8. Transmitted Power Density

8.1 *Test Specification*

FCC, Part 15, Subpart C, Section 247(e)

8.2 *Test Procedure*

(Temperature (20°C)/ Humidity (59%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (loss= 30.5dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

The spectrum analyzer was set to 3 kHz RBW.

8.3 *Test Limit*

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.4 *Test Results*

Protocol Type	Operation Frequency (MHz)	PSD Reading (dBm)	Limit (dBm)	Margin (dB)
BLE	2402.0	-13.3	8.0	-21.3
	2440.0	-13.1	8.0	-21.1
	2480.0	-12.7	8.0	-20.7
Wi-fi/g(6Mbit/s)	2412.0	-14.8	8.0	-22.8
	2437.0	-14.7	8.0	-22.7
	2462.0	-13.5	8.0	-21.5
Wi-fi/g(54Mbit/s)	2412.0	-14.3	8.0	-22.3
	2437.0	-16.3	8.0	-24.3
	2462.0	-15.3	8.0	-23.3
Wi-fi/n(6.5Mbit/s)	2412.0	-14.2	8.0	-22.2
	2437.0	-15.5	8.0	-23.5
	2462.0	-13.9	8.0	-21.9
Wi-fi/n(65Mbit/s)	2412.0	-16.2	8.0	-24.2
	2437.0	-18.4	8.0	-26.4
	2462.0	-16.4	8.0	-24.4

Figure 81 Test Results

JUDGEMENT: Passed by 20.7dB

For additional information see *Figure 82* to *Figure 96.*

Transmitted Power Density

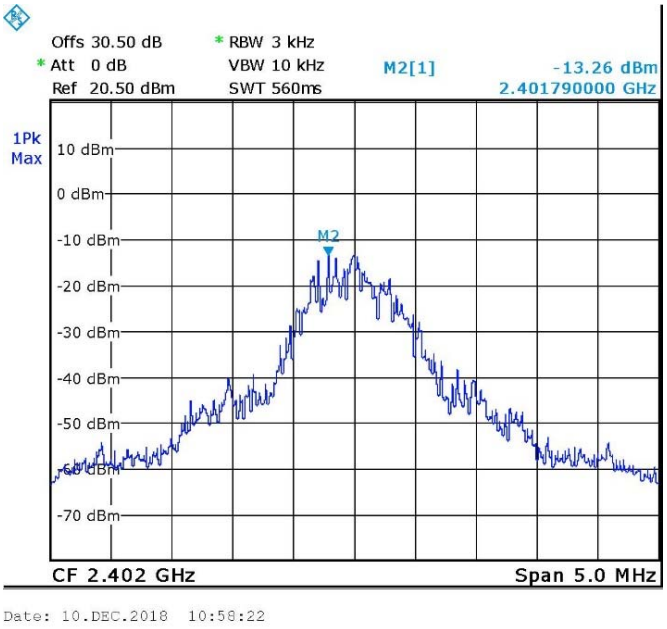

Figure 82. 2402.0 MHz, BLE

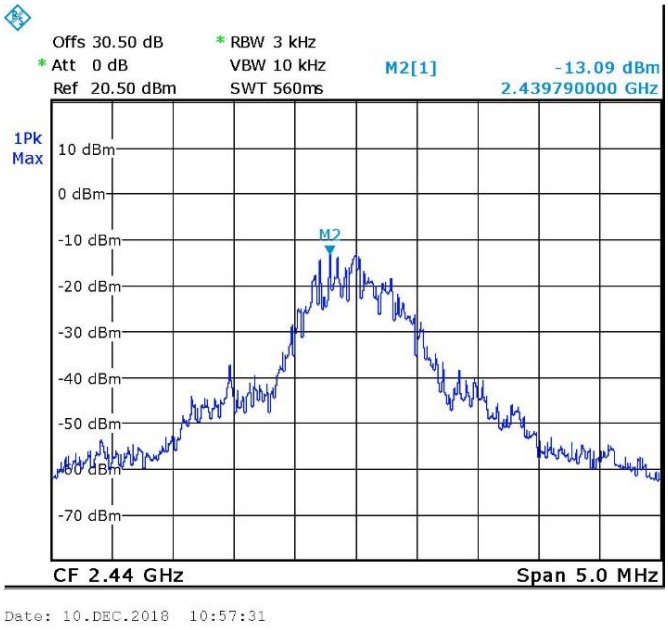

Figure 83. 2440.0 MHz, BLE

Transmitted Power Density

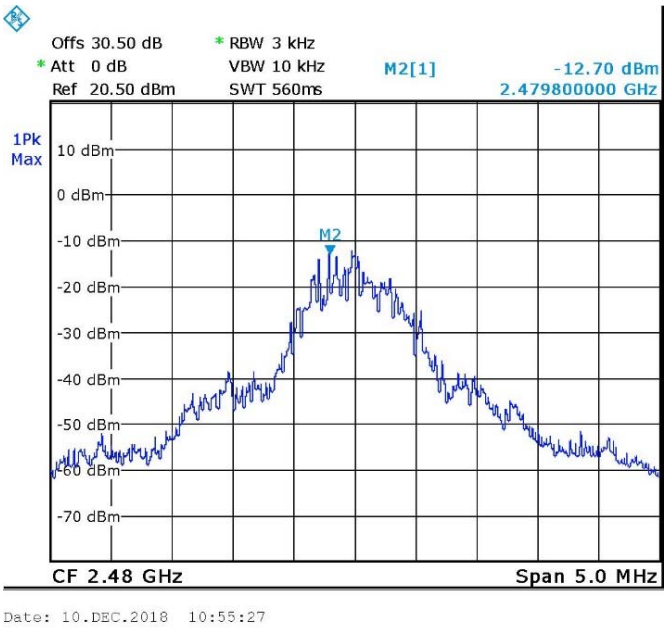

Figure 84. 2480.0 MHz, BLE

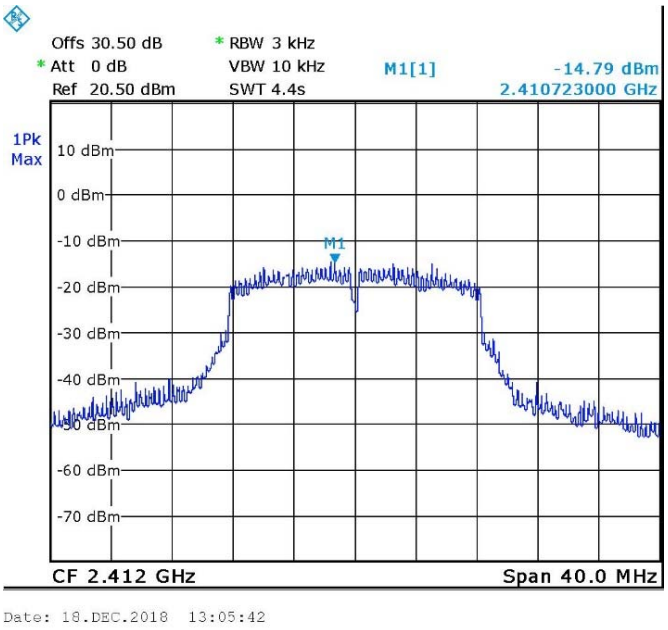

Figure 85. 2412.0 MHz, Wi-fi/g(6Mbit/s)

Transmitted Power Density

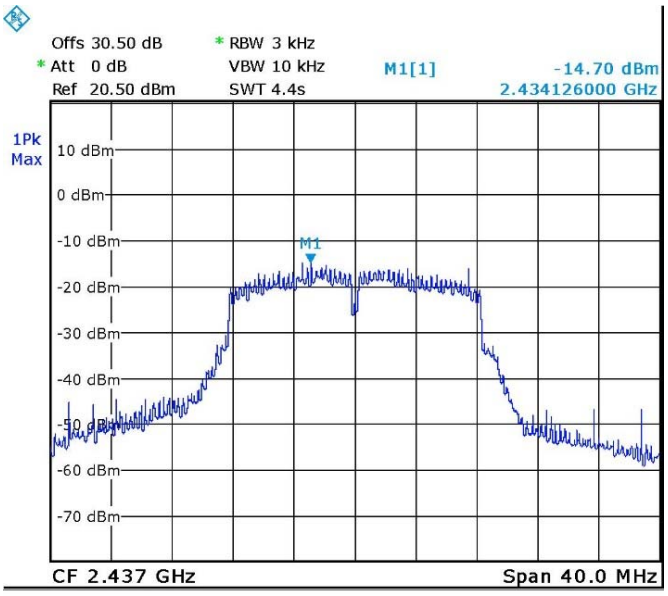

Figure 86. 2437.0 MHz, Wi-fi/g(6Mbit/s)

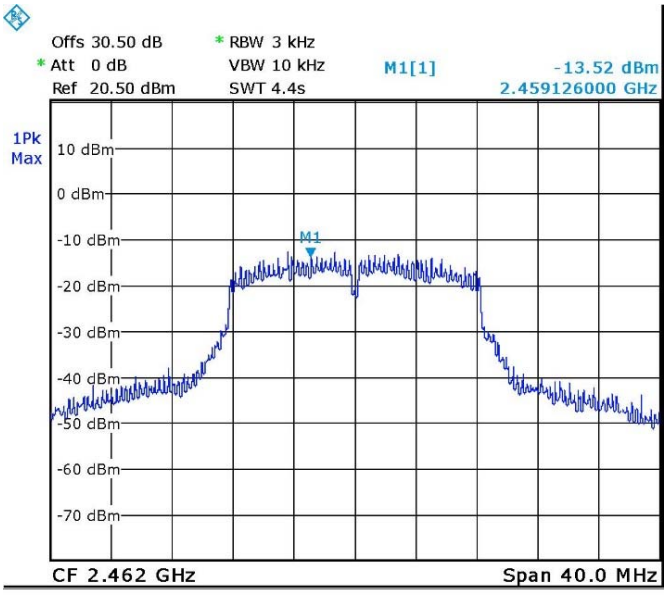

Figure 87. 2462.0 MHz, Wi-fi/g(6Mbit/s)

Transmitted Power Density

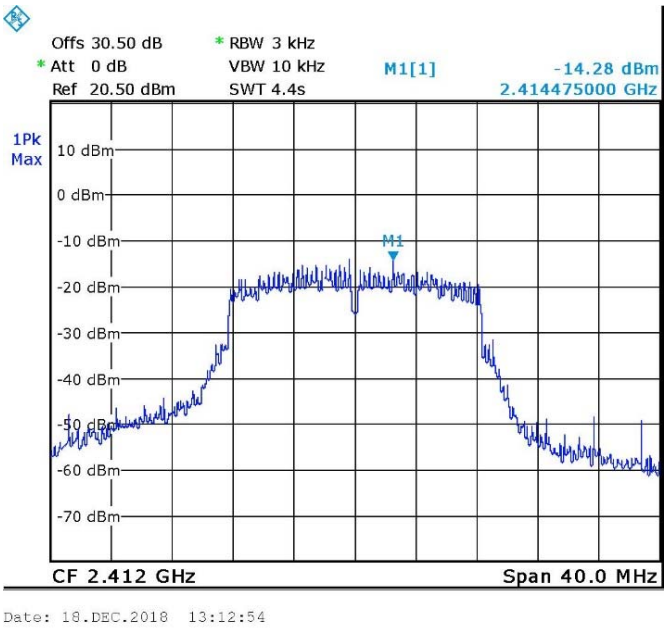

Figure 88. 2412.0 MHz, Wi-fi/g(54Mbit/s)

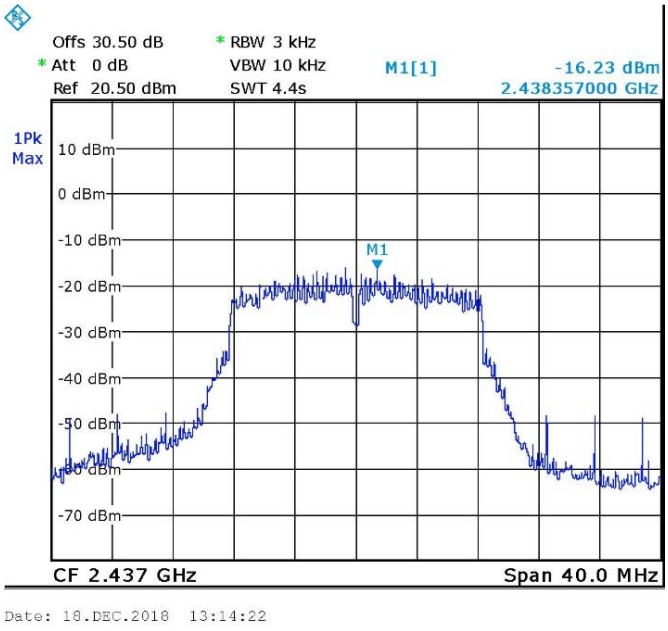

Figure 89. 2437.0 MHz, Wi-fi/g(54Mbit/s)

Transmitted Power Density

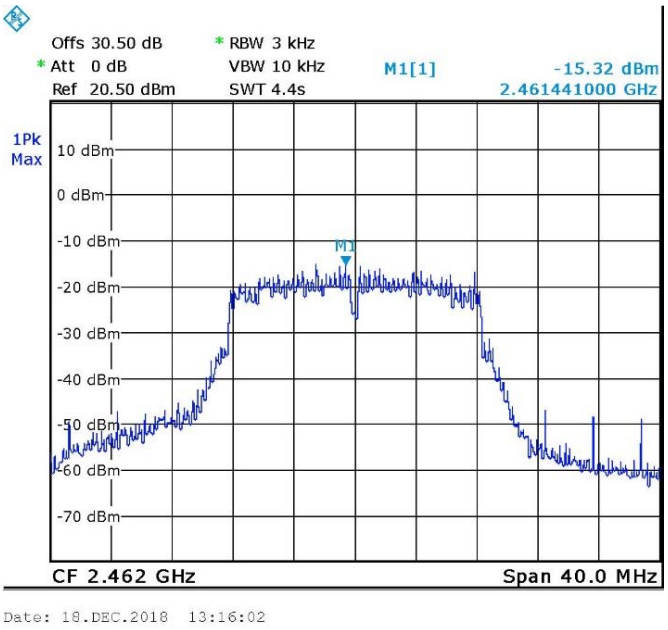

Figure 90. 2462.0 MHz, Wi-fi/g(54Mbit/s)

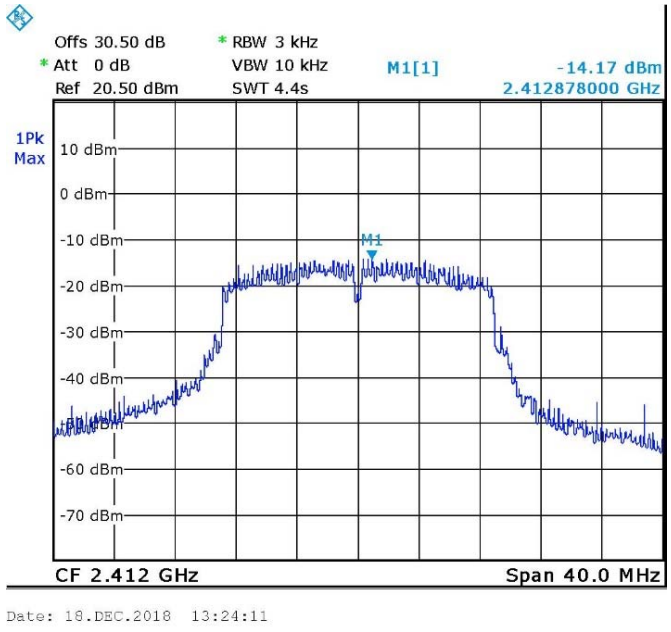

Figure 91. 2412.0 MHz, Wi-fi/n(6.5Mbit/s)

Transmitted Power Density

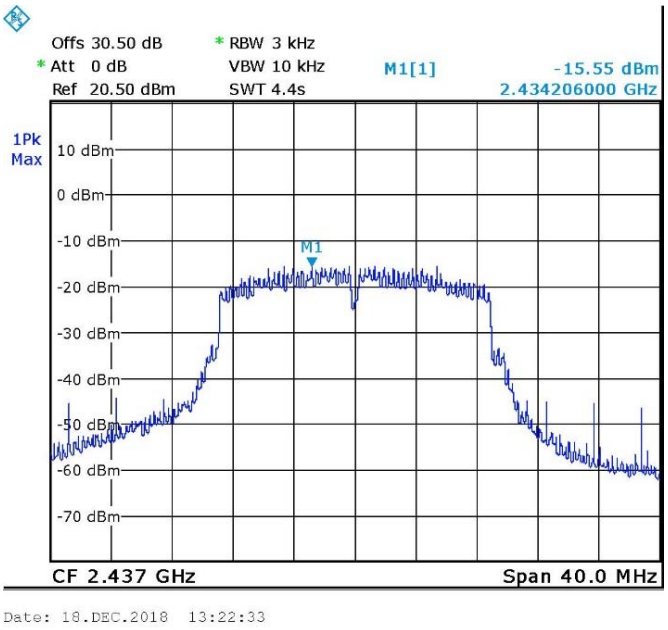

Figure 92. 2437.0 MHz, Wi-fi/n(6.5Mbit/s)

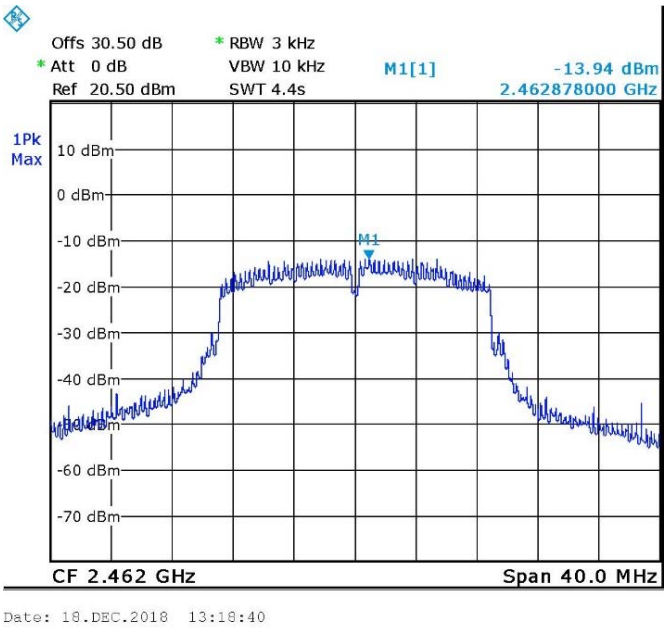

Figure 93. 2462.0 MHz, Wi-fi/n(6.5Mbit/s)

Transmitted Power Density

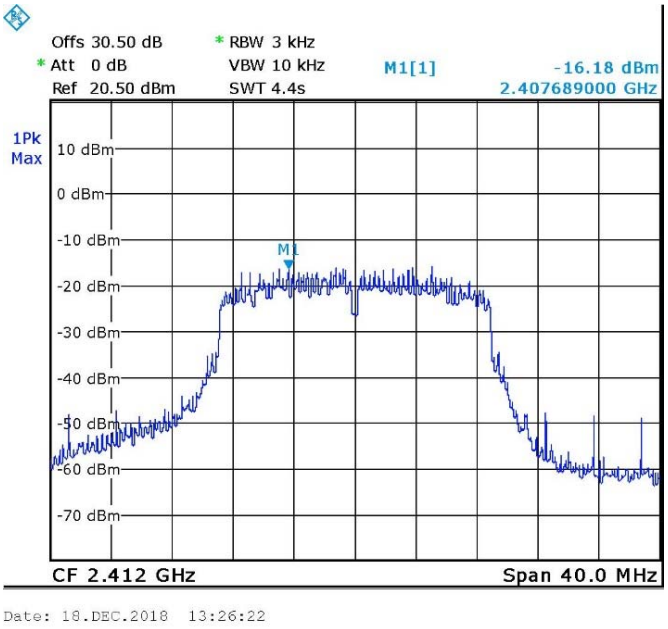

Figure 94. 2412.0 MHz, Wi-fi/n(65Mbit/s)

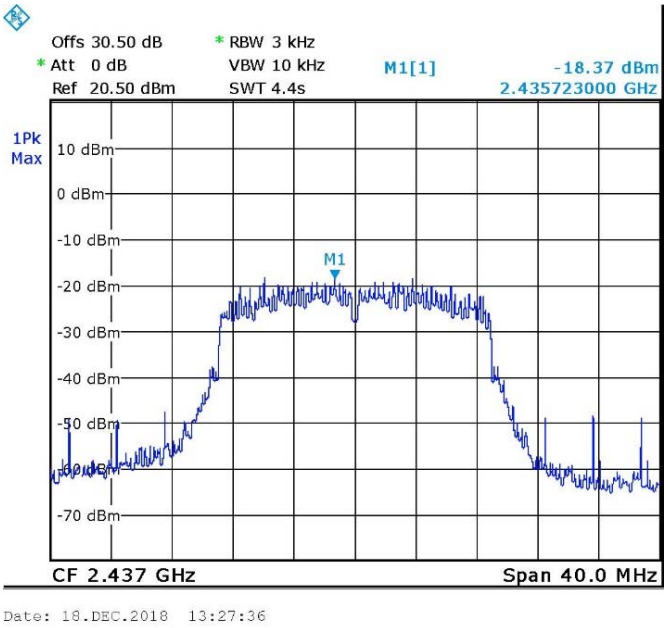

Figure 95. 2437.0 MHz, Wi-fi/n(65Mbit/s)

Transmitted Power Density

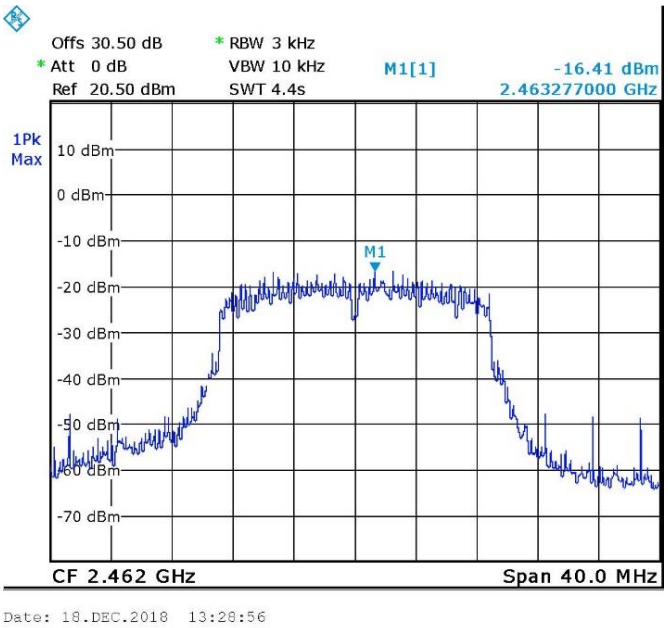

Figure 96. 2462.0 MHz, Wi-fi/n(65Mbit/s)

8.5 *Test Equipment Used; Transmitted Power Density*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Spectrum Analyzer	R&S	FSL6	100194	February 19, 2018	February 19, 2019
30dB Attenuator	MCL	BW-S30W5	533	October 1, 2017	December 31, 2018 See Note below
RF Cable	Huber Suner	Sucofelex	27502/4PE A	October 1, 2017	December 31, 2018 See Note below

Note: Testing performed on December 18, 2018

Figure 97 Test Equipment Used

9. Occupied Bandwidth

9.1 *Test Specification*

FCC, Part 2, Sub part J, Section 2.1049

9.2 *Test Procedure*

(Temperature (22°C)/ Humidity (56%RH))
The E.U.T. operation mode and test set-up are as described in Section 2 of this report.
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss= 30.5dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

The RBW set to the range of 1% to 5% of the OBW.

The span was set to ~ 3 times the OBW.
99% occupied bandwidth function was set on.

9.3 *Test Limit*

N/A

9.4 *Test Results*

Protocol Type	Operation Frequency (MHz)	Reading (MHz)
BLE	2402.0	1.042
	2440.0	1.054
	2480.0	1.060
Wi-fi/g(6Mbit/s)	2412.0	18.772
	2437.0	18.333
	2462.0	18.772
Wi-fi/g(54Mbit/s)	2412.0	18.113
	2437.0	17.784
	2462.0	17.764
Wi-fi/n(6.5Mbit/s)	2412.0	18.333
	2437.0	18.113
	2462.0	18.223
Wi-fi/n(65Mbit/s)	2412.0	18.443
	2437.0	18.443
	2462.0	18.552

Figure 98. Bandwidth Test Results

JUDGEMENT: N/A

See additional information in *Figure 99* to *Figure 113.*

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

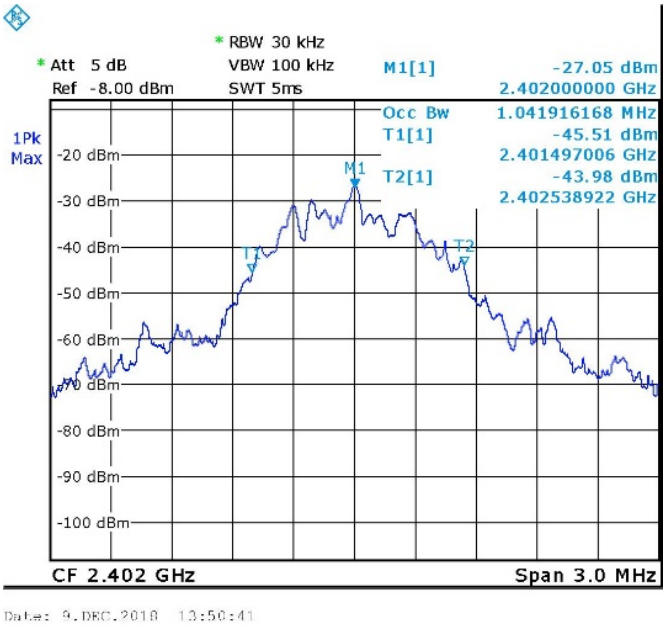

Figure 99. 2402.0 MHz, BLE

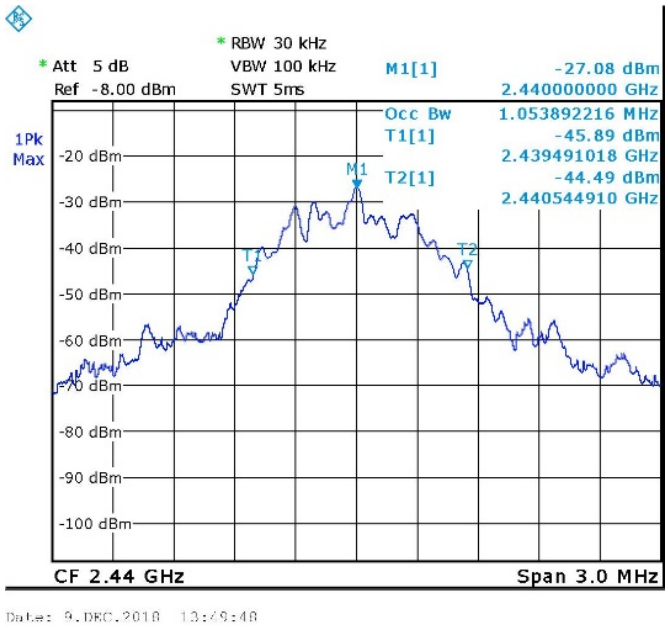

Figure 100. 2440.0 MHz, BLE

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

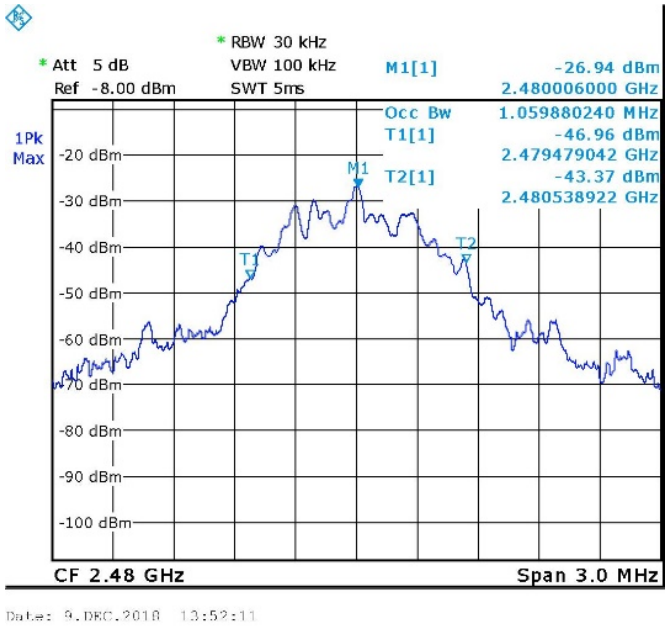

Figure 101. 2480.0 MHz, BLE

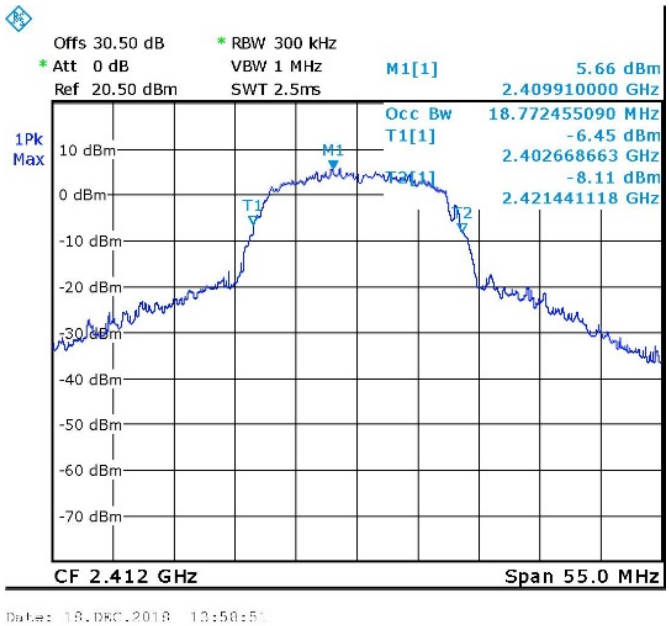

Figure 102. 2412.0 MHz, Wi-fi/g(6Mbit/s)

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

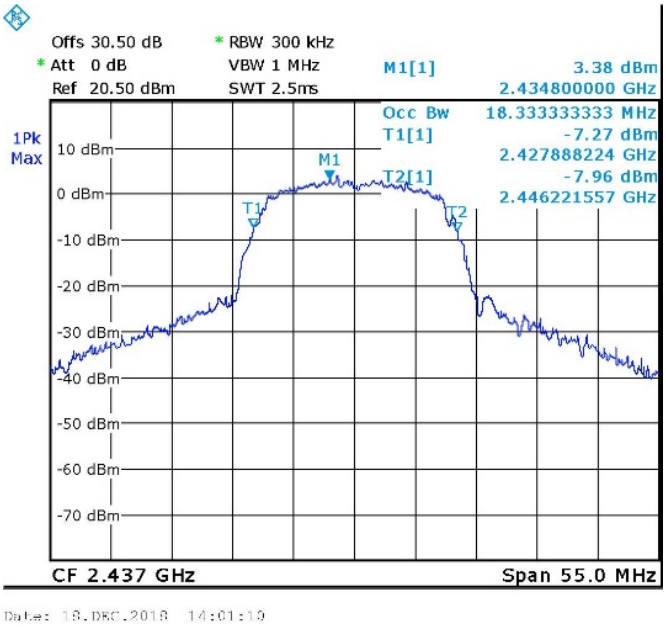

Figure 103. 2437.0 MHz, Wi-fi/g(6Mbit/s)

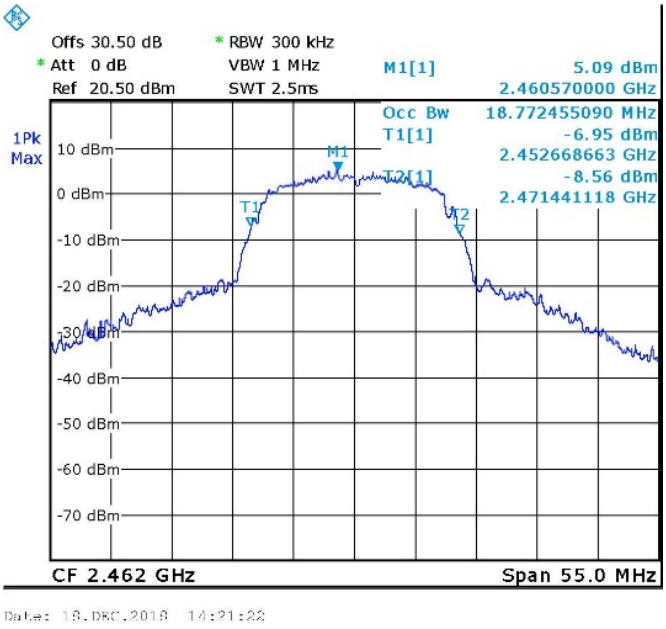

Figure 104. 2462.0 MHz, Wi-fi/g(6Mbit/s)

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

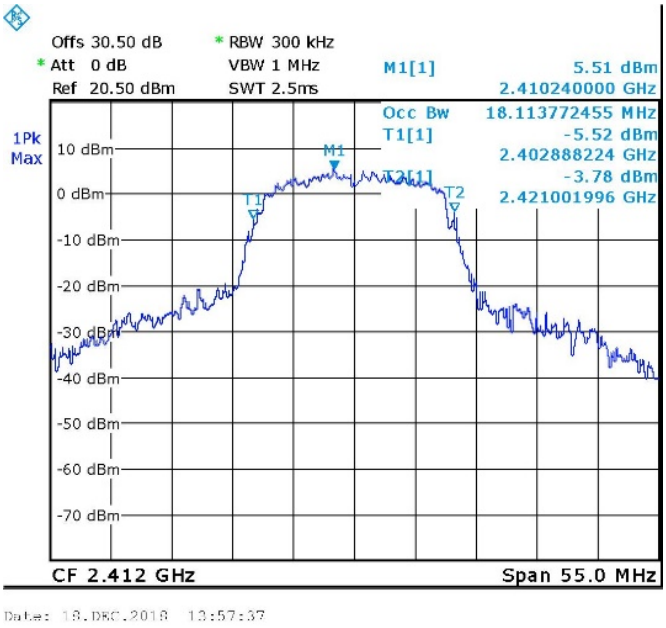

Figure 105. 2412.0 MHz, Wi-fi/g(54Mbit/s)

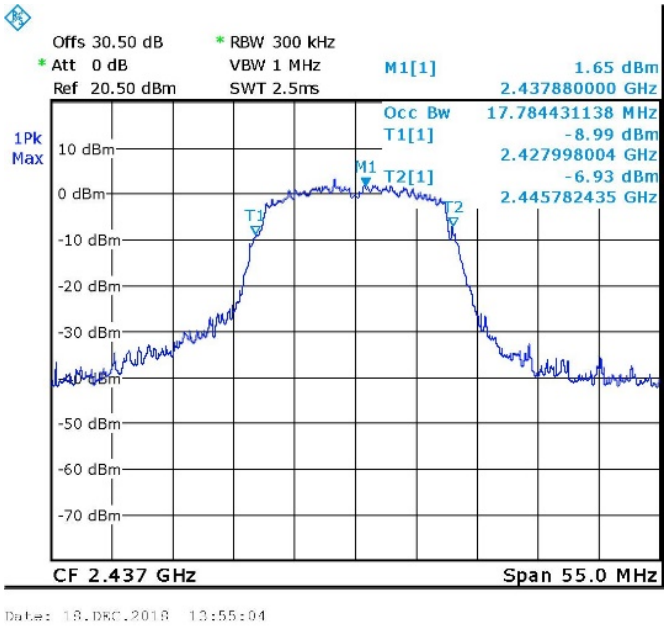

Figure 106. 2437.0 MHz, Wi-fi/g(54Mbit/s)

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

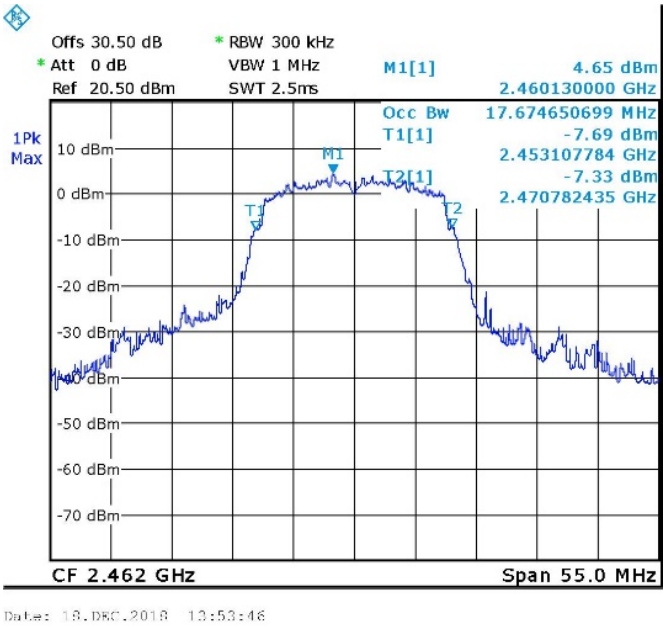

Figure 107. 2462.0 MHz, Wi-fi/g(54Mbit/s)

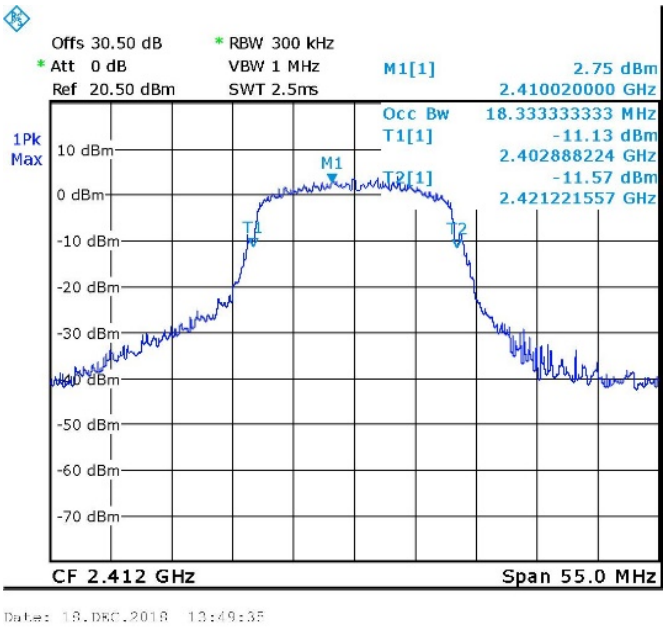

Figure 108. 2412.0 MHz, Wi-fi/n(6.5Mbit/s)

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

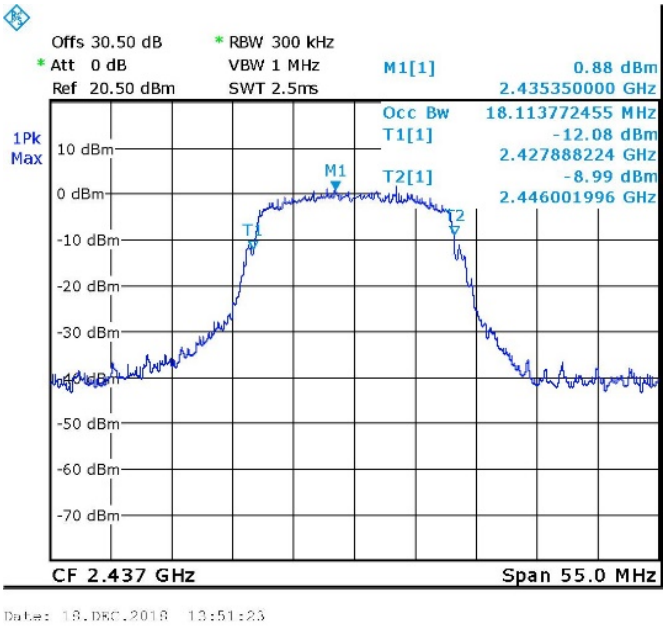

Figure 109. 2437.0 MHz, Wi-fi/n(6.5Mbit/s)

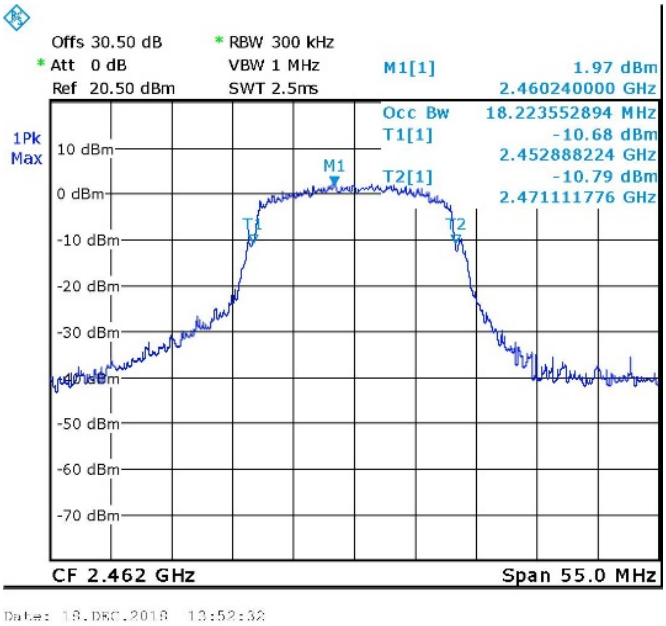

Figure 110. 2462.0 MHz, Wi-fi/n(6.5Mbit/s)

Occupied Bandwidth

E.U.T Description	Wearable Device
Model Number	ORCAM **MYME**
Part Number:	18380173

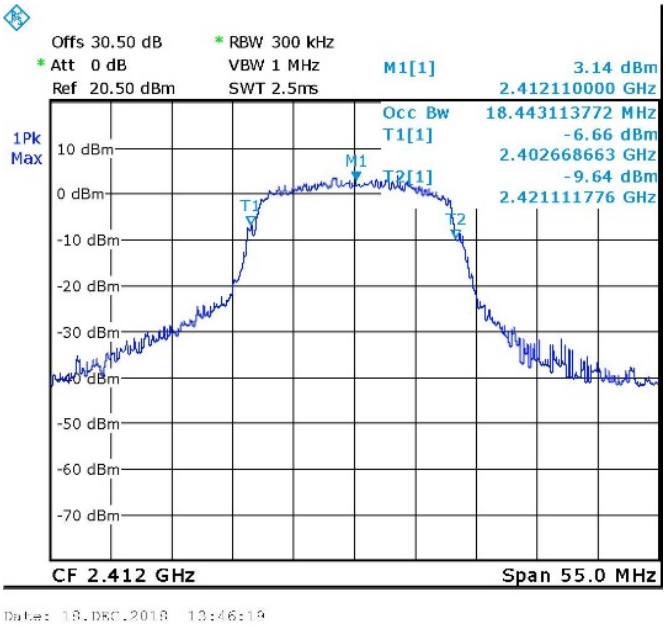

Figure 111. 2412.0 MHz, Wi-fi/n(65Mbit/s)

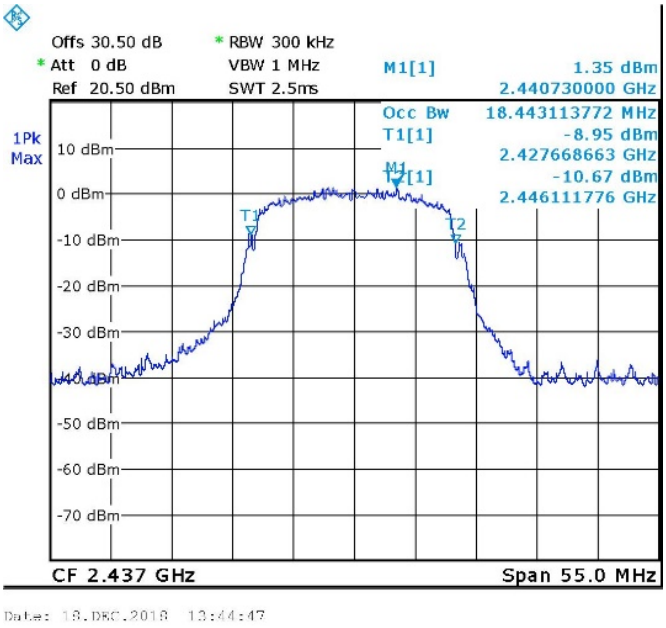

Figure 112. 2437.0 MHz, Wi-fi/n(65Mbit/s)

Occupied Bandwidth

E.U.T Description Wearable Device
Model Number ORCAM **MYME**
Part Number: 18380173

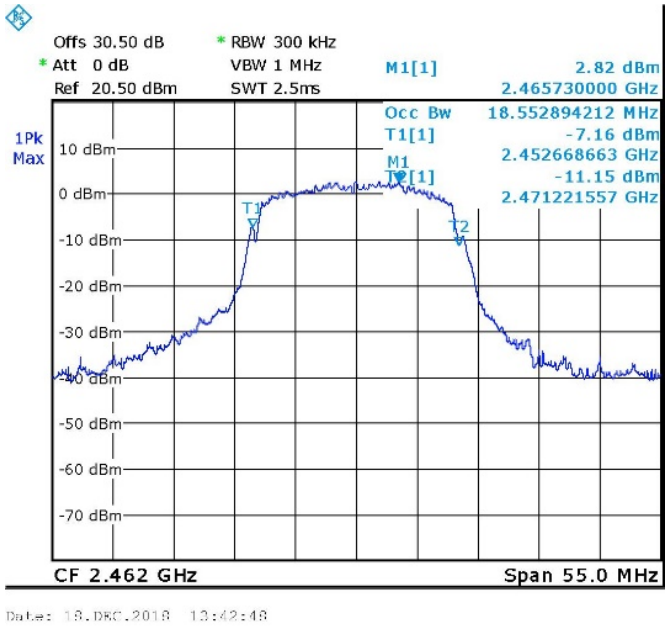

Figure 113. 2462.0 MHz, Wi-fi/n(65Mbit/s)

9.5 *Test Equipment Used; Bandwidth*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Spectrum Analyzer	R&S	FSL6	100194	February 19, 2018	February 19, 2019
30dB Attenuator	MCL	BW-S30W5	533	October 1, 2017	December 31, 2018 See Note below
RF Cable	Huber Suner	Sucofelex	27502/4PEA	October 1, 2017	December 31, 2018 See Note below

Note: Testing performed on December 18, 2018

Figure 114 Test Equipment Used

10. Emissions in Non-Restricted Frequency Bands

10.1 *Test Specification*

FCC, Part 15, Subpart C, Section 247(d)

10.2 *Test Procedure*

(Temperature (22°C)/ Humidity (54%RH))
The E.U.T. operation mode and test set-up are as described in Section 2 of this report.
The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (max total loss=34.0 dB).
Special attention was taken to prevent Spectrum Analyzer RF input overload.
RBW was set to 100kHz, detector set to max peak and trace to "max hold".

10.3 *Test Limit*

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

10.4 *Test Results*

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 247(d) specification.

For additional information see *Figure 115* to *Figure 129.*

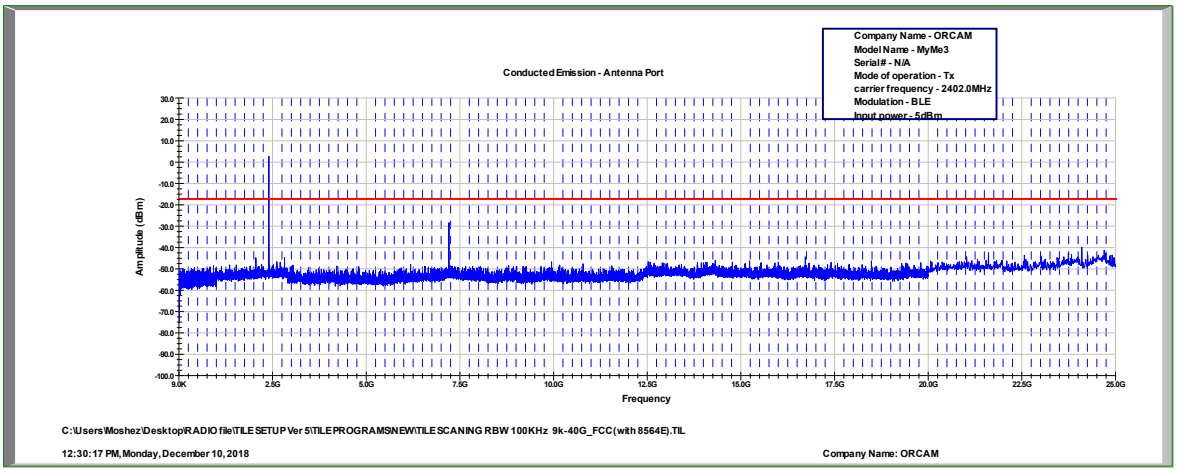

Figure 115 2402.0 MHz, BLE

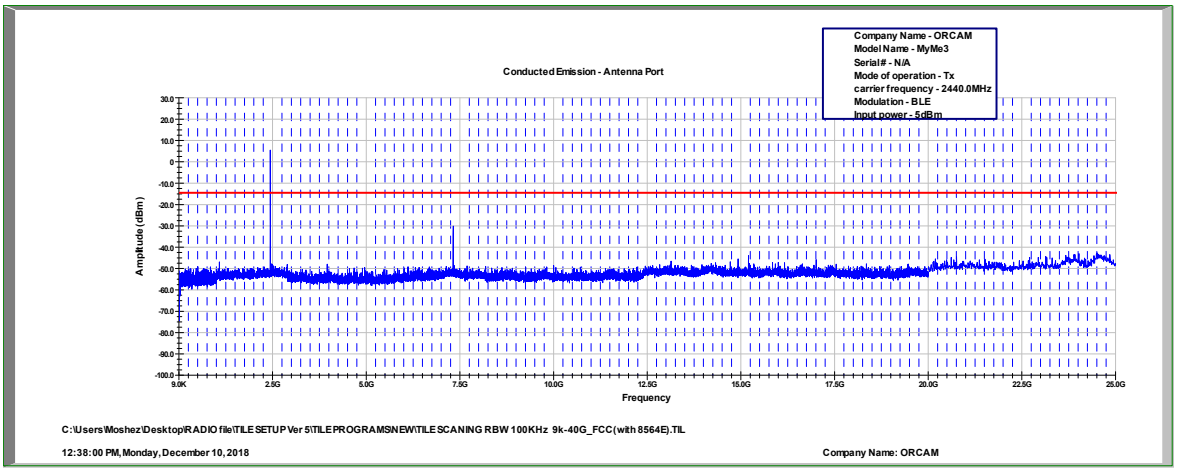

Figure 116 2440.0 MHz, BLE

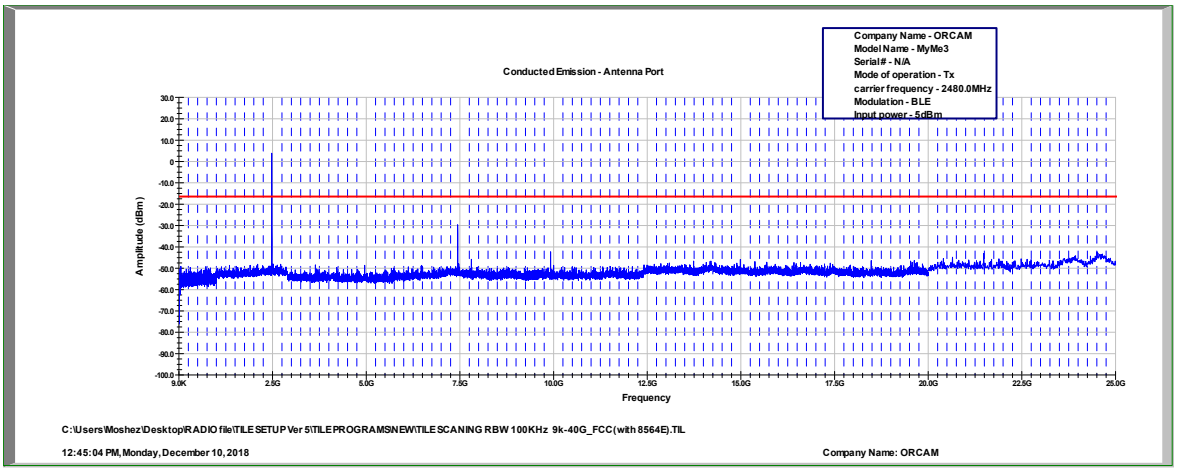

Figure 117 2480.0 MHz, BLE

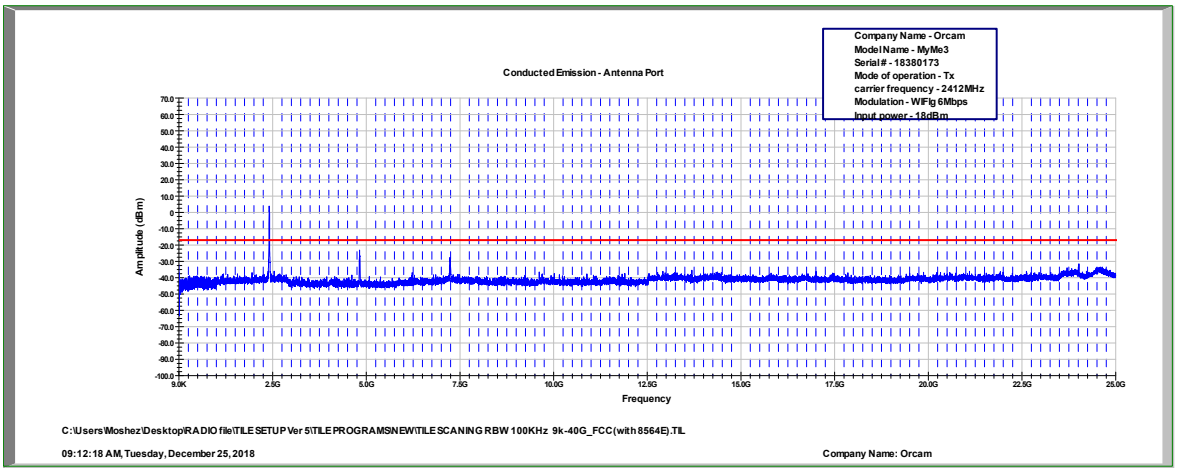

Figure 118 2412.0 MHz, WI-FI/g(6Mbit/s)

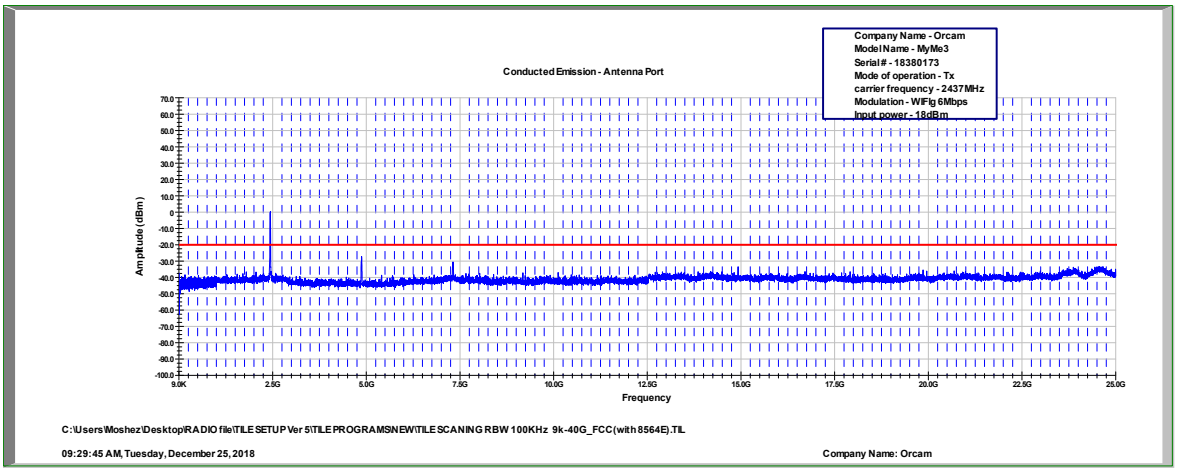

Figure 119 2437.0 MHz, WI-FI/g(6Mbit/s)

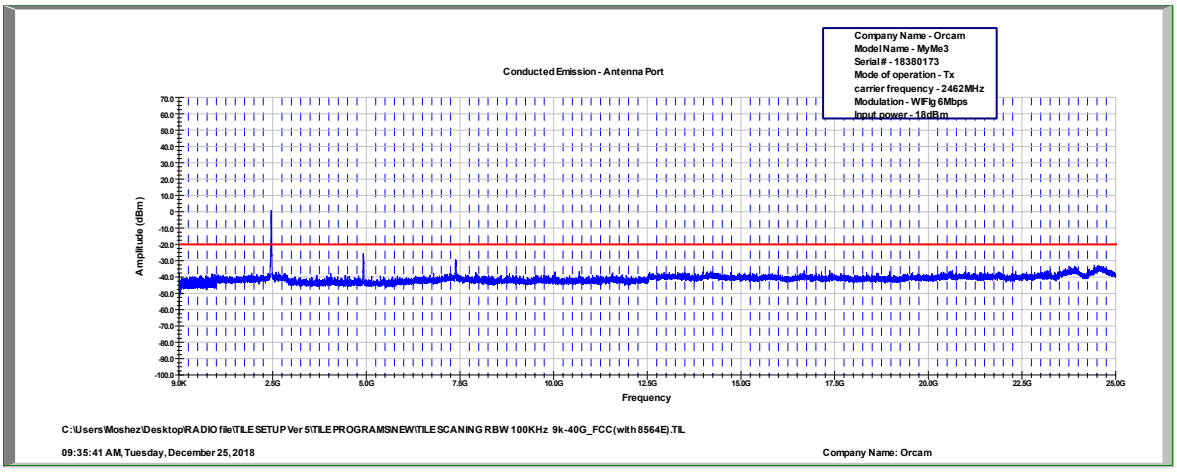

Figure 120 2462.0 MHz, WI-FI/g(6Mbit/s)

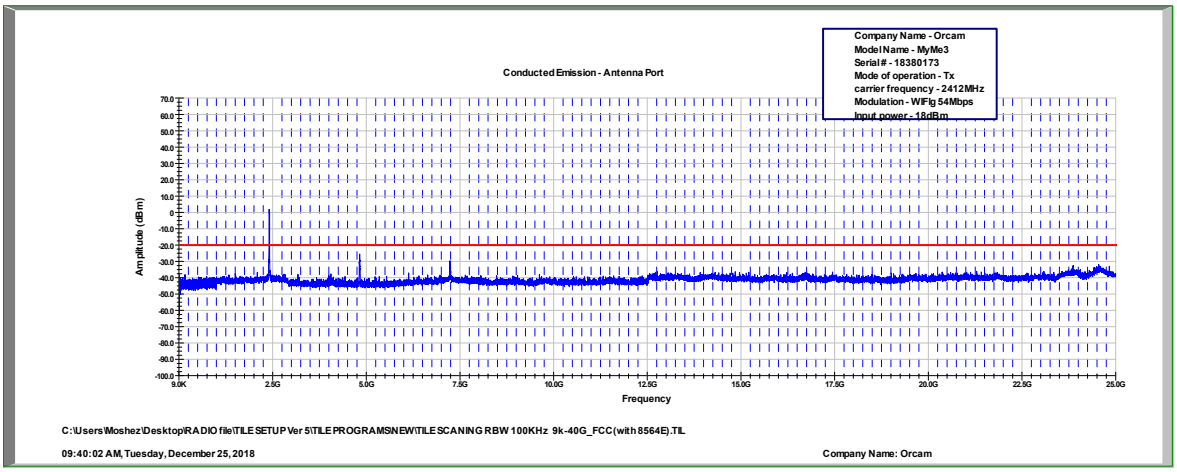

Figure 121 2412.0 MHz, WI-FI/g(54Mbit/s)

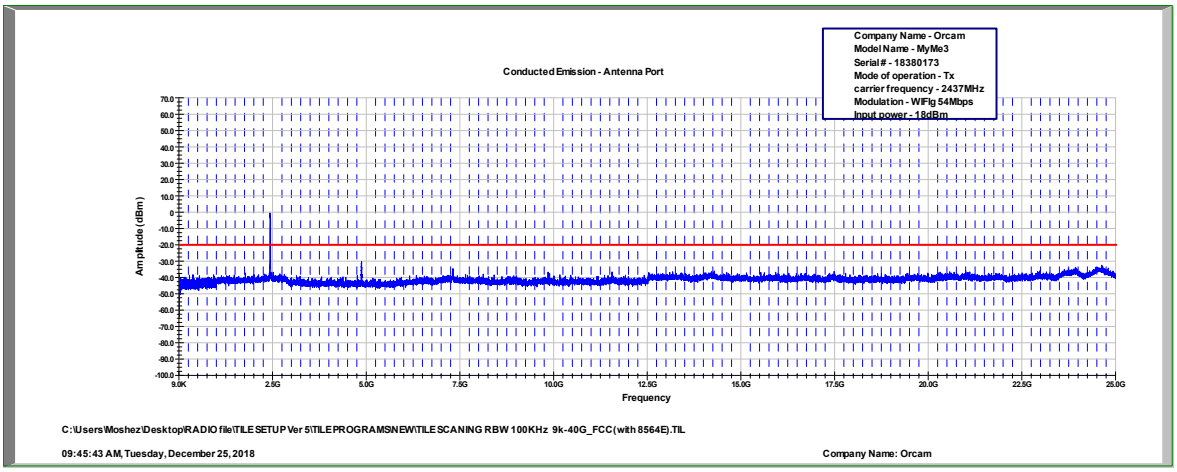

Figure 122 2437.0 MHz, WI-FI/g(54Mbit/s)

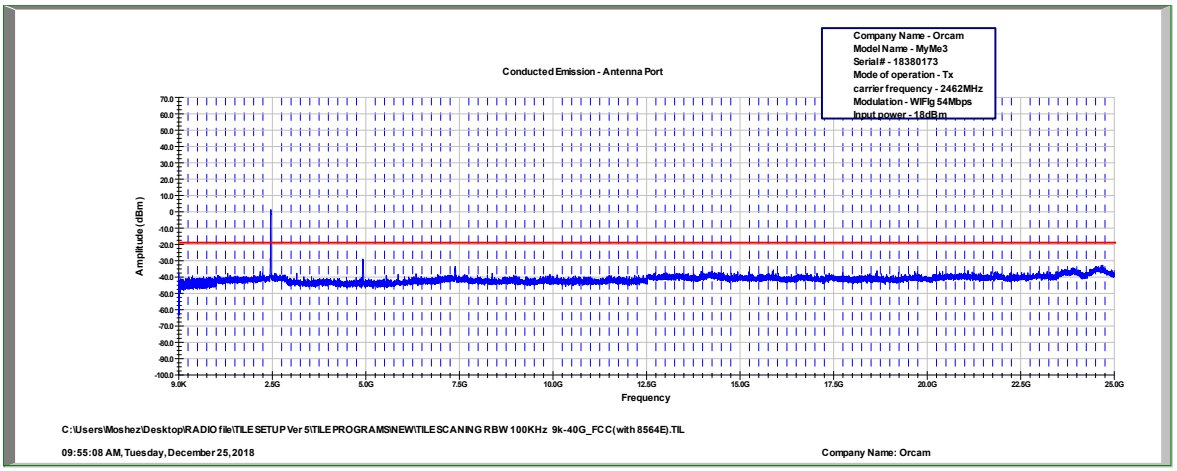

Figure 123 2462.0 MHz, WI-FI/g(54Mbit/s)

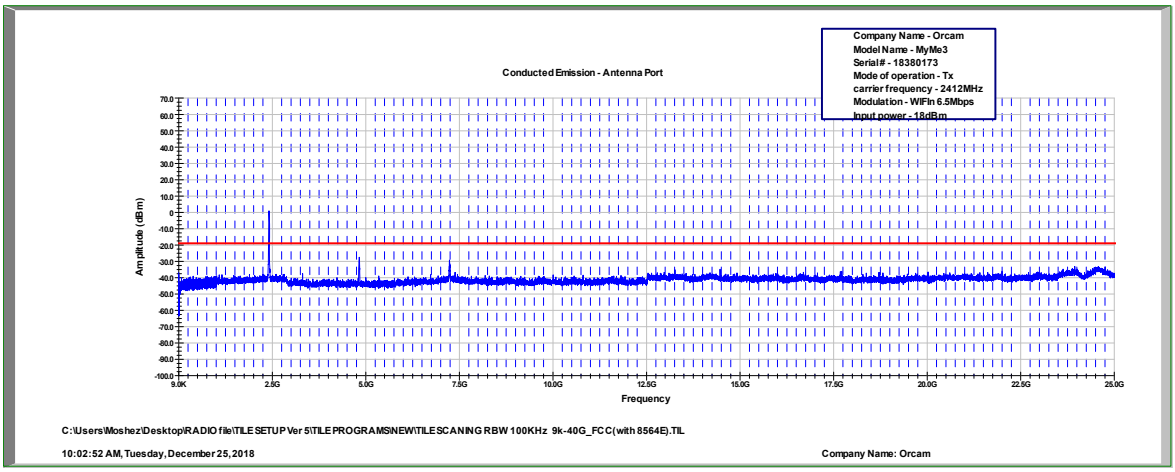

Figure 124 2412.0 MHz, WI-FI/n(6.5Mbit/s)

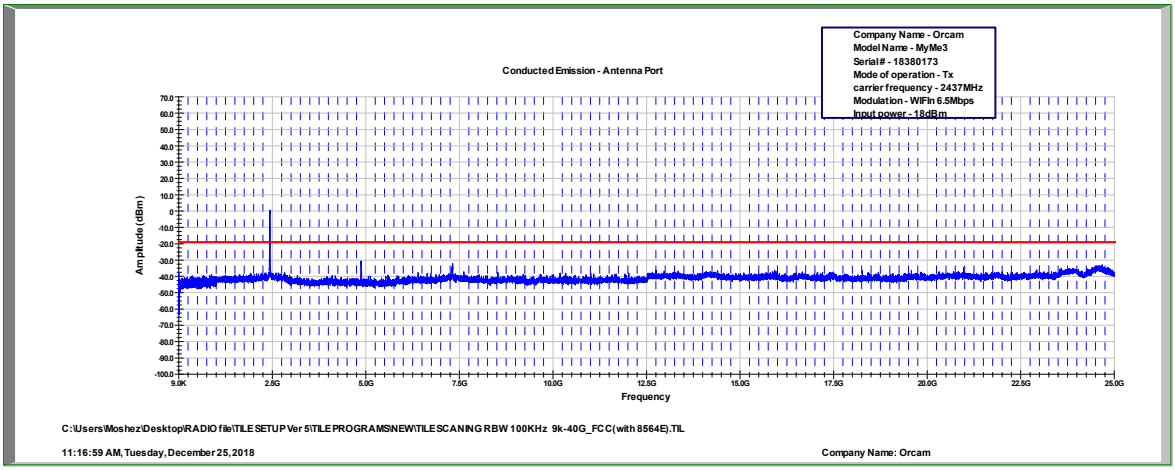

Figure 125 2437.0 MHz, WI-FI/n(6.5Mbit/s)

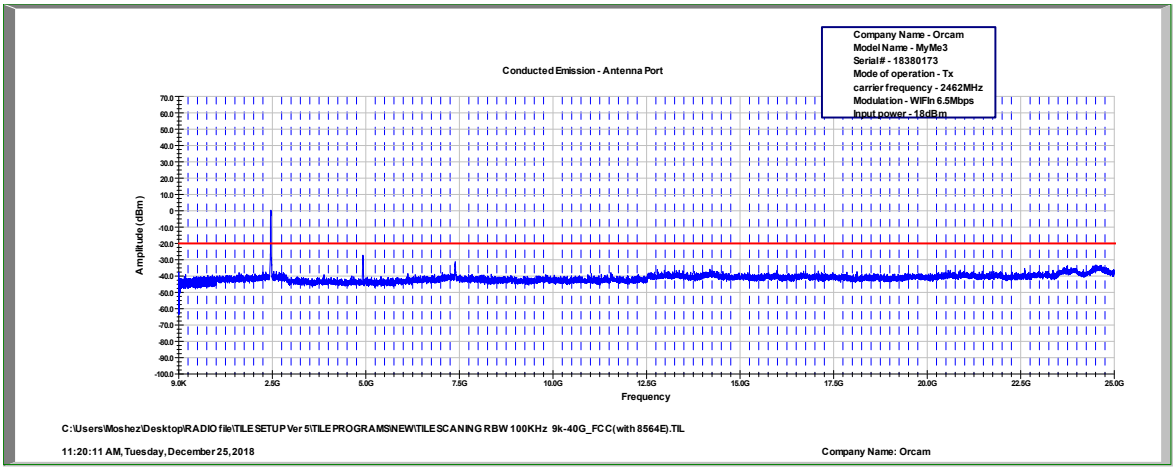

Figure 126 2462.0 MHz, WI-FI/n(6.5Mbit/s)

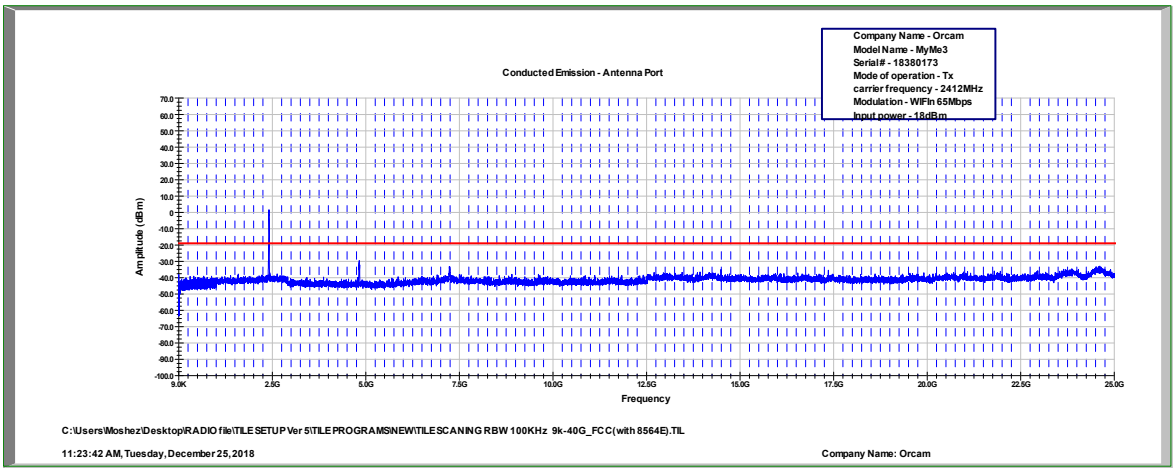

Figure 127 2412.0 MHz, WI-FI/n(65Mbit/s)

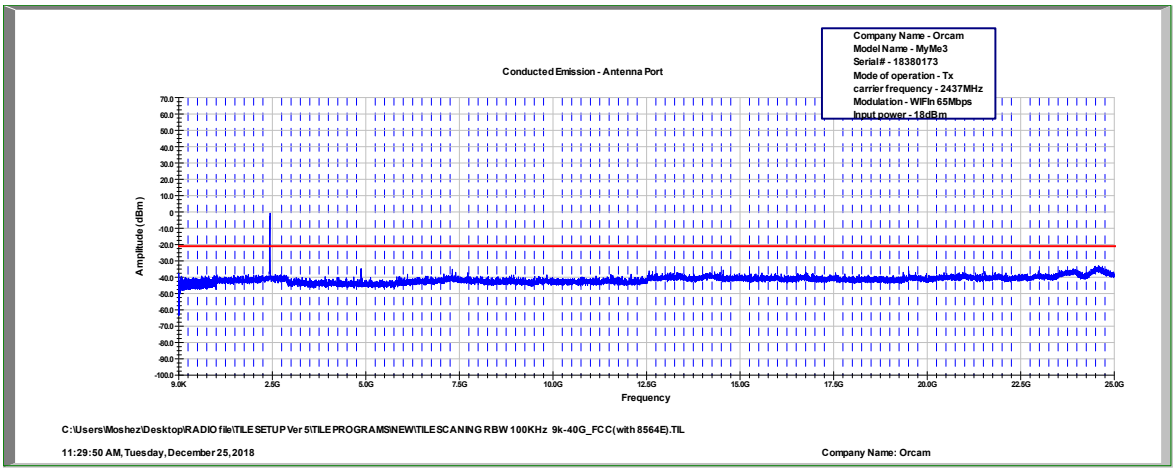

Figure 128 2437.0 MHz, WI-FI/n(65Mbit/s)

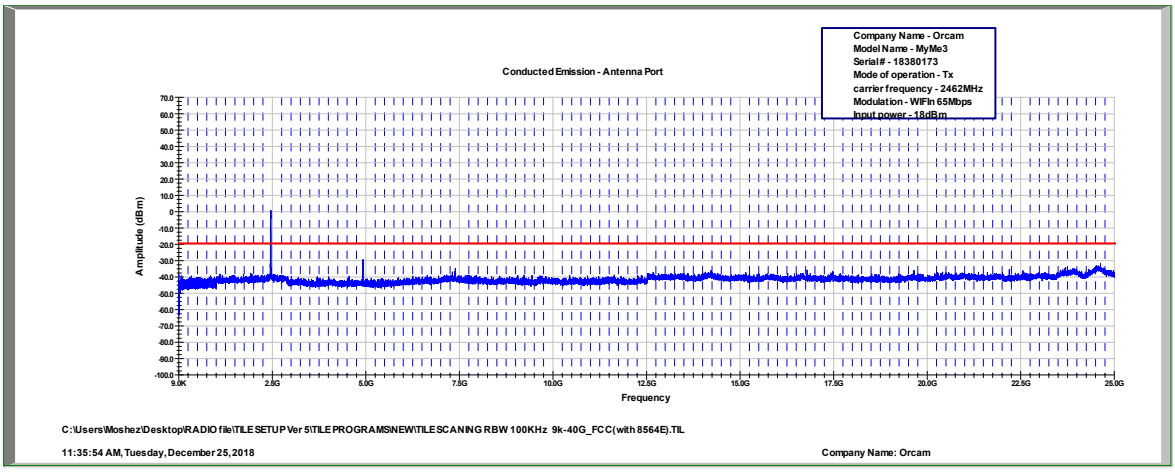

Figure 129 2462.0 MHz, WI-FI/n(65Mbit/s)

Note: All peaks in plots are the fundamental transmission frequency.

10.5 *Test Instrumentation Used, Emission in Non Restricted Frequency Bands*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Spectrum Analyzer	HP	8564E	3442A00275	February 28, 2018	February 28, 2019
30dB Attenuator	MCL	BW-S30W5	533	October 1, 2017	December 31, 2018 See Note below
RF Cable	Huber Suner	Sucofelex	27502/4PEA	October 1, 2017	December 31, 2018 See Note below

Note: Testing concluded on December 25, 2018

Figure 130 Test Equipment Used

11. Emissions in Restricted Frequency Bands

11.1 *Test Specification*

FCC Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

11.2 *Test Procedure*

(Temperature (21°C)/ Humidity (55%RH))
The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

For measurements between 0.009-30MHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 0.009MHz-30MHz was scanned.

For measurements between 30-1000MHz:
A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30MHz -1000MHz was scanned and the list of the highest emissions was verified and updated accordingly.

For measurements between 1GHz-25GHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 1GHz -25GHz was scanned.

Tests done for all “worst case”, each protocol type. The highest radiation describes in the tables below

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

11.3 *Test Limit*

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)	Field Strength* (dBµV/m)	Field Strength* (dBµV/m)@3m
0.009-0.490	2400/F(kHz)	300	48.5-13.8	128.5-73.8
0.490-1.705	24000/F(kHz)	30	33.8-23.0	73.8-63.0
1.705-30.0	30	30	29.5	69.5
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 131 Table of Limits

11.4 *Test Results for BLE*

JUDGEMENT: Passed by 0.9 dB

For the operation frequency of 2402 MHz, the margin between the emission level and the specification limit is in the worst case 0.9 dB at the frequency of 7206.0 MHz, vertical polarization.

For the operation frequency of 2440 MHz, the margin between the emission level and the specification limit is in the worst case 2.1dB at the frequency of 7320.0 MHz, vertical polarization.

For the operation frequency of 2480 MHz, the margin between the emission level and the specification limit is in the worst case 3.7dB at the frequency of 7440.0 MHz, horizontal polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C Sections 15.209, 15.205, 15.247(d) specifications.

The details of the highest emissions are given in *Figure 132.*

11.5 *Test Results for WiFi*

JUDGEMENT: Passed by 0.5 dB

For the operation frequency of 2412 MHz, the margin between the emission level and the specification limit is in the worst case 0.5 dB at the frequency of 7236.0 MHz, horizontal polarization.

For the operation frequency of 2437 MHz, the margin between the emission level and the specification limit is in the worst case 1.0dB at the frequency of 7311.0 MHz, horizontal polarization.

For the operation frequency of 2462 MHz, the margin between the emission level and the specification limit is in the worst case 0.5dB at the frequency of 7386.0 MHz, horizontal polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C Sections 15.209, 15.205, 15.247(d) specifications.

The details of the highest emissions are given in *Figure 133* to *Figure 136.*

Radiated Emission

E.U.T Description Wearable Device
Type ORCAM MYME
Serial Number: 18380173

Specifications: FCC, Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

Antenna Polarization: Horizontal/Vertical Frequency Range: 9kHz to 25.0 GHz
Protocol Type: BLE Detector: Peak, Average

Operation Frequency	Freq.	Pol	Peak Reading	Peak Limit	Peak Margin	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2402.0	2390.0	V	54.0	74.0	-20.0	41.8	54.0	-12.2
	2390.0	H	55.1	74.0	-18.9	42.0	54.0	-12.0
	7206.0	V	64.7	74.0	-9.3	53.1	54.0	-0.9
	7206.0	H	61.0	74.0	-13.0	50.0	54.0	-4.0
2440.0	4880.0	V	50.2	74.0	-23.8	-	54.0	-
	4880.0	H	45.2	74.0	-28.8	-	54.0	-
	7320.0	V	62.6	74.0	-11.4	51.9	54.0	-2.1
	7320.0	H	61.6	74.0	-12.4	50.7	54.0	-3.3
2480.0	7440.0	V	59.4	74.0	-14.6	49.9	54.0	-4.1
	7440.0	H	59.5	74.0	-14.5	50.3	54.0	-3.7
	2483.5	V	53.5	74.0	-20.5	42.2	54.0	-11.8
	2483.5	H	53.3	74.0	-20.7	42.1	54.0	-11.9

Figure 132. Radiated Emission Results

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Radiated Emission

E.U.T Description Wearable Device
Type ORCAM MYME
Serial Number: 18380173

Specifications: FCC, Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

Antenna Polarization: Horizontal/Vertical Frequency Range: 9kHz to 25.0 GHz
Protocol Type: WI-FI/g(6Mbps) Detector: Peak, Average

Operation Frequency	Freq.	Pol	Peak Reading	Peak Limit	Peak Margin	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2412.0	2390.0	V	54.2	74.0	-19.8	45.2	54.0	-8.8
	2390.0	H	56.0	74.0	-18.0	46.3	54.0	-7.7
	7236.0	V	65.9	74.0	-8.1	50.9	54.0	-3.1
	7236.0	H	69.0	74.0	-5.0	53.2	54.0	-0.8
2437.0	4874.0	V	59.6	74.0	-14.4	46.7	54.0	-7.3
	4874.0	H	67.0	74.0	-7.0	52.3	54.0	-1.7
	7311.0	V	63.3	74.0	-10.7	49.2	54.0	-4.8
	7311.0	H	68.0	74.0	-6.0	53.0	54.0	-1.0
2462.0	7386.0	V	64.5	74.0	-9.5	51.1	54.0	-2.9
	7386.0	H	68.0	74.0	-6.0	52.8	54.0	-1.2
	2483.5	V	54.4	74.0	-19.6	46.8	54.0	-7.2
	2483.5	H	53.8	74.0	-20.2	47.7	54.0	-6.3

Figure 133. Radiated Emission Results

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Radiated Emission

E.U.T Description Wearable Device
Type ORCAM MYME
Serial Number: 18380173

Specifications: FCC, Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

Antenna Polarization: Horizontal/Vertical Frequency Range: 9kHz to 25.0 GHz
Protocol Type: WI-FI/g(54Mbps) Detector: Peak, Average

Operation Frequency	Freq.	Pol	Peak Reading	Peak Limit	Peak Margin	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2412.0	2390.0	V	55.8	74.0	-18.2	46.1	54.0	-7.9
	2390.0	H	56.1	74.0	-17.9	46.2	54.0	-7.8
	7236.0	V	64.1	74.0	-9.9	50.0	54.0	-4.0
	7236.0	H	68.0	74.0	-6.0	53.5	54.0	-0.5
2437.0	4874.0	V	55.3	74.0	-18.7	41.7	54.0	-12.3
	4874.0	H	57.0	74.0	-17.0	44.2	54.0	-9.8
	7311.0	V	58.2	74.0	-15.8	44.9	54.0	-9.1
	7311.0	H	62.9	74.0	-11.1	50.6	54.0	-3.4
2462.0	7386.0	V	61.8	74.0	-12.2	48.5	54.0	-5.5
	7386.0	H	67.6	74.0	-6.4	53.1	54.0	-0.9
	2483.5	V	53.8	74.0	-20.2	46.1	54.0	-7.9
	2483.5	H	53.8	74.0	-20.2	46.3	54.0	-7.7

Figure 134. Radiated Emission Results

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Radiated Emission

E.U.T Description Wearable Device
Type ORCAM MYME
Serial Number: 18380173

Specifications: FCC, Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

Antenna Polarization: Horizontal/Vertical Frequency Range: 9kHz to 25.0 GHz
Protocol Type: WI-FI/n(6.5Mbps) Detector: Peak, Average

Operation Frequency	Freq.	Pol	Peak Reading	Peak Limit	Peak Margin	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2412.0	2390.0	V	54.7	74.0	-19.3	44.0	54.0	-10.0
	2390.0	H	55.1	74.0	-18.9	44.3	54.0	-9.7
	7236.0	V	64.3	74.0	-9.7	50.8	54.0	-3.2
	7236.0	H	68.1	74.0	-5.9	53.4	54.0	-0.6
2437.0	4874.0	V	60.0	74.0	-14.0	45.2	54.0	-8.8
	4874.0	H	61.5	74.0	-12.5	48.4	54.0	-5.6
	7311.0	V	62.6	74.0	-11.4	50.0	54.0	-4.0
	7311.0	H	64.3	74.0	-9.7	50.6	54.0	-3.4
2462.0	7386.0	V	63.3	74.0	-10.7	49.8	54.0	-4.2
	7386.0	H	68.5	74.0	-5.5	53.5	54.0	-0.5
	2483.5	V	54.0	74.0	-20.0	48.1	54.0	-5.9
	2483.5	H	53.7	74.0	-20.3	48.0	54.0	-6.0

Figure 135. Radiated Emission Results

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

Radiated Emission

E.U.T Description Wearable Device
Type ORCAM MYME
Serial Number: 18380173

Specifications: FCC, Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

Antenna Polarization: Horizontal/Vertical Frequency Range: 9kHz to 25.0 GHz
Protocol Type: WI-FI/n(65Mbps) Detector: Peak, Average

Operation Frequency	Freq.	Pol	Peak Reading	Peak Limit	Peak Margin	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
2412.0	2390.0	V	54.2	74.0	-19.8	45.6	54.0	-8.4
	2390.0	H	54.0	74.0	-20.0	45.3	54.0	-8.7
	7236.0	V	62.8	74.0	-11.2	50.1	54.0	-3.9
	7236.0	H	66.5	74.0	-7.5	52.9	54.0	-1.1
2437.0	4874.0	V	60.3	74.0	-13.7	48.2	54.0	-5.8
	4874.0	H	61.1	74.0	-12.9	49.7	54.0	-4.3
	7311.0	V	62.0	74.0	-12.0	50.2	54.0	-3.8
	7311.0	H	63.7	74.0	-10.3	50.9	54.0	-3.1
2462.0	7386.0	V	62.8	74.0	-11.2	50.6	54.0	-3.4
	7386.0	H	66.2	74.0	-7.8	53.2	54.0	-0.8
	2483.5	V	54.1	74.0	-19.9	47.5	54.0	-6.5
	2483.5	H	54.3	74.0	-19.7	47.7	54.0	-6.3

Figure 136. Radiated Emission Results

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

"Peak Amp" includes correction factor.

* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

11.6 *Test Instrumentation Used; Emissions in Restricted Frequency Bands*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100724	February 19, 2018	February 19, 2019
EMI Receiver	HP	8542E	3906A00276	February 19, 2018	February 19, 2019
RF Filter Section	HP	85420E	3705A00248	February 19, 2018	February 19, 2019
Spectrum Analyzer	HP	8593EM	3536A00120 ADI	February 20, 2018	February 20, 2019
Active Loop Antenna	EMCO	6502	9506-2950	October 19, 2018	October 19, 2019
Biconical Antenna	EMCO	3110B	9912-3337	May 15, 2017	May 15, 2019
Log Periodic Antenna	EMCO	3146	9505-4081	May 31, 2018	May 31, 2019
Horn Antenna	ETS	3115	29845	May 31, 2018	May 31, 2021
Horn Antenna	ARA	SWH-28	1007	December 31, 2017	December 31, 2020
MicroWave System Amplifier	HP	83006A	3104A00589	October 1, 2018	October 31, 2019
Low Noise Amplifier 1GHz-18GHz	Miteq	AFSX4-02001800-50-8P	-	October 1, 2018	October 31, 2019
RF Cable Chamber	Commscope ORS	0623 WBC-400	G020132	October 1, 2018	December 31, 2018 See Note below
RF Cable Oats	EIM	RG214-11N(X2)		August 13, 2018	August 31, 2019
Filter Band Pass 4-20 GHz	Meuro	MFL040120H50	902252	December 24, 2018	December 24, 2019
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR
Antenna Mast	ETS	2070-2	9608-1497	NCR	NCR
Turntable	ETS	2087	-	NCR	NCR
Mast & Table Controller	ETS/EMCO	2090	9608-1456	NCR	NCR

Note: Testing performed December 25, 2018

Figure 137 Test Equipment Used

12. Antenna Gain/Information

The antenna gain is -2.0 dBi, integral

13. R.F Exposure/Safety

Typical use of the E.U.T. is as a wearable device.

The typical distance between the E.U.T. and the user is 0.5 cm.

SAR Testing Exclusion Based on Section 4.3.1 and Appendix A of KDB 447498 D01 V06 Requirements

For FCC

Section 4.3.1 and Appendix A of KDB447498 D01 V06 was used as the guidance as follows:

Conducted power output = 1.7dBm + (-2dBi) (antenna gain) = -0.3dBm = 0.933mW

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] *· [√f(GHz)]

=0.993/5 * 1.55=0.289 this value is less than 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR.

The SAR measurement is not necessary.

14. APPENDIX A - CORRECTION FACTORS

14.1 *Correction factors for RF OATS Cable 35m ITL #1911*

Frequency (MHz)	Ref&cable loss (dBm)	Ref loss (dBm)	Cable loss (dB)
1.00	0.7	0.2	0.5
10.00	1.3	0.3	1
20.00	1.7	0.3	1.34
30.00	2.0	0.5	1.5
50.00	2.3	0.5	1.83
100.00	3.0	0.3	2.67
150.00	3.7	0.5	3.17
200.00	4.3	0.5	3.83
250.00	4.5	0.3	4.17
300.00	5.0	0.5	4.5
350.00	5.7	0.5	5.17
400.00	6.0	0.5	5.5
450.00	6.5	0.7	5.83
500.00	6.8	0.5	6.33
550.00	7.2	0.5	6.67
600.00	7.5	0.7	6.83
650.00	7.7	0.5	7.17
700.00	8.3	0.7	7.66
750.00	8.5	0.7	7.83
800.00	8.8	0.7	8.16
850.00	9.0	0.5	8.5
900.00	9.5	0.7	8.83
950.00	9.7	0.8	8.84
1000.00	9.7	0.7	9

14.2 *Correction factor for RF cable for Anechoic Chamber*

ITL # 1840

Frequency (GHz)	loss Result (dB)
0.5	-1.0
1.0	-1.4
1.5	-1.7
2.0	-2.0
2.5	-2.3
3.0	-2.6
3.5	-2.8
4.0	-3.1
4.5	-3.3
5.0	-3.6
5.5	-3.7
6.0	-4.0
6.5	-4.4
7.0	-4.7
7.5	-4.8
8.0	-5.0
8.5	-5.1
9.0	-5.6
9.5	-5.8
10.0	-6.0
10.5	-6.2
11.0	-6.2
11.5	-6.0
12.0	-6.0
12.5	-6.1
13.0	-6.3
13.5	-6.5
14.0	-6.7
14.5	-7.0
15.0	-7.3
15.5	-7.5
16.0	-7.6
16.5	-8.0
17.0	-8.0
17.5	-8.1
18.0	-8.2
18.5	-8.2
19.0	-8.3
19.5	-8.6
20.0	-8.5

NOTES:

1. *The cable is manufactured by Commscope*
2. *The cable type is 0623 WBC-400, serial # G020132 and 10m long*

14.3 *Correction factors for Active Loop Antenna*

Model 6502 S/N 9506-2950

ITL # 1075:

f(MHz)	MAF(dBs/m)	AF(dB/m)
0.01	-33.1	18.4
0.02	-37.2	14.3
0.03	-38.2	13.3
0.05	-39.8	11.7
0.1	-40.1	11.4
0.2	-40.3	11.2
0.3	-40.3	11.2
0.5	-40.3	11.2
0.7	-40.3	11.2
1	-40.1	11.4
2	-40	11.5
3	-40	11.5
4	-40.1	11.4
5	-40.2	11.3
6	-40.4	11.1
7	-40.4	11.1
8	-40.4	11.1
9	-40.5	11
10	-40.5	11
20	-41.5	10
30	-43.5	8

14.4 *Correction factors for biconical antenna*

ITL #1356
Model: EMCO 3110B
Serial No.: 9912-3337

Frequency [MHz]	ITL 1356 AF [dB/m]
30	14.77
35	13.46
40	12.57
45	11.62
50	10.87
60	9.19
70	9.52
80	9.55
90	9.27
100	10.20
120	11.18
140	12.02
160	12.62
180	13.44
200	14.82

14.5 *Correction factors for log periodic antenna*

ITL # 1349
Model:EMCO 3146
Serial No.: 9505-4081

Frequency [MHz]	ITL 1349 AF [dB/m]
200	11.31
250	11.85
300	14.47
400	15.12
500	17.69
600	18.45
700	20.52
800	20.77
900	21.97
1000	23.21

14.6 *Correction factors for Double –Ridged Waveguide Horn ANTENNA*

Model: 3115
Serial number:29845
3 meter range; ITL # 1352

FREQUENCY (GHz)	AFE (dB/m)	FREQUENCY (GHz)	AFE (dB/m)
0.75	25	9.5	38
1.0	23.5	10.0	38.5
1.5	26.0	10.5	38.5
2.0	29.0	11.0	38.5
2.5	27.5	11.5	38.5
3.0	30.0	12.0	38.0
3.5	31.5	12.5	38.5
4.0	32.5	13.0	40.0
4.5	32.5	13.5	41.0
5.0	33.0	14.0	40.0
5.5	35.0	14.5	39.0
6.0	36.5	15.0	38.0
6.5	36.5	15.5	37.5
7.0	37.5	16.0	37.5
7.5	37.5	16.5	39.0
8.0	37.5	17.0	40.0
8.5	38.0	17.5	42.0
9.0	37.5	18.0	42.5

14.7 *Correction factors for Horn Antenna Model: SWH-28*

CALIBRATION DATA

3 m distance

Frequency, MHz	Measured antenna factor, dB/m [1]
18000	32.4
18500	32.0
19000	32.3
19500	32.4
20000	32.3
20500	32.8
21000	32.8
21500	32.7
22000	33.1
22500	33.0
23000	33.1
23500	33.8
24000	33.5
24500	33.5
25000	33.8
25500	33.9
26000	34.2
26500	34.7

[1] The antenna factor shall be added to receiver reading in dBµV to obtain field strength in dBµV/m.