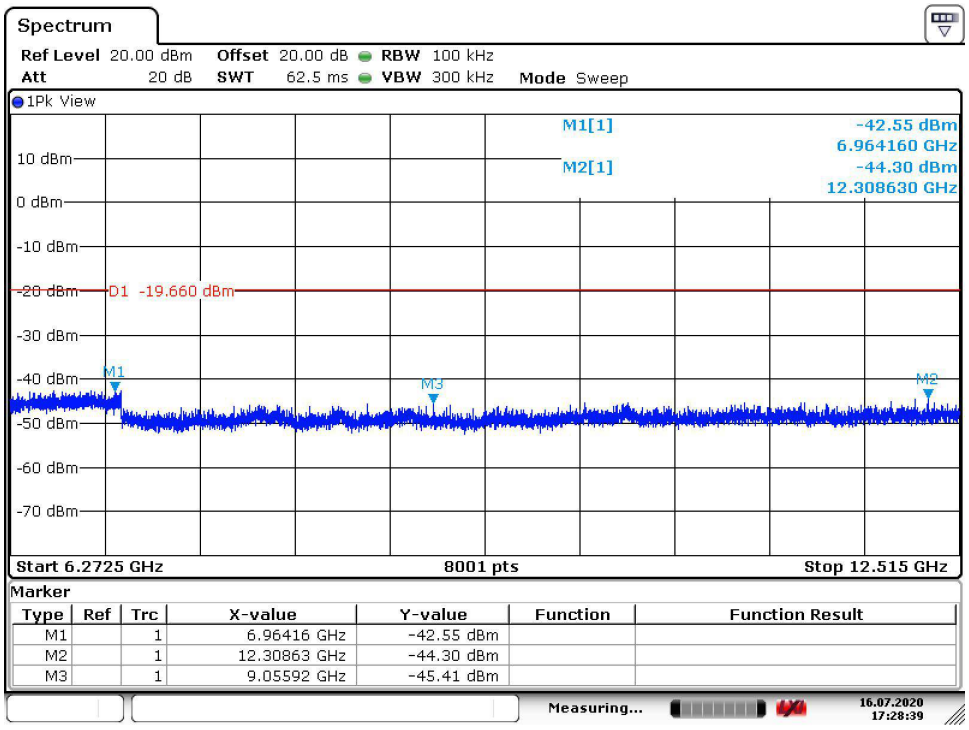
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Mid Channel: 2437 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:28:40

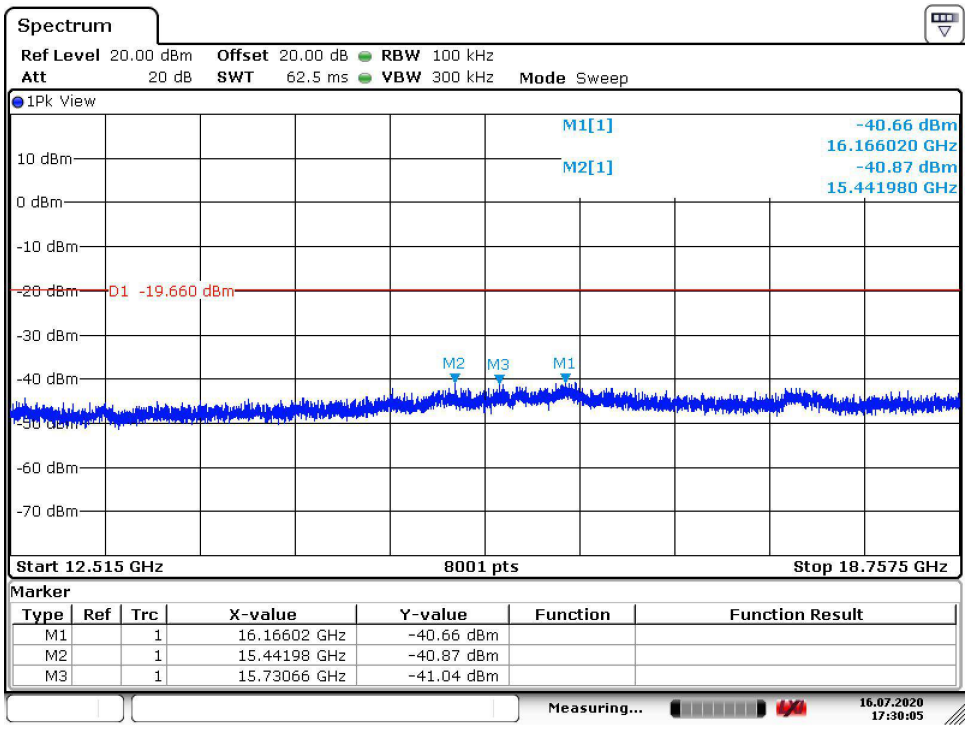
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Mid Channel: 2437 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:30:06

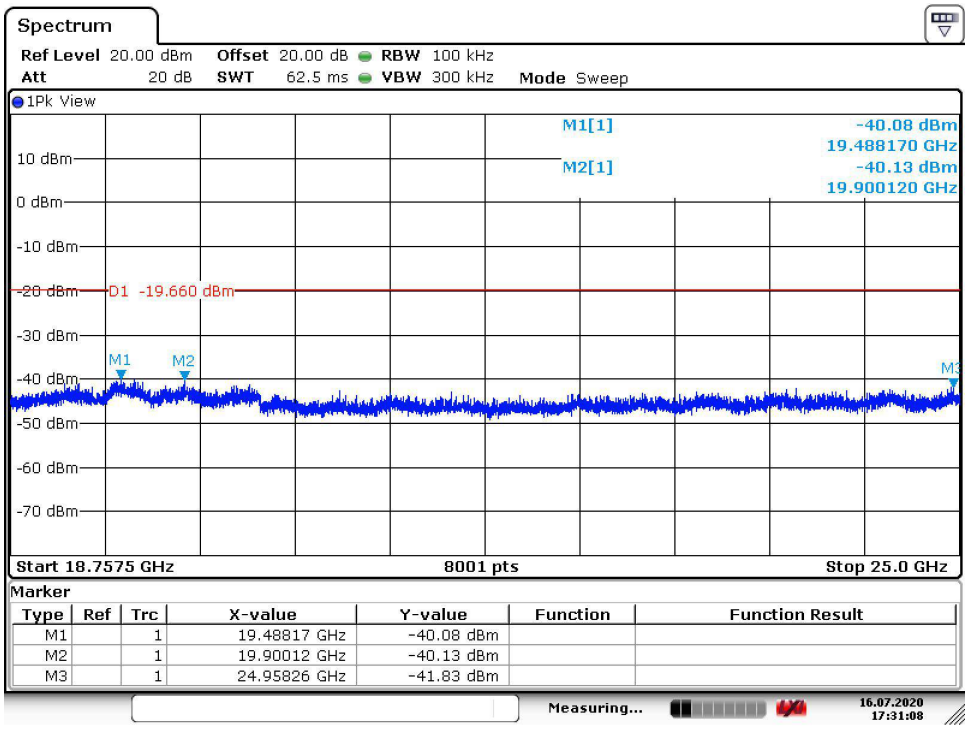
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

Mid Channel: 2437 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:31:09

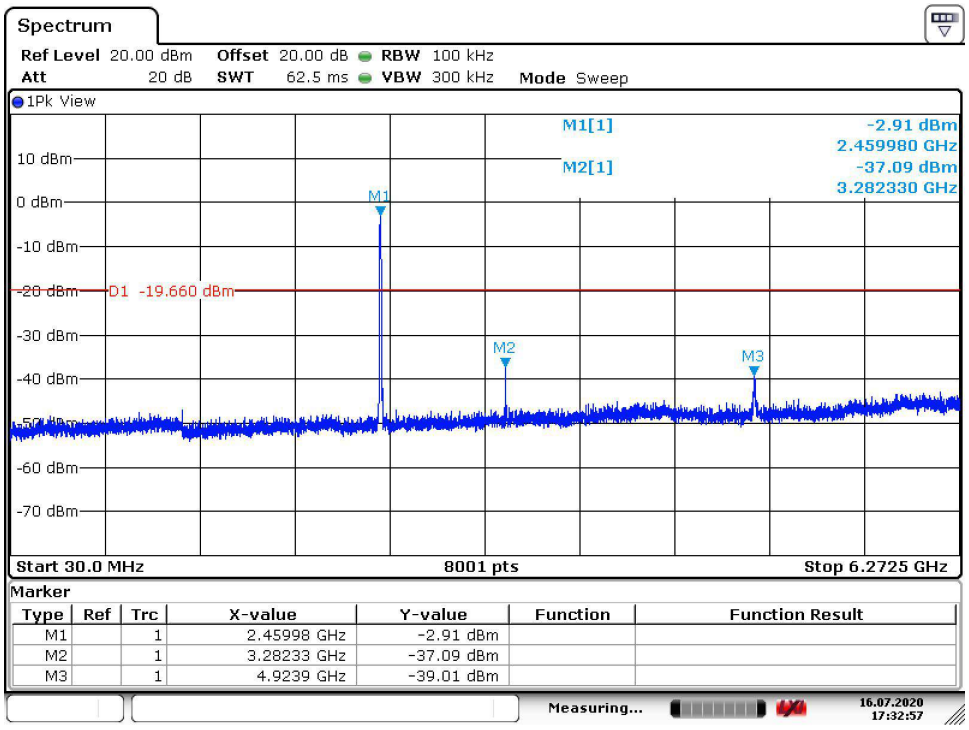
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

High Channel: 2462 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:32:57

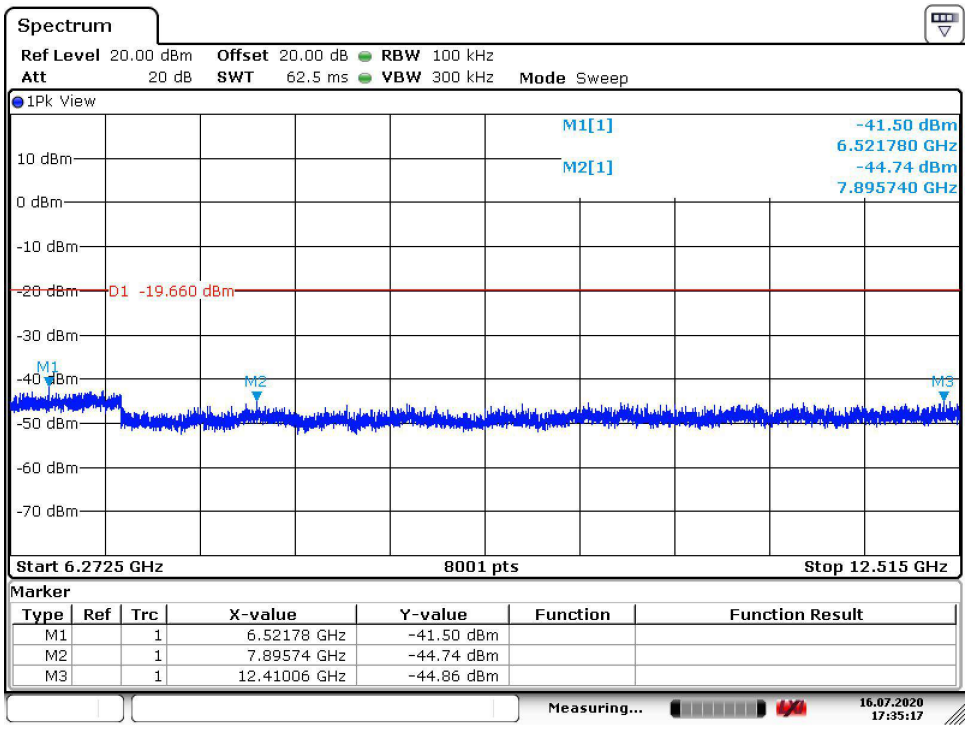
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

High Channel: 2462 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:35:18

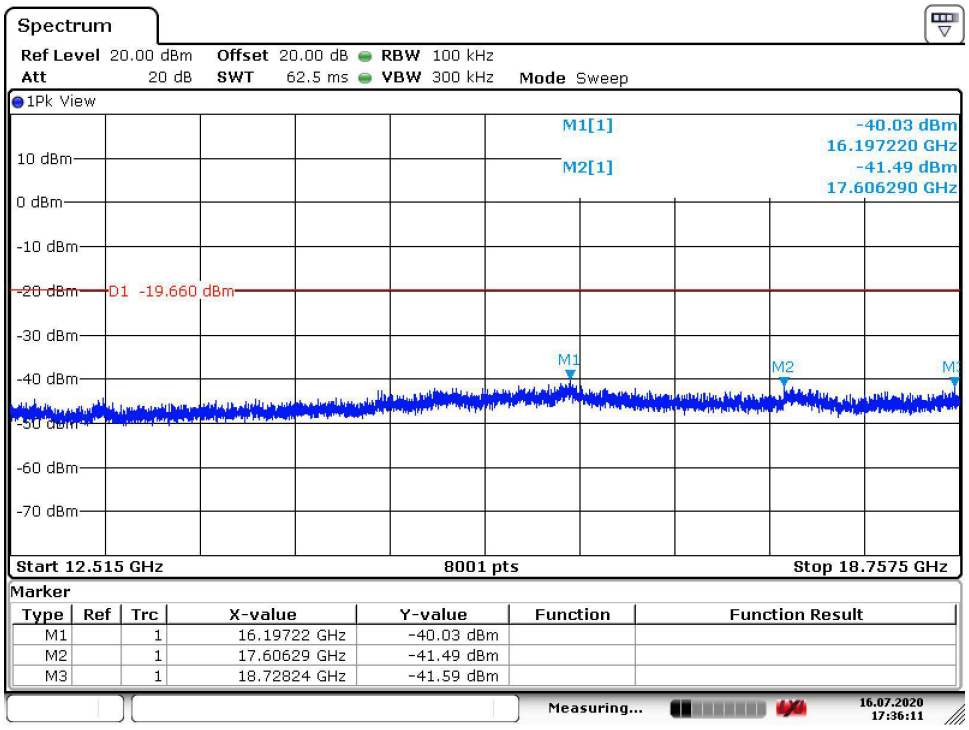
Client: IOSiX LLC Date: 16 Jul 2020 DNB Job: 06125

EUT: IOSiX OBDv5 Vehicle Data Logger Model No: IO-2050

Requirement: Conducted spurious emission <20dB of peak Tech: CL Payne

Modulation: 802.11b Maximum Reading = 0.34 dBm

High Channel: 2462 MHz Requirement = -19.66 dBm Result: Pass



Date: 16.JUL.2020 17:36:11