

Appendix B: Test results. Flora (2M)

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 3.7 Vdc
Type of Power Supply: Internal rechargeable battery

ANTENNA (*):

Type of Antenna: Integral Antenna
Maximum Declared Antenna Gain: -10.5 dBi

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel:	Middle Channel	High Channel
GMSK	2M 2 Mbit/s	2402 MHz	2440 MHz	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

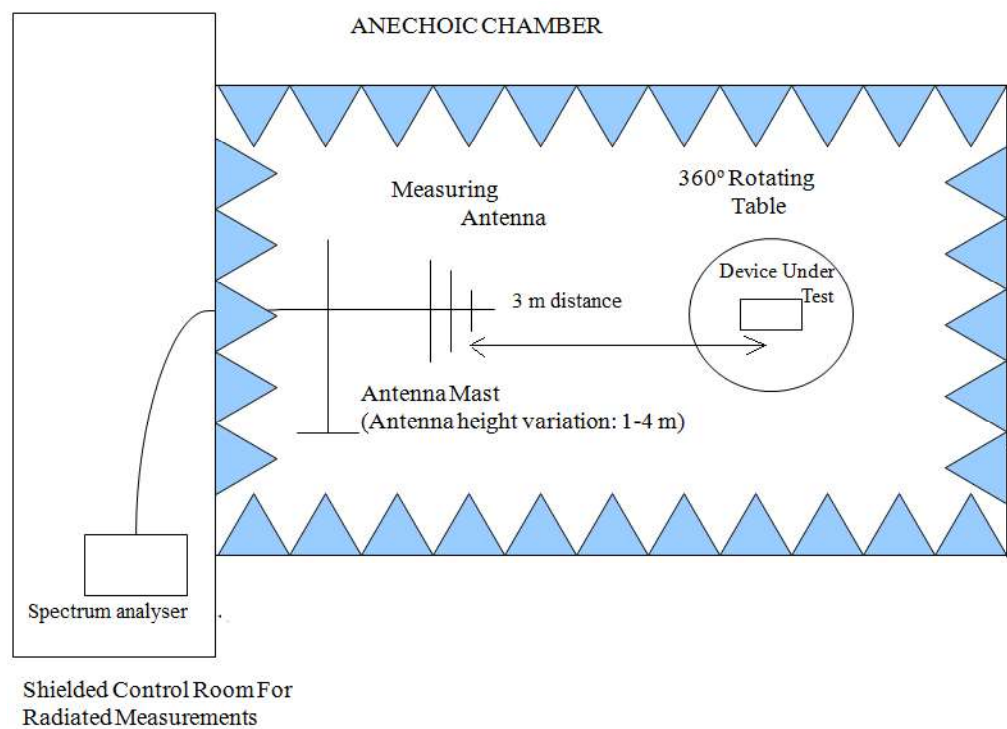
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

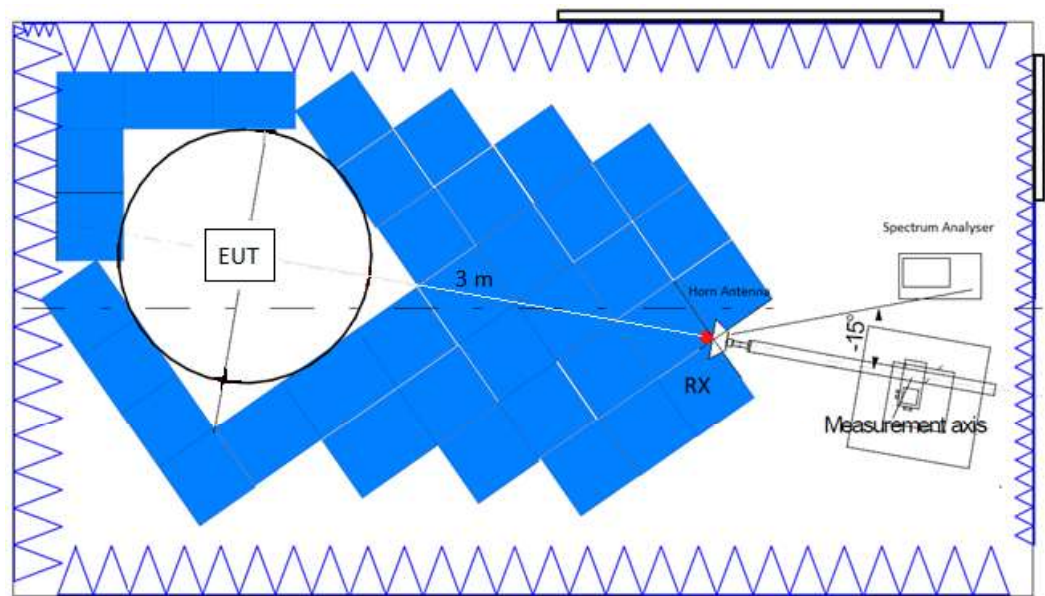
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

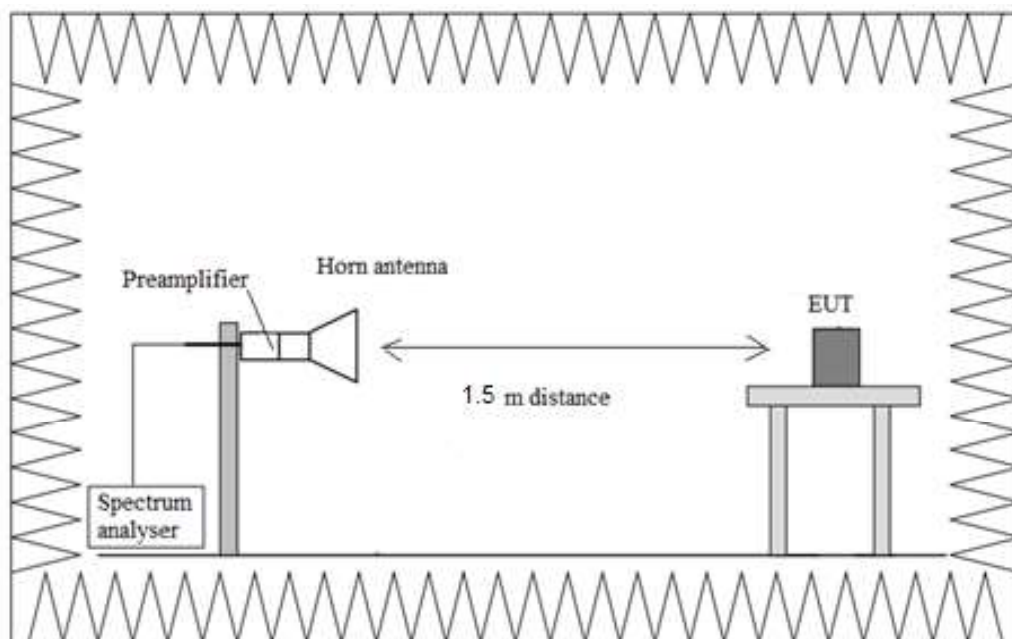
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



SAMPLE CALCULATION

For radiated measurements:

Values measures by the test receiver / analyzer are converted to field strength, in dBuV/m, at the regulatory distance using the following calculation:

$$\text{Unwanted Lvl (dBuV/m)} = \text{Raw Rec (dBuV)} + \text{Preamp (dB)} + \text{Trd Corre. (dB/m)} + \text{SigPath (dB)}$$

Where,

Raw Rec (dBuV): Measured voltage in the receiver / spectrum analyzer in dBuV

Preamp (dB): Path loses due to preamplifier

Trd Corr. (dB/m): Antenna factor in dB/m

SigPath (dB) = Cable loss (dB) – External Gain amplifier (dB) – Distance factor (dB)

Cable loss (dB): Cable loss

External Gain amplifier (dB): Gain from external amplifier (when used)

Distance factor (dB): Distance factor in dB. When measurement distance is different to limit distance

The field strength, calculated by this way is compared with the regulatory limit.

TEST CASES DETAILS

99dBw Occupied Channel Bandwidth 99%

Limits

RSS-Gen 6.7 / FCC 2.1049 - Occupied Channel Bandwidth 99%

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

Modulation: FLORA

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Occ Ch BW (MHz)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	2.640
		2440.00000		2.630
		2480.00000		2.640

Verdict

Pass

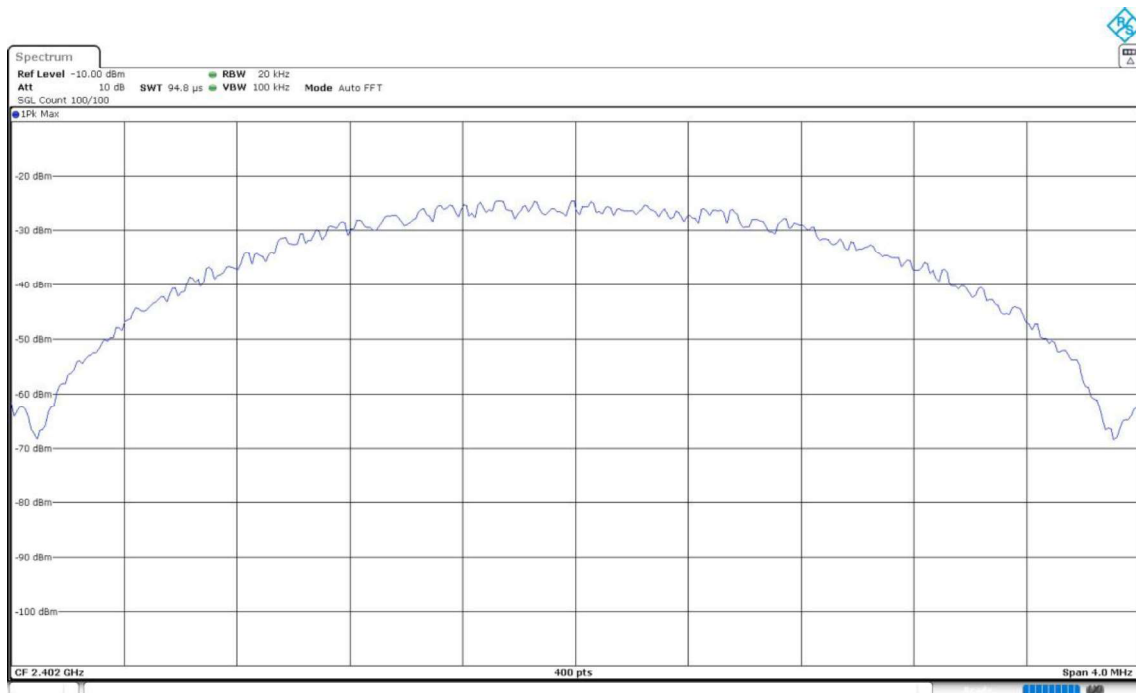
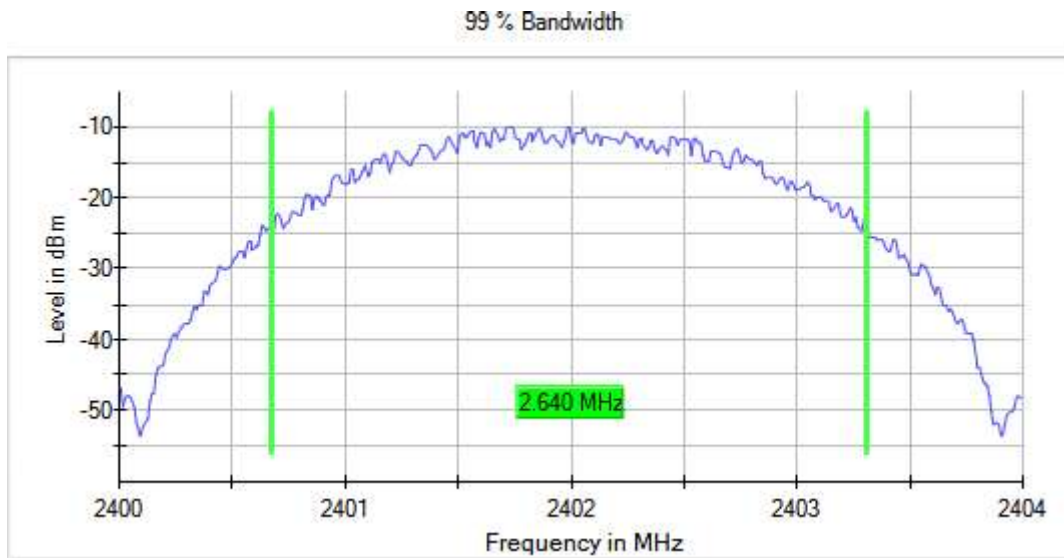
Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000 Active Port = 1

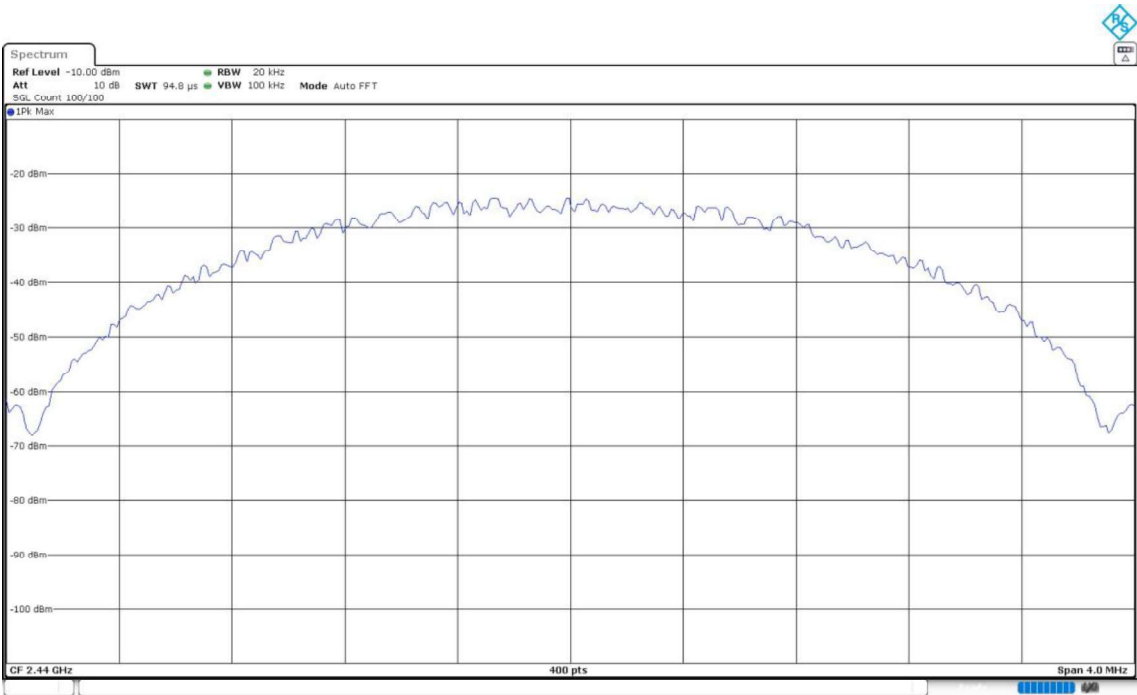
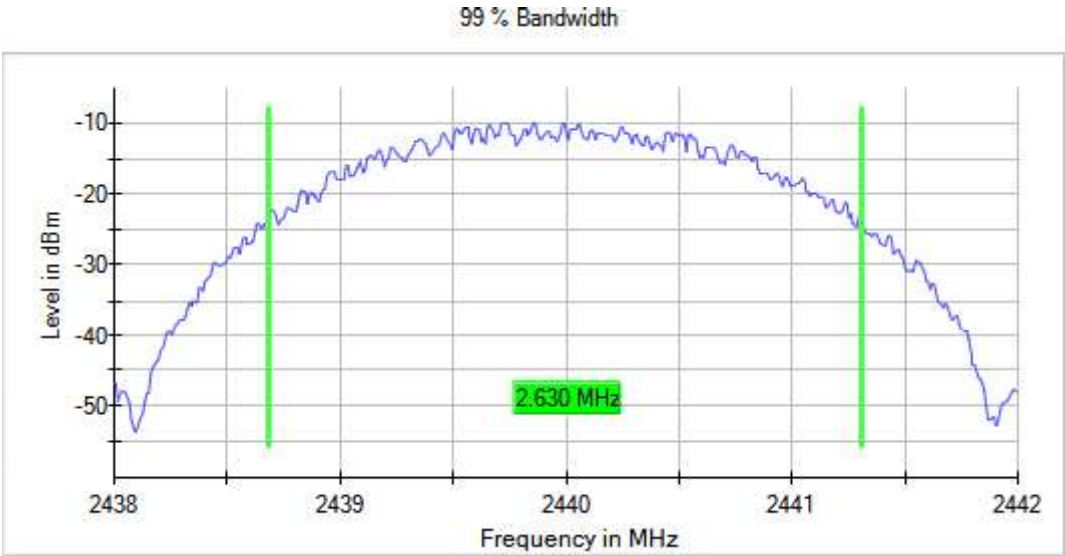
Modulation = FLORA

Images:



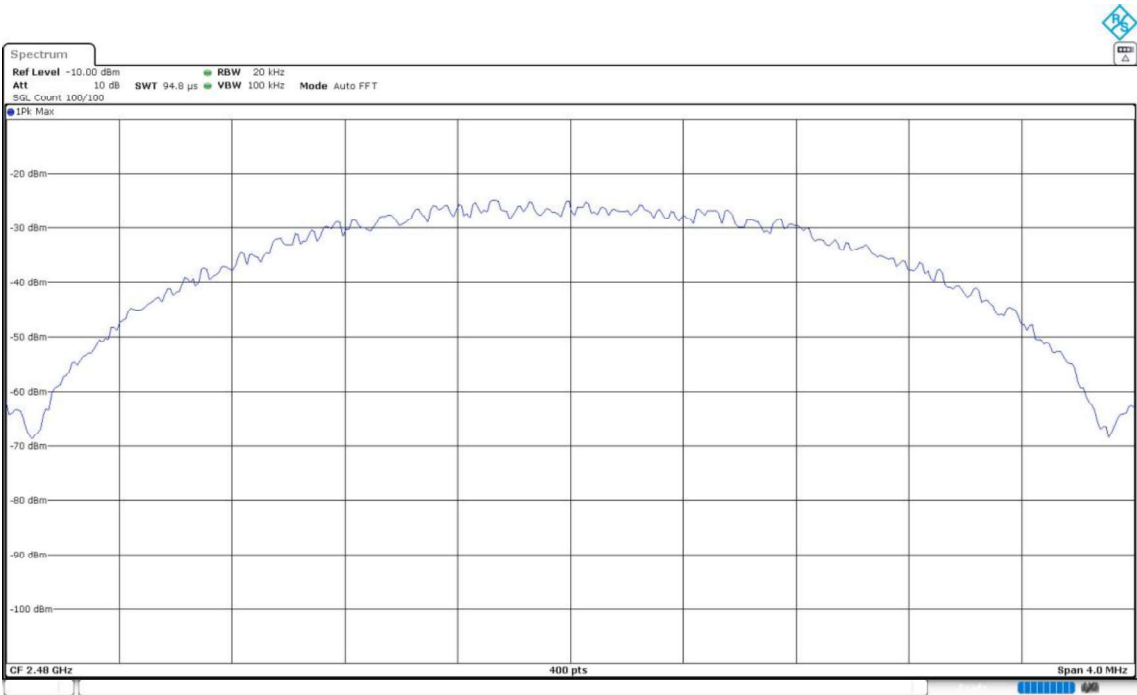
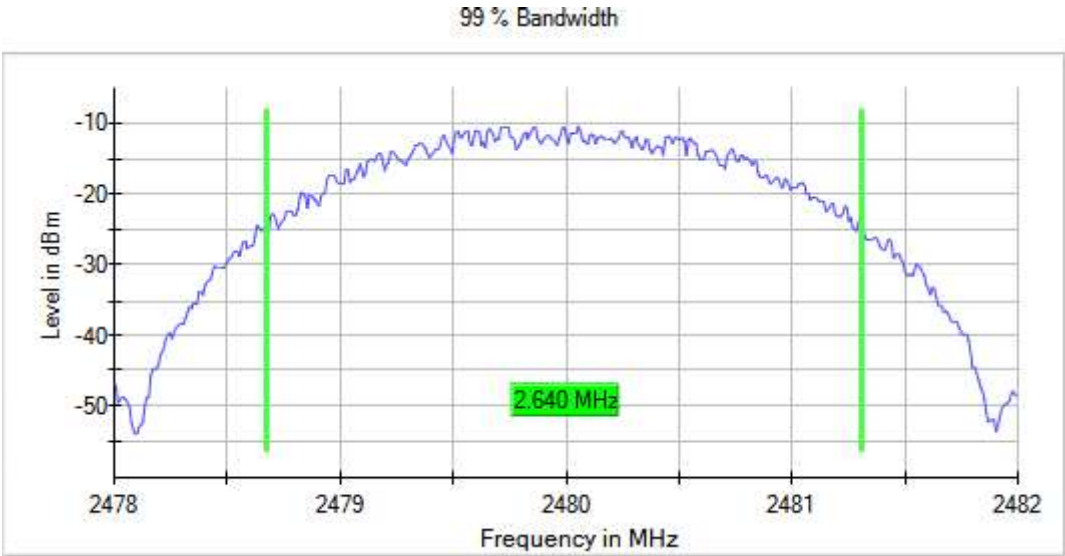
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = FLORA

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = FLORA

Images:



RSS-247 6.3.1 (a) / FCC 15.247 (a) (2) [6dBw] 6 dB Bandwidth

Limits

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: FLORA

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Ebw (MHz)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	1.822
		2440.00000		1.822
		2480.00000		1.822

Verdict

Pass

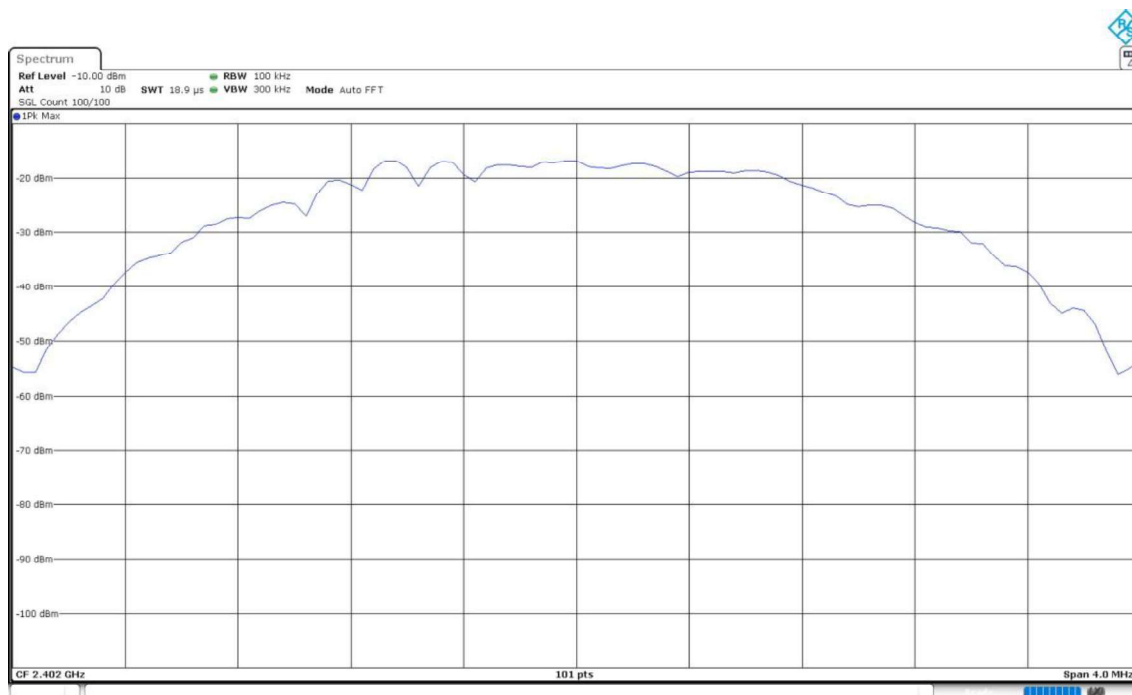
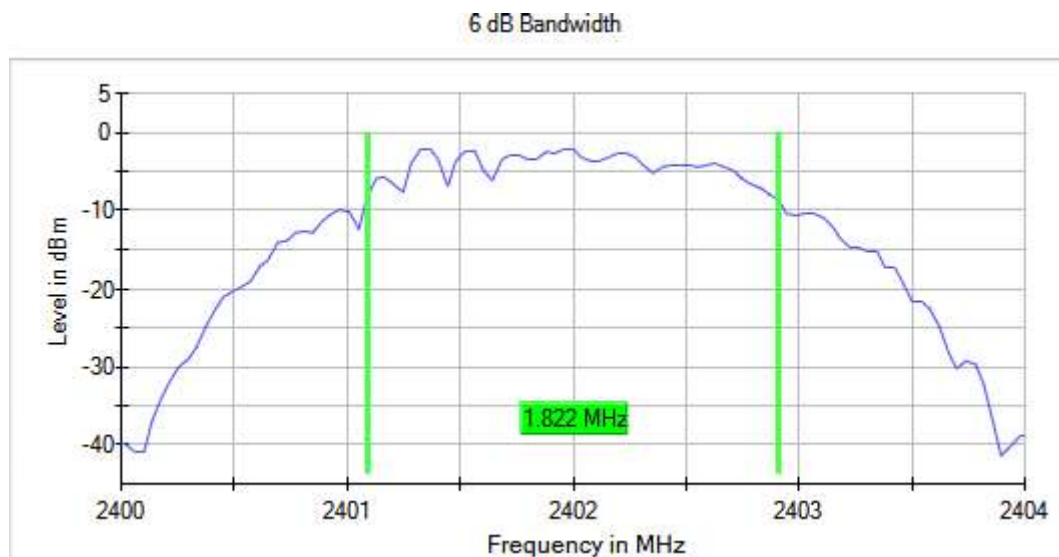
Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000 Active Port = 1

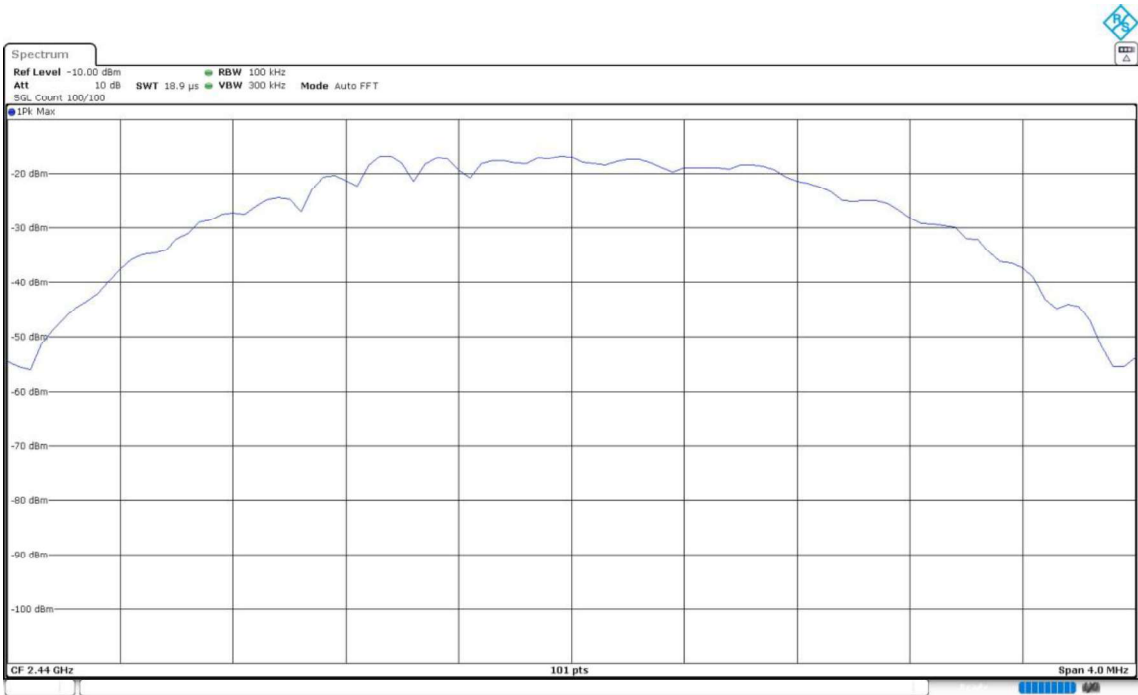
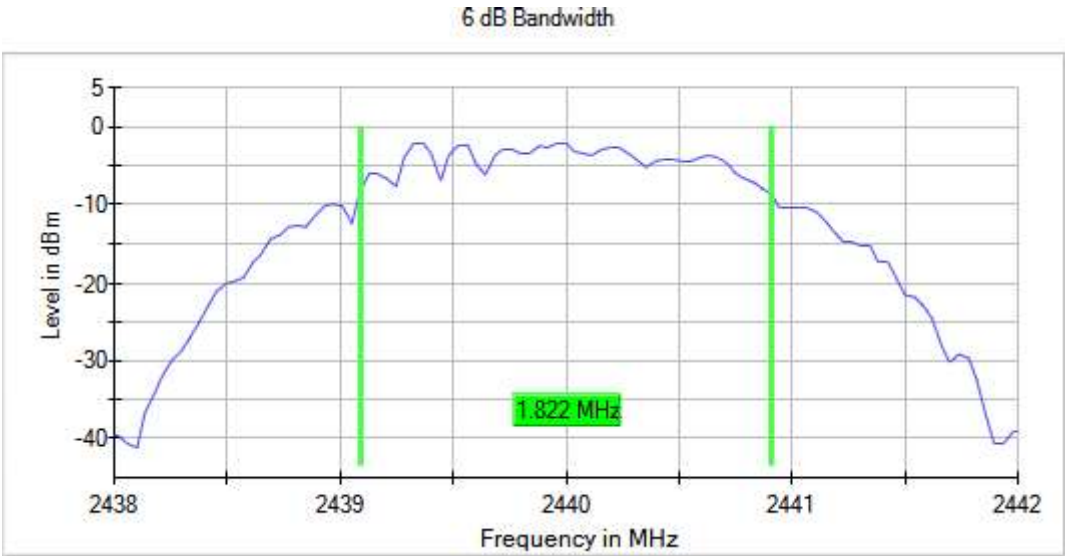
Modulation = FLORA

Images:



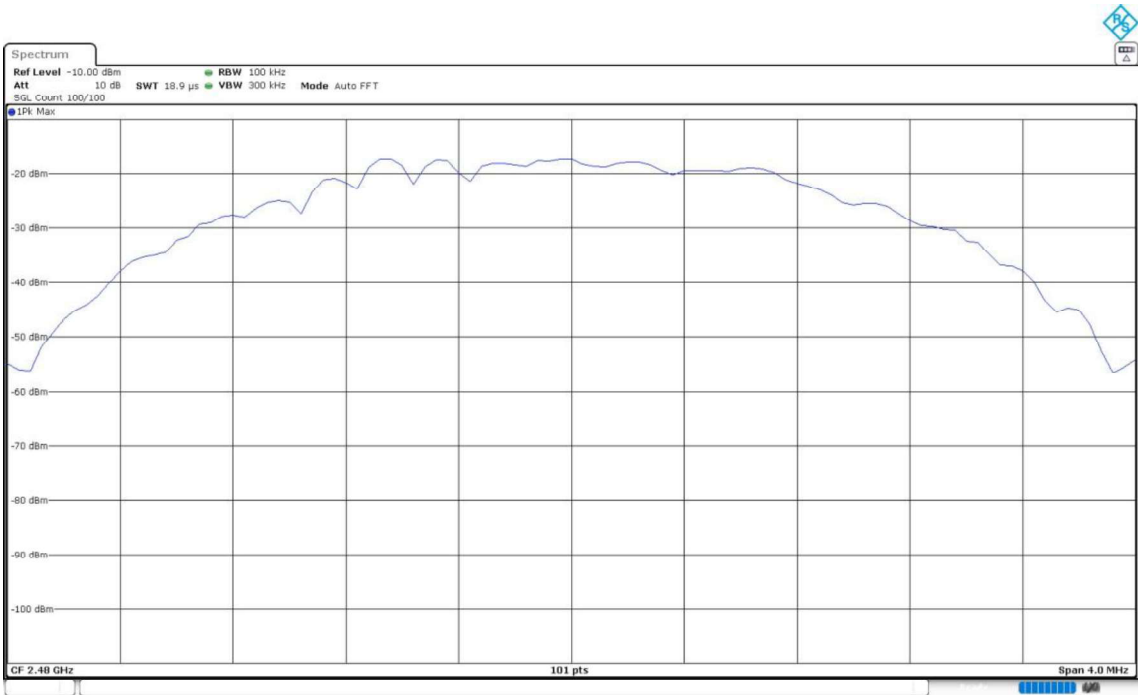
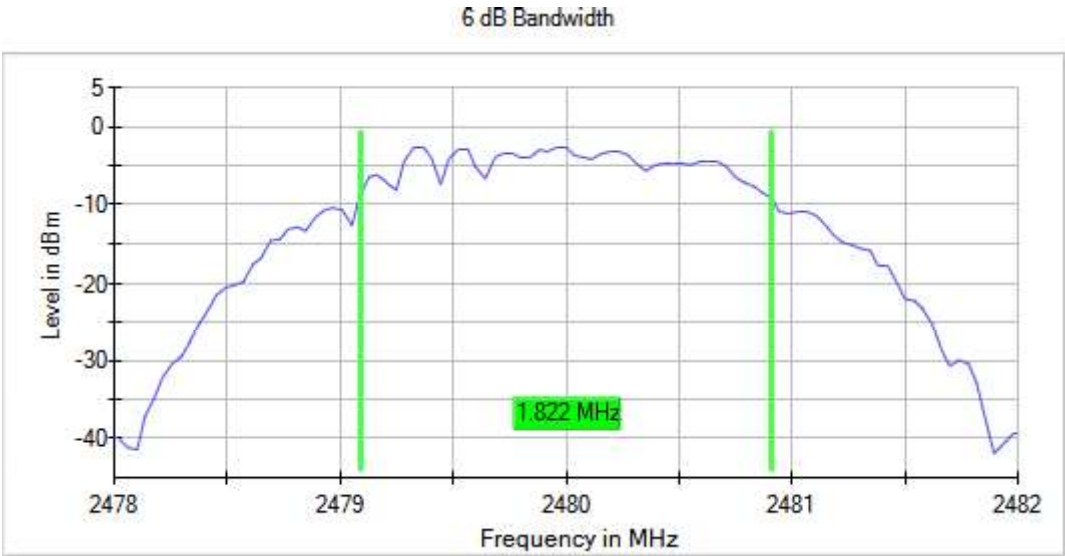
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = FLORA

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = FLORA

Images:



RSS-247 6.3.1. (b) / FCC 15.247 (e) [PSD] Power Spectral Density

Limits

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.

Modulation: FLORA

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	PSD (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	-13.67
		2440.00000		-13.61
		2480.00000		-14.17

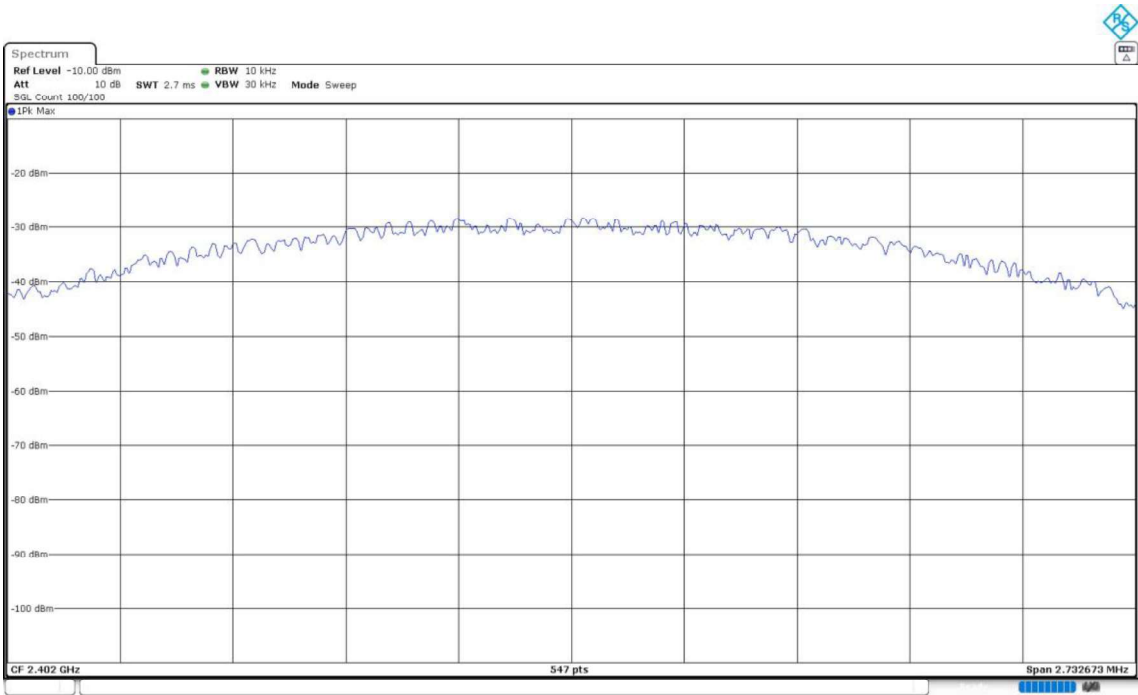
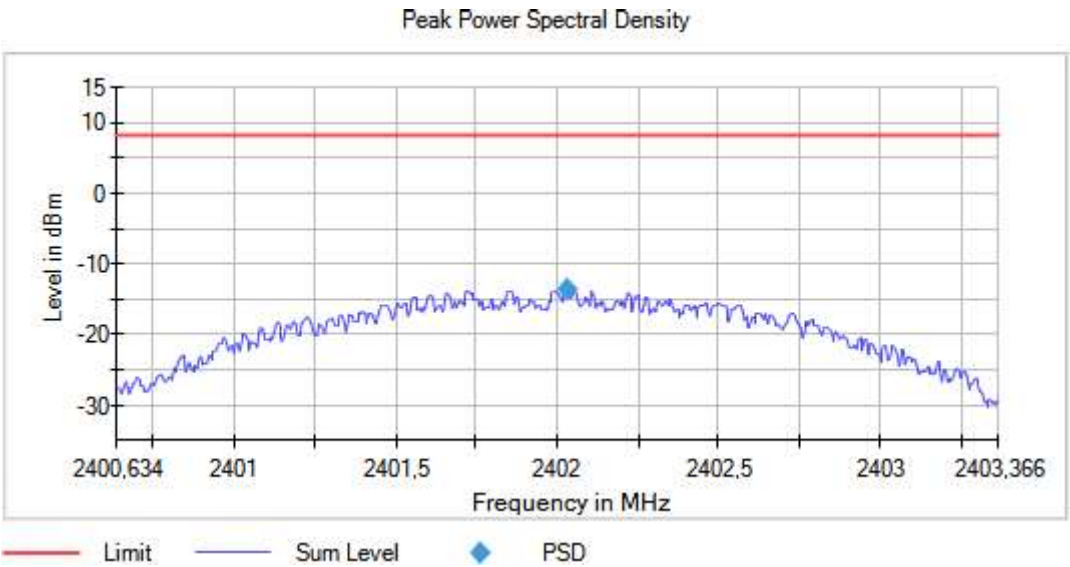
Verdict

Pass

Attachments

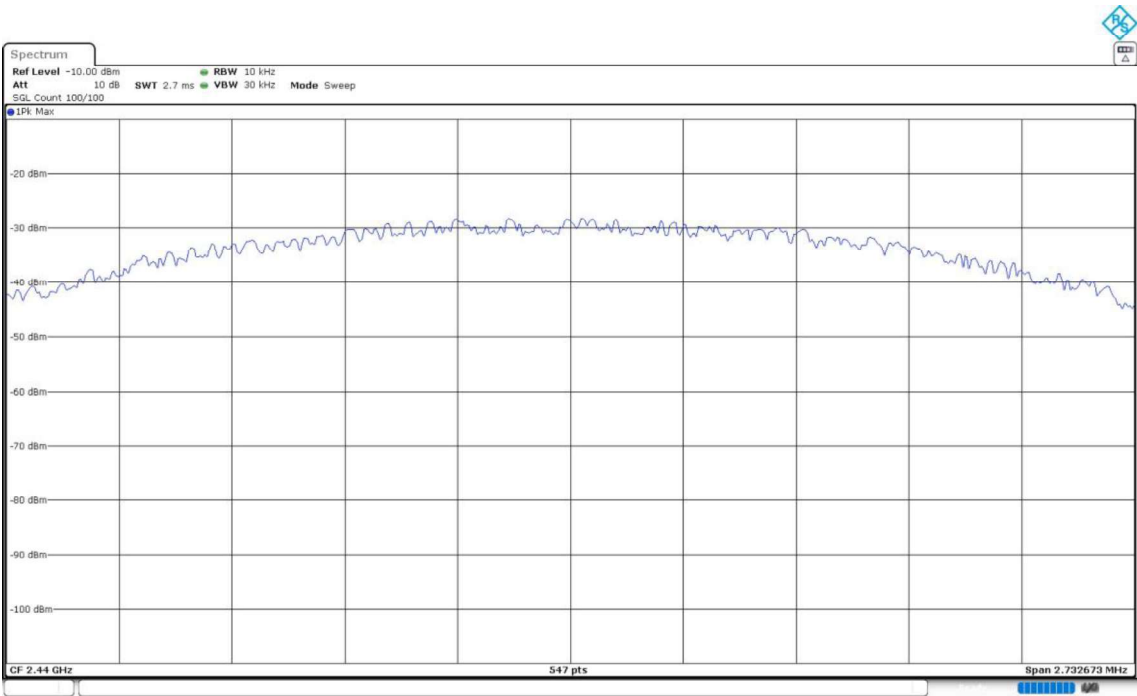
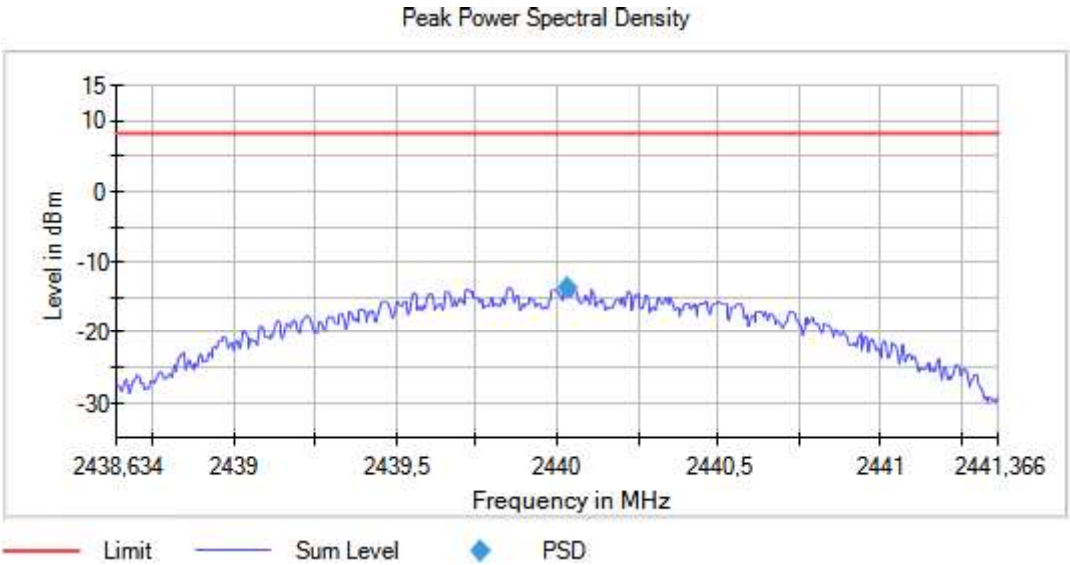
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = FLORA

Images:



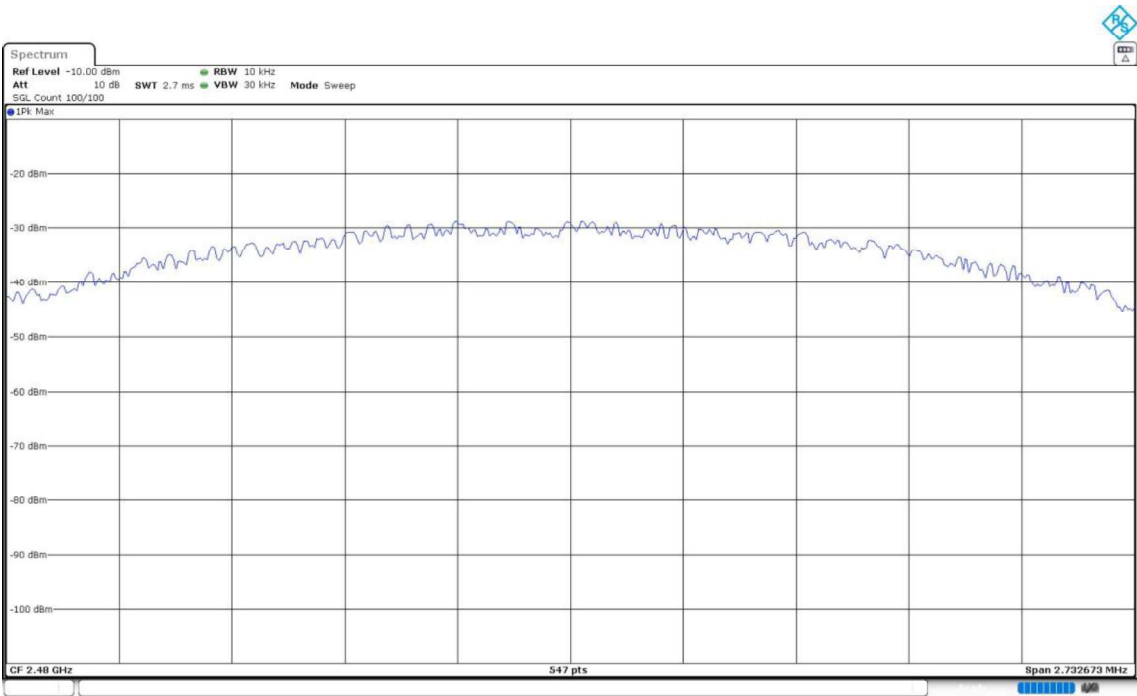
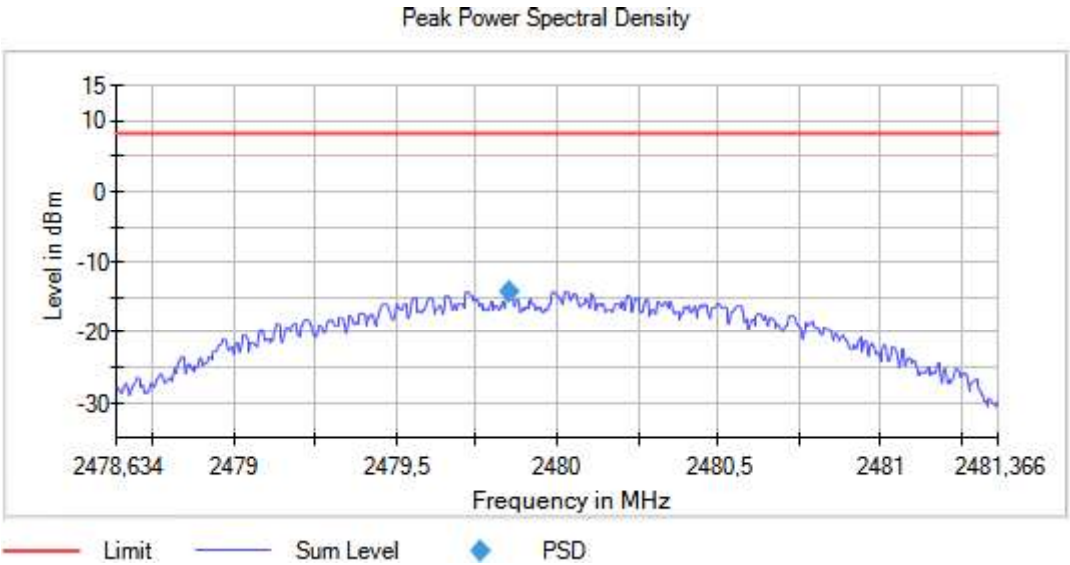
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = FLORA

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = FLORA

Images:



RSS-247 6.3.2 / FCC 15.247 (b) [Pkcp] Maximum Peak Conducted Output Power

Limits

FCC 15.247 (b) (3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

RSS 5.4 (d)

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

Modulation: FLORA

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Peak Power (dBm)	E.I.R.P. (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	1.8910	-8.609
		2440.00000		1.8880	-8.612
		2480.00000		1.3740	-9.126

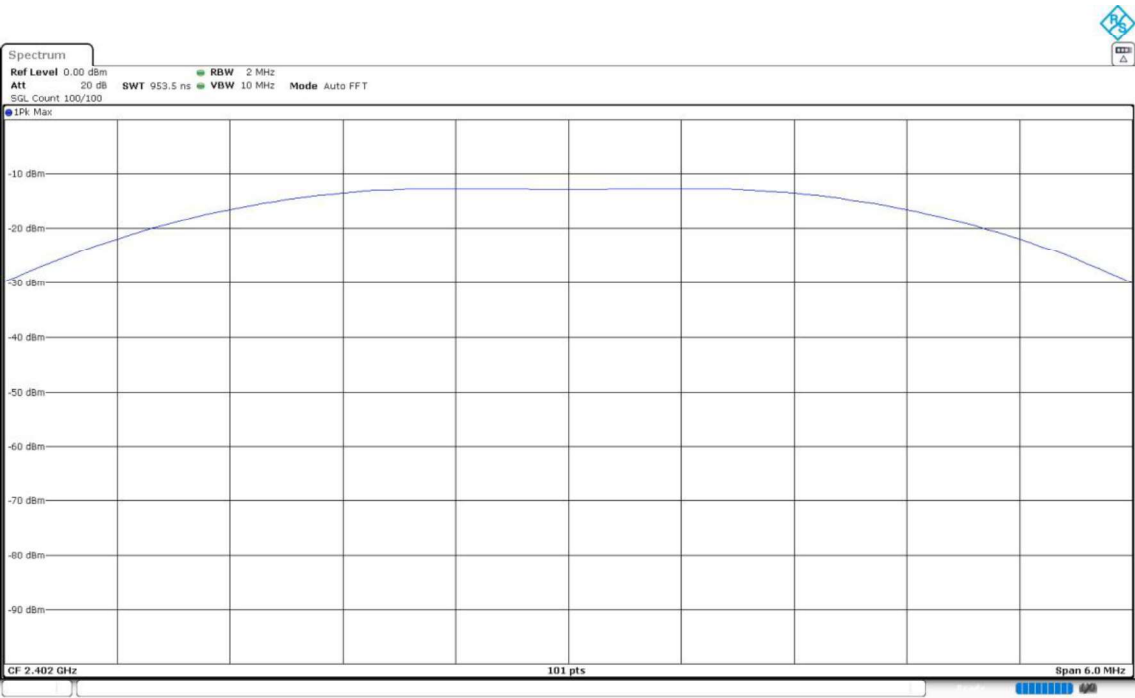
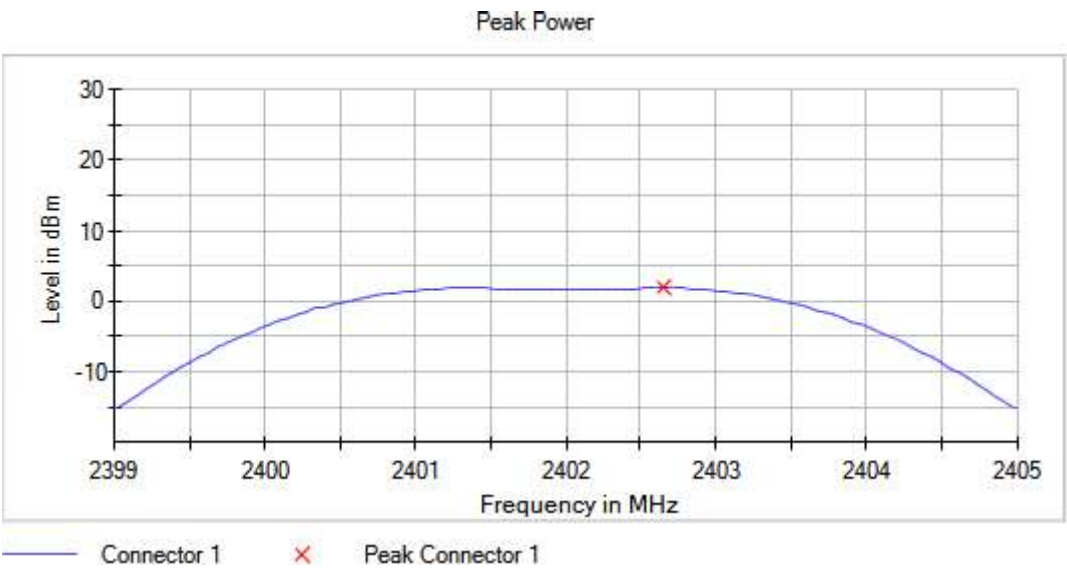
Verdict

Pass

Attachments

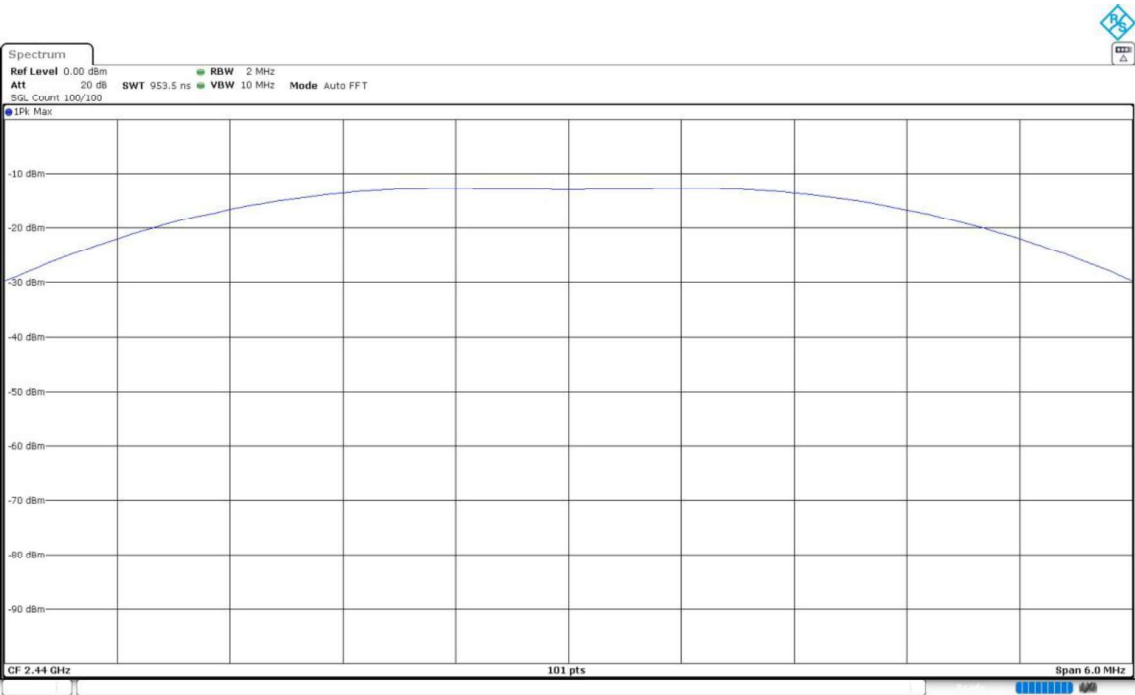
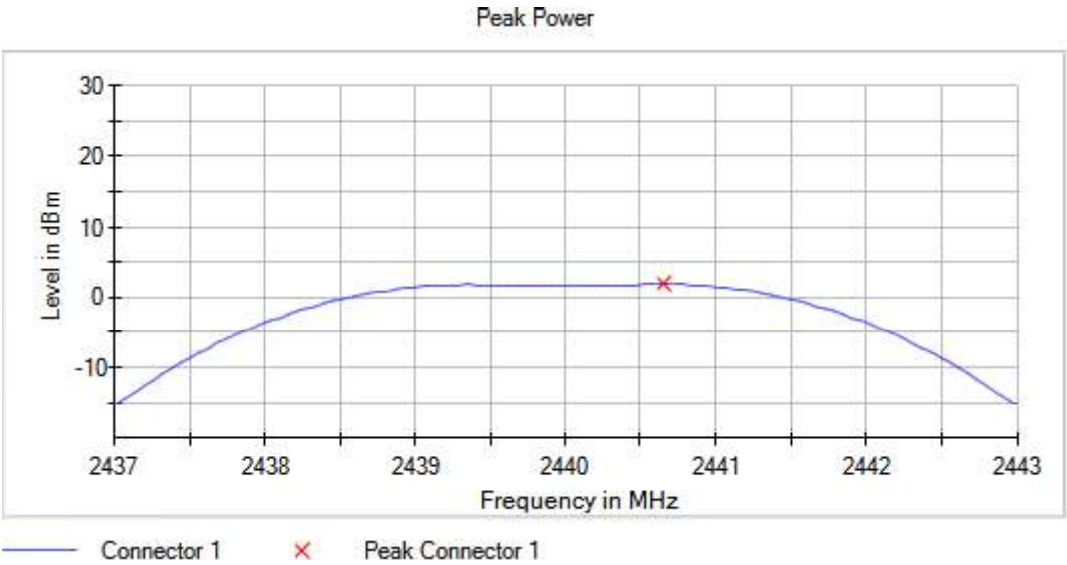
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = FLORA

Images:



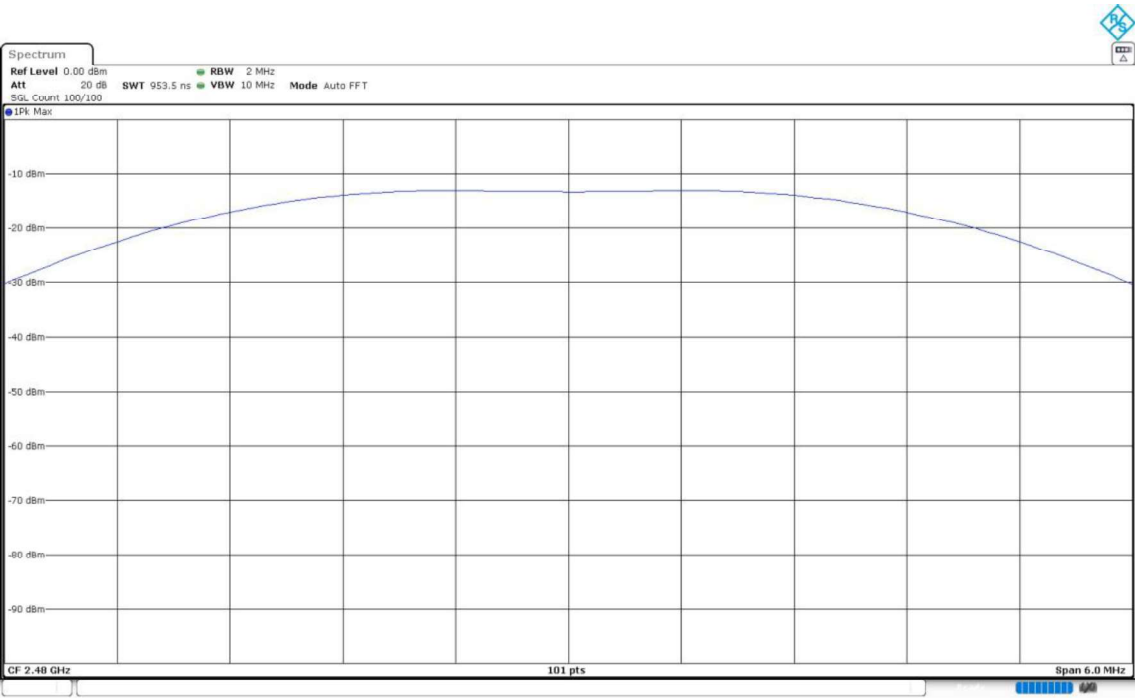
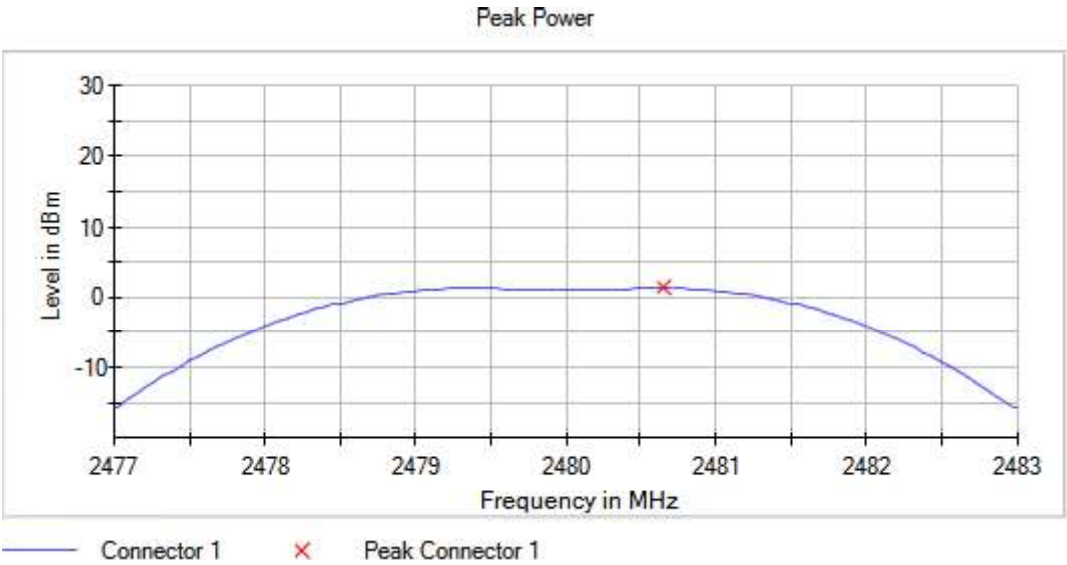
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = FLORA

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = FLORA

Images:



RSS-247 6.6 / FCC 15.247 (d) [Bndedge] Band-edge emissions compliance (Transmitter)

Limits

In any 100 kHz bandwidths outside the frequency band in which the 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Modulation: FLORA

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Inband Peak Lvl (dBm)	Freq (MHz)	Lvl (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	-11.131	2399.625000	-42.3
				-11.131	2399.675000	-42.4
				-11.131	2399.575000	-42.6
				-11.131	2399.725000	-43.2
				-11.131	2399.525000	-43.3
				-11.131	2399.475000	-43.4
				-11.131	2399.425000	-43.4
				-11.131	2399.375000	-43.6
				-11.131	2399.825000	-43.7
				-11.131	2399.775000	-44.2
				-11.131	2399.325000	-44.4
				-11.131	2399.875000	-44.6
				-11.131	2399.925000	-45.4
				-11.131	2399.275000	-45.5
				-11.131	2399.225000	-46.8
		2480.00000		-11.546	2483.525000	-67.3
				-11.546	2483.675000	-67.3
				-11.546	2483.625000	-67.6
				-11.546	2483.725000	-67.6
				-11.546	2483.575000	-67.9
				-11.546	2483.775000	-68.1
				-11.546	2483.825000	-68.4
				-11.546	2484.375000	-69.0
				-11.546	2483.875000	-69.1
				-11.546	2483.925000	-69.3
				-11.546	2484.325000	-69.6
				-11.546	2484.275000	-69.9
				-11.546	2484.425000	-70.1

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Inband Peak Lvl (dBm)	Freq (MHz)	Lvl (dBm)
				-11.546	2483.975000	-70.5
				-11.546	2484.225000	-70.6

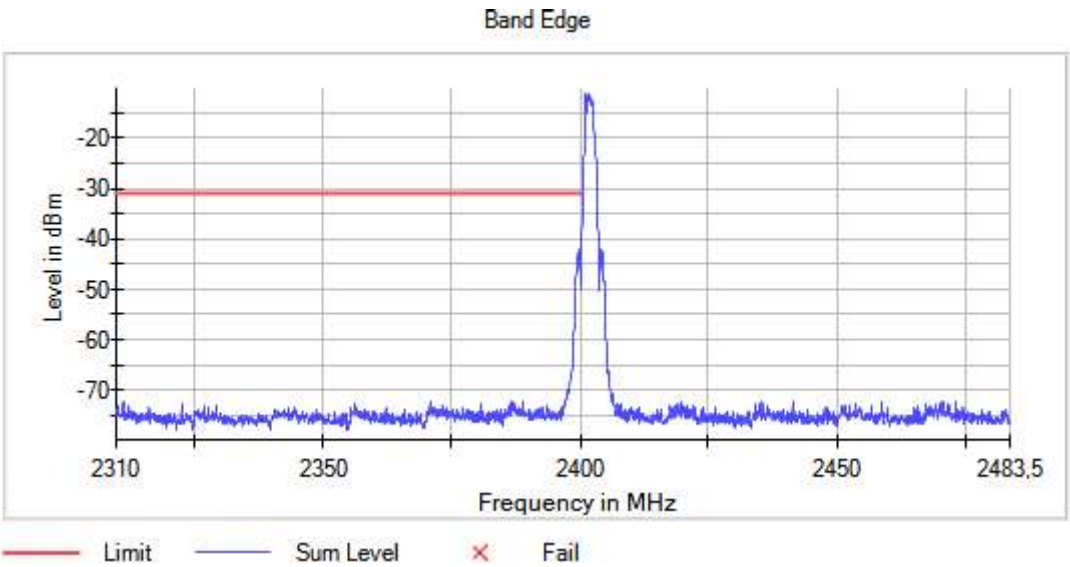
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = FLORA

Images:



Tables:

Spectrum Analyzer Parameters 1

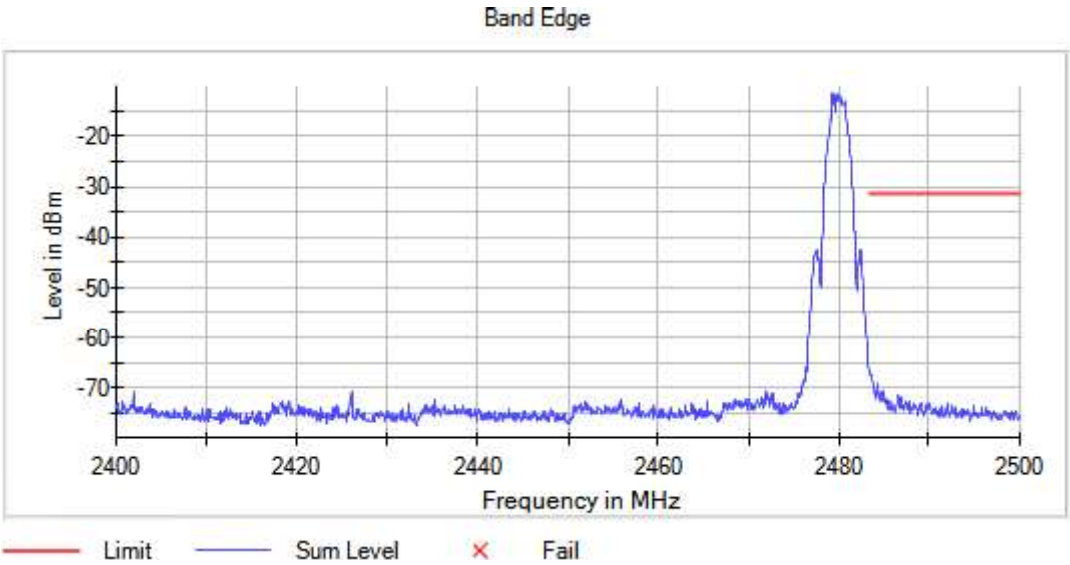
Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.09 dB	0.50 dB

Spectrum Analyzer Parameters 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.50 dB

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = FLORA

Images:



Tables:

Spectrum Analyzer Parameters 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
Sweeptime	113.672 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.09 dB	0.50 dB

Spectrum Analyzer Parameters 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.50 dB

RSS-247 6.6 / FCC 15.247 (d) [RSE] Emission limitations radiated (Transmitter)

Limits

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) (see Section 15.205(c)/RSS-Gen):

Frequency Range (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
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	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

The emission limits shown in the above table are based on measurements employing 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.

RSS-247: Attenuation below the general field strength limits specified in RSS-Gen is not required.

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Modulation: FLORA

Results

- Frequency range [30MHz - 1GHz]
The spurious frequencies do not depend on modulation and channel operation.
No spurious frequencies detected at less than 20 dB below the limit.

- Frequency range [1 - 17GHz]
Spurious frequencies detected at less than 20 dB below the limit:

Operation Band (MHz)	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
[2400, 2483.5]	[1, 3]	2480.00000	2483.533	58.80	H	PK	4.2	0.0	27.6	24.1
	[1, 3]	2480.00000	2483.533	48.12	H	AVG	4.2	0.0	27.6	10.9

- Frequency range [17 - 26GHz]
The spurious frequencies do not depend on modulation and channel operation.
No spurious frequencies detected at less than 20 dB below the limit.

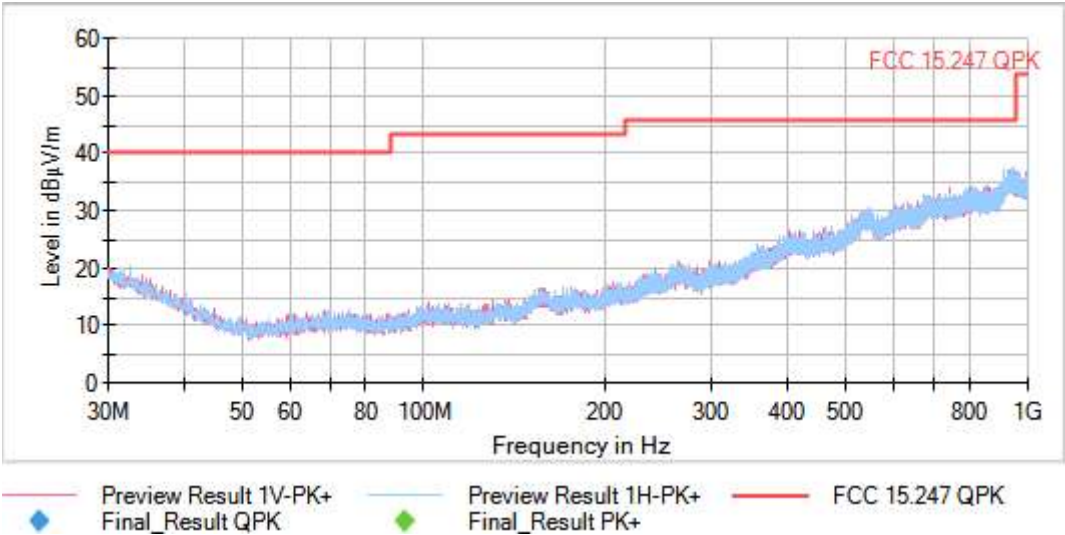
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Frequency Range GHz = [0.03, 1]
Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2402.00000
Active Port = 1 Modulation = FLORA

Images:



This plot is valid for all channels and modulations

Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	30 dB

Operation Band MHz = [2400, 2483.5]

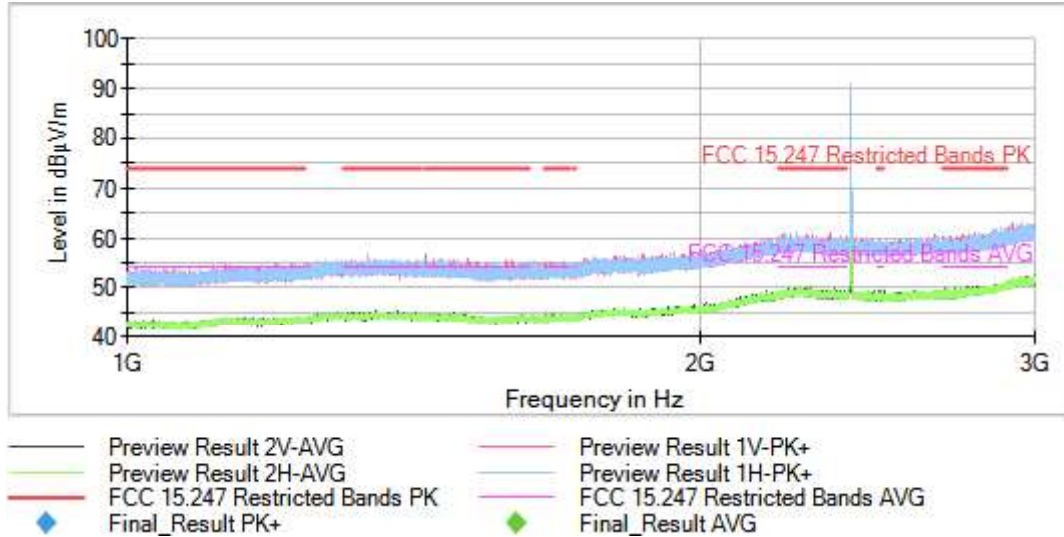
Frequency Range GHz = [1, 3]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2402.00000

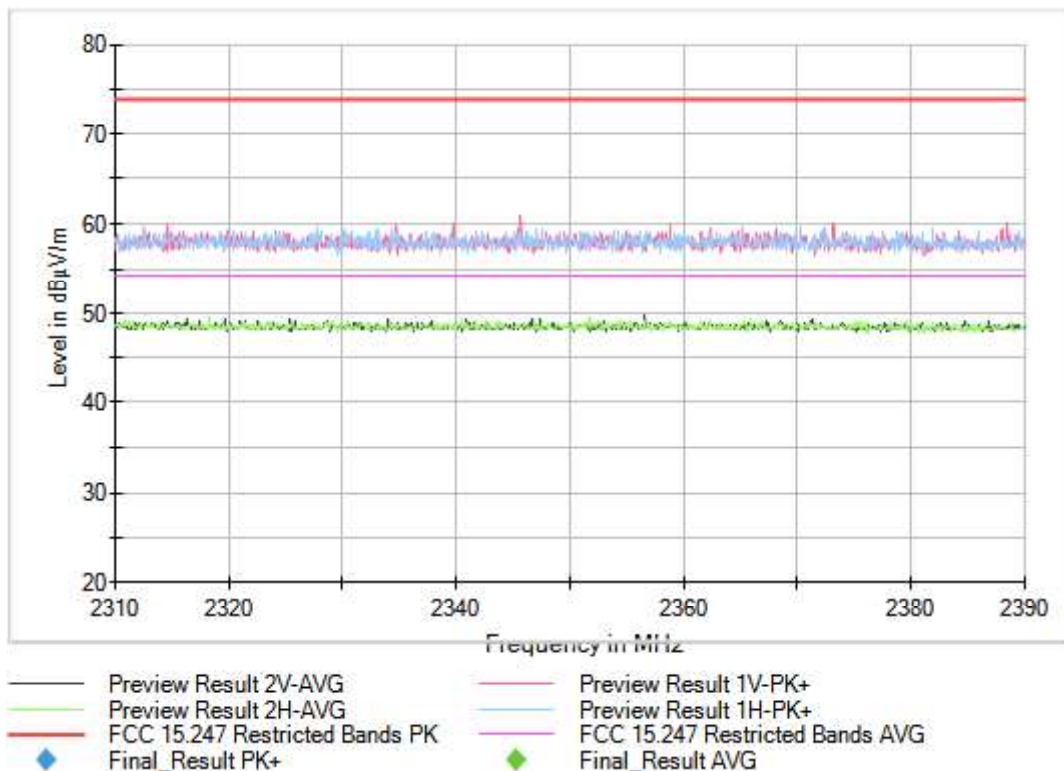
Active Port = 1

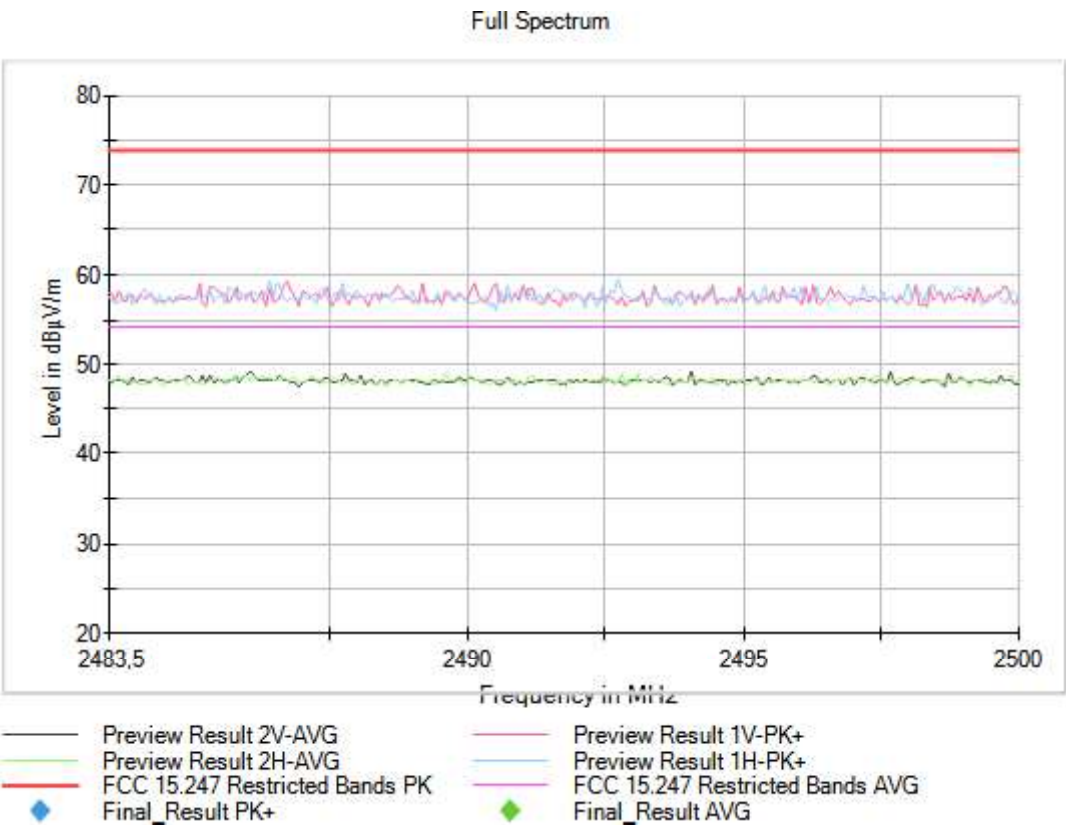
Modulation = FLORA

Images:



Full Spectrum



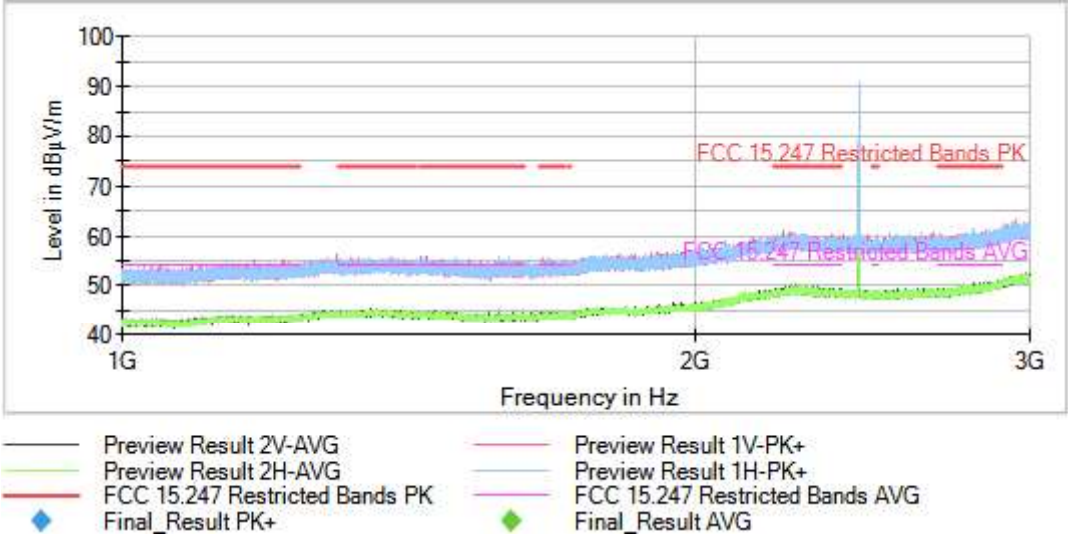


Tables:
Spectrum Analyzer Parameters

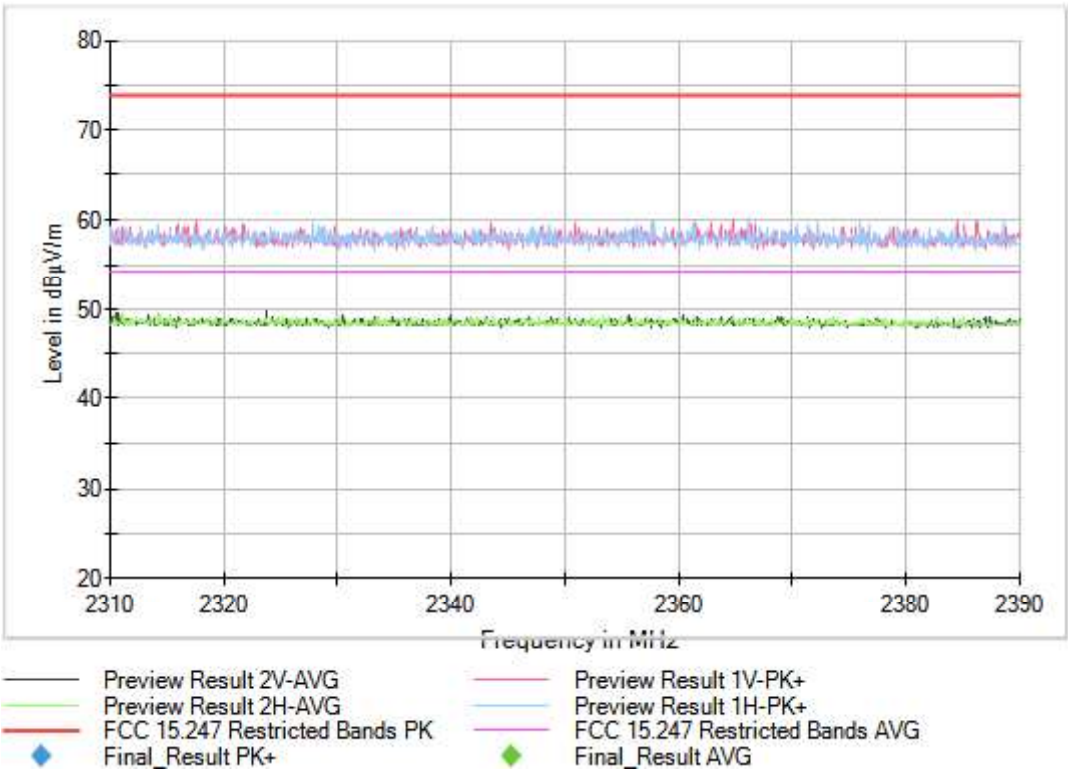
	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

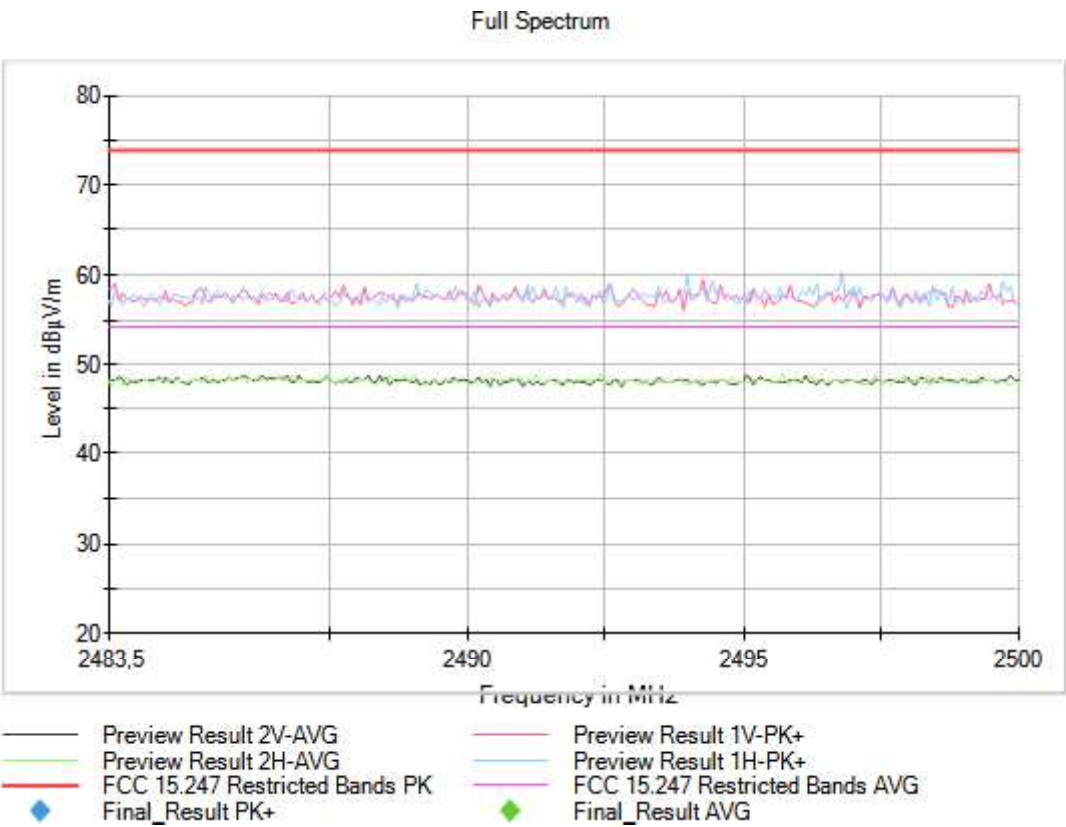
Operation Band MHz = [2400, 2483.5] Frequency Range GHz = [1, 3]
Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2440.00000
Active Port = 1 Modulation = FLORA

Images:



Full Spectrum





Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [1, 3]

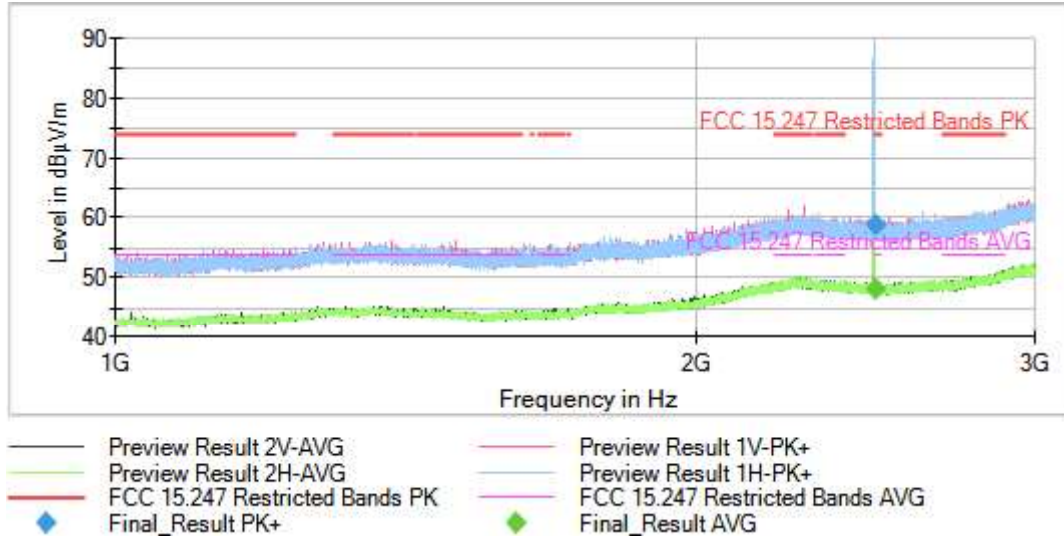
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2480.00000

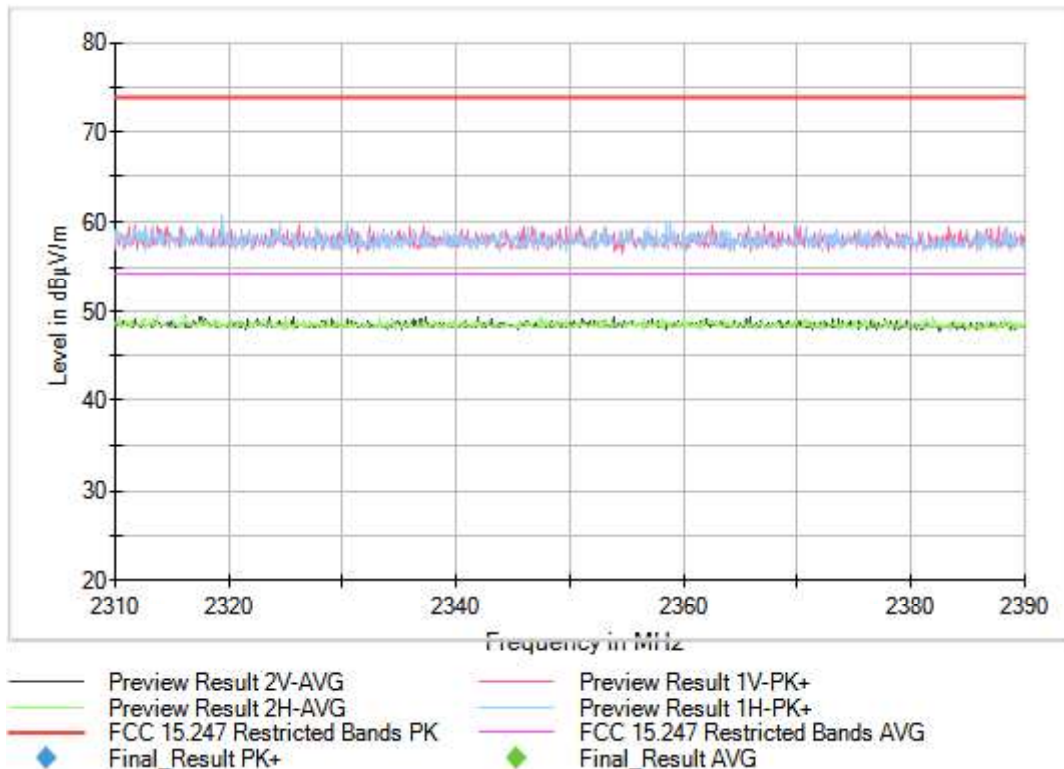
Active Port = 1

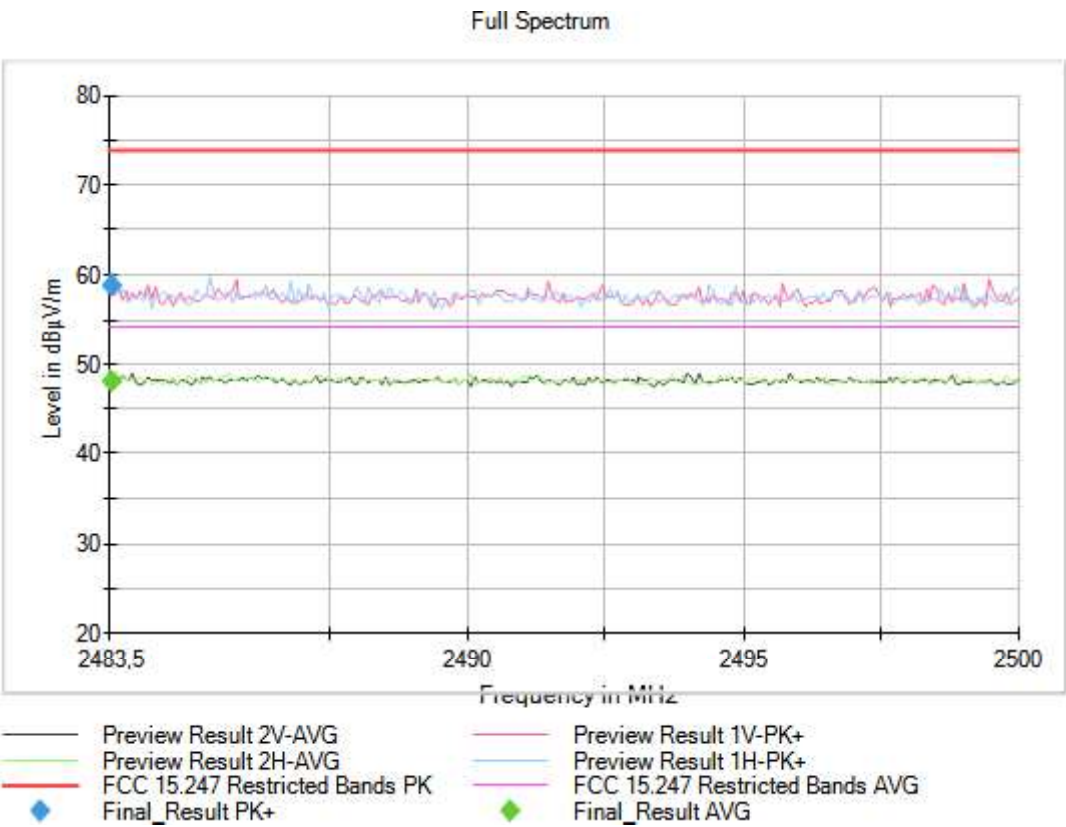
Modulation = FLORA

Images:



Full Spectrum





Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

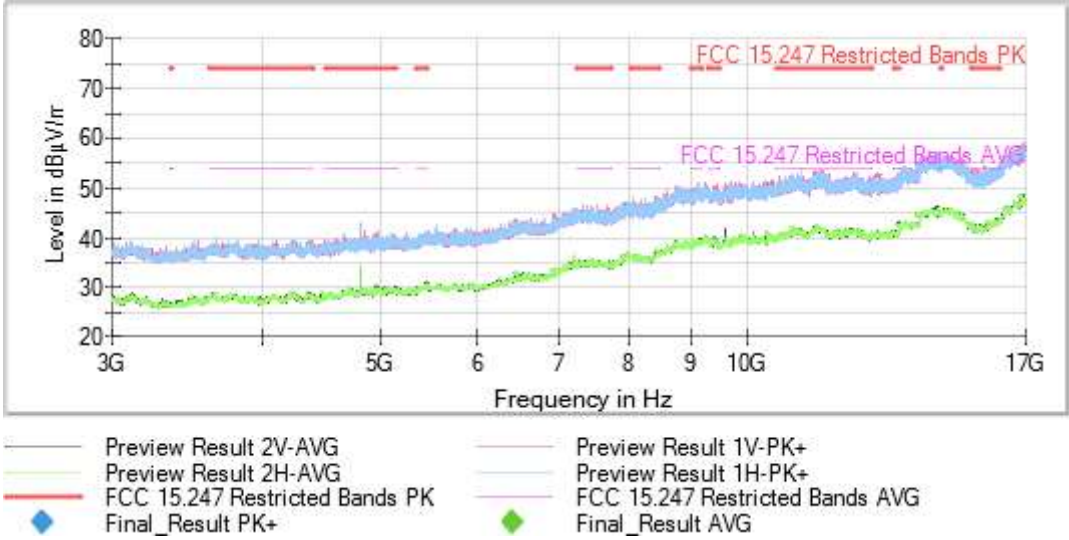
Active Port = 1

Frequency Range GHz = [3, 17]

Frequency MHz = 2402.00000

Modulation = FLORA

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

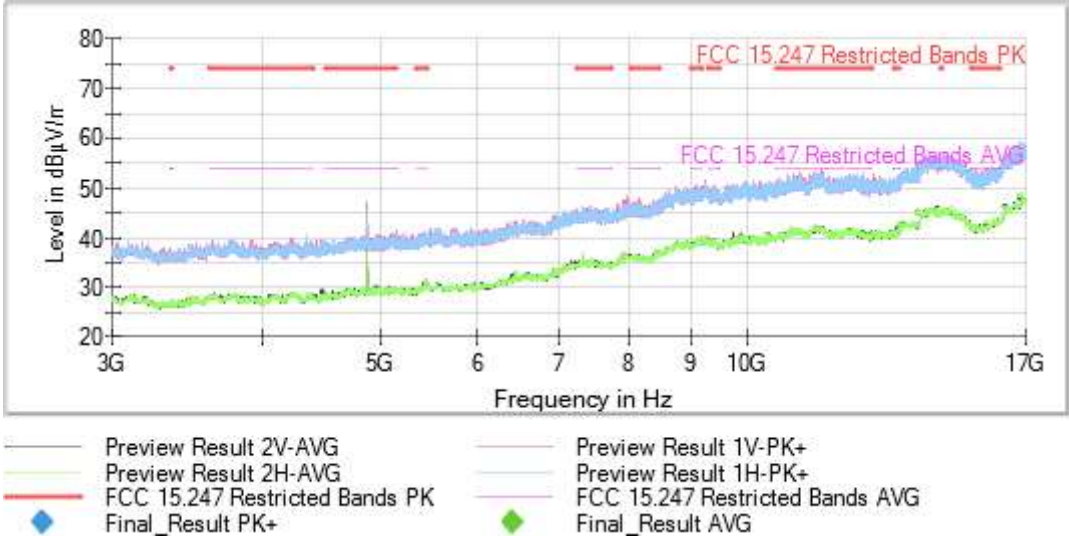
Active Port = 1

Frequency Range GHz = [3, 17]

Frequency MHz = 2440.00000

Modulation = FLORA

Images:



Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

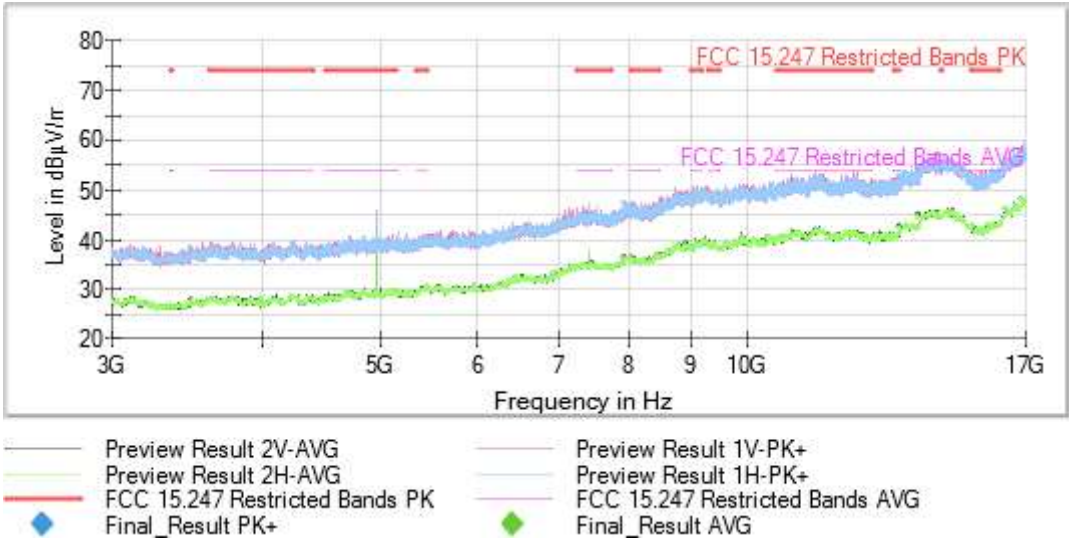
Active Port = 1

Frequency Range GHz = [3, 17]

Frequency MHz = 2480.00000

Modulation = FLORA

Images:



Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [17, 26]

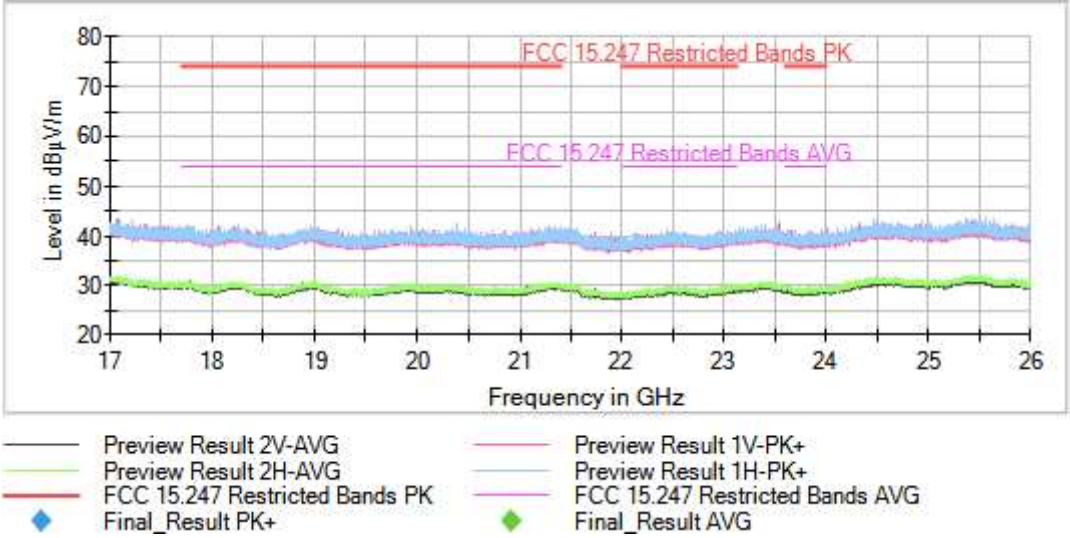
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000

Active Port = 1

Modulation = FLORA

Images:



This plot is valid for all channels and modulations

Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	17 GHz - 26 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Appendix C: Test results. DM (2M)

TEST CONDITIONS	138
SAMPLE CALCULATION	141
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<i>99dBw Occupied Channel Bandwidth 99%</i>	142
<i>RSS-247 6.3.1 (a) / FCC 15.247 (a) (2) [6dBw] 6 dB Bandwidth</i>	146
<i>RSS-247 6.3.1. (b) / FCC 15.247 (e) [PSD] Power Spectral Density</i>	150
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<i>RSS-247 6.6 / FCC 15.247 (d) [RSE] Emission limitations radiated (Transmitter)</i>	164

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 3.7 Vdc
Type of Power Supply: Internal rechargeable battery

ANTENNA (*):

Type of Antenna: Integral Antenna
Maximum Declared Antenna Gain: -10.5 dBi

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel:	Middle Channel	High Channel
GFSK	2M 2 Mbit/s	2402 MHz	2440 MHz	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

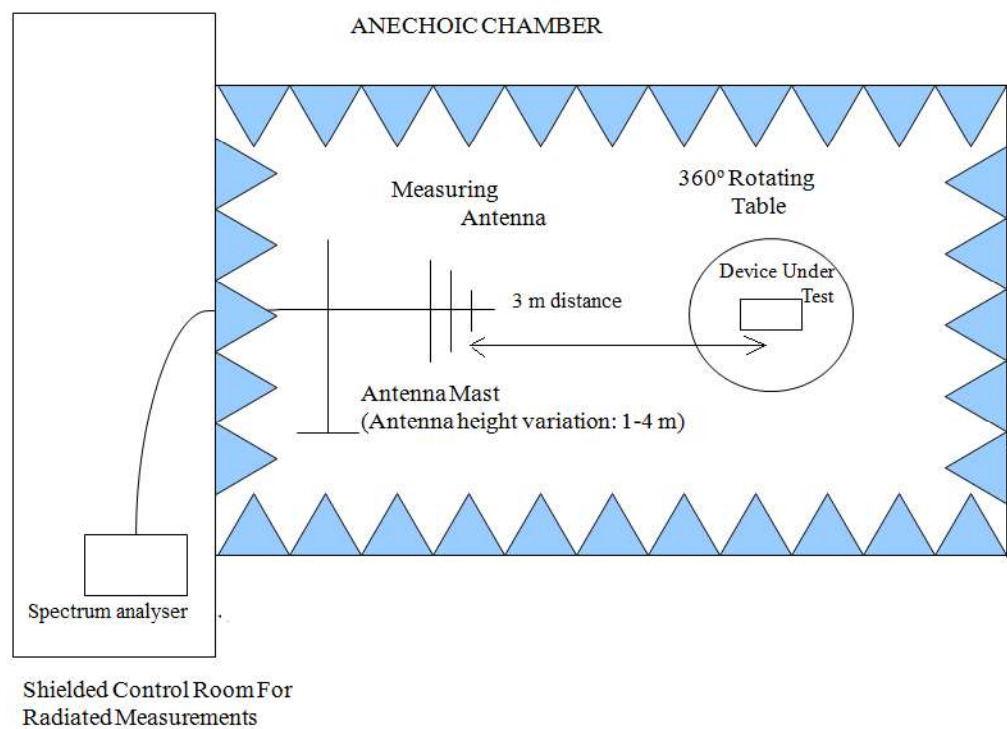
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

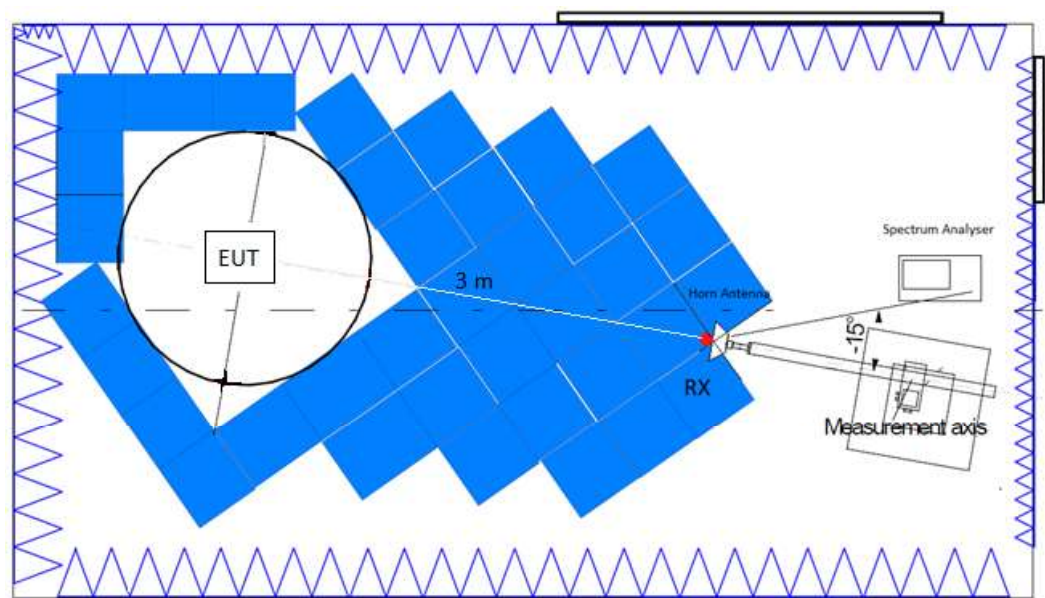
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

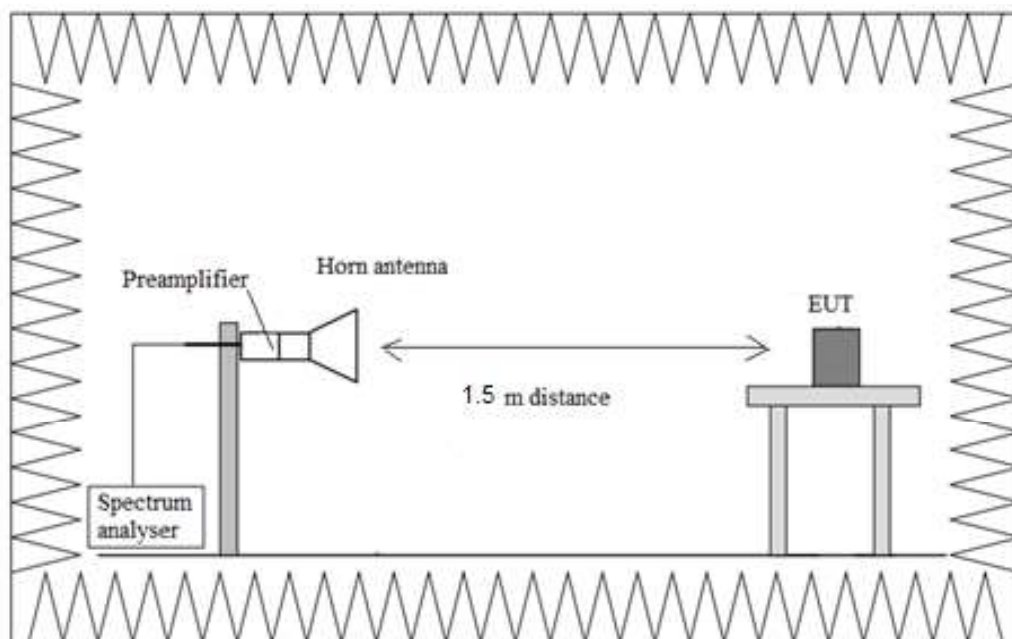
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



SAMPLE CALCULATION

For radiated measurements:

Values measures by the test receiver / analyzer are converted to field strength, in dBuV/m, at the regulatory distance using the following calculation:

$$\text{Unwanted Lvl (dBuV/m)} = \text{Raw Rec (dBuV)} + \text{Preamp (dB)} + \text{Trd Corre. (dB/m)} + \text{SigPath (dB)}$$

Where,

Raw Rec (dBuV): Measured voltage in the receiver / spectrum analyzer in dBuV

Preamp (dB): Path loses due to preamplifier

Trd Corr. (dB/m): Antenna factor in dB/m

SigPath (dB) = Cable loss (dB) – External Gain amplifier (dB) – Distance factor (dB)

Cable loss (dB): Cable loss

External Gain amplifier (dB): Gain from external amplifier (when used)

Distance factor (dB): Distance factor in dB. When measurement distance is different to limit distance

The field strength, calculated by this way is compared with the regulatory limit.

TEST CASES DETAILS

99dBw Occupied Channel Bandwidth 99%

Limits

RSS-Gen 6.7 / FCC 2.1049 - Occupied Channel Bandwidth 99%

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

Modulation: DM

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Occ Ch BW (MHz)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	1.730
		2440.00000		1.730
		2480.00000		1.730

Verdict

Pass

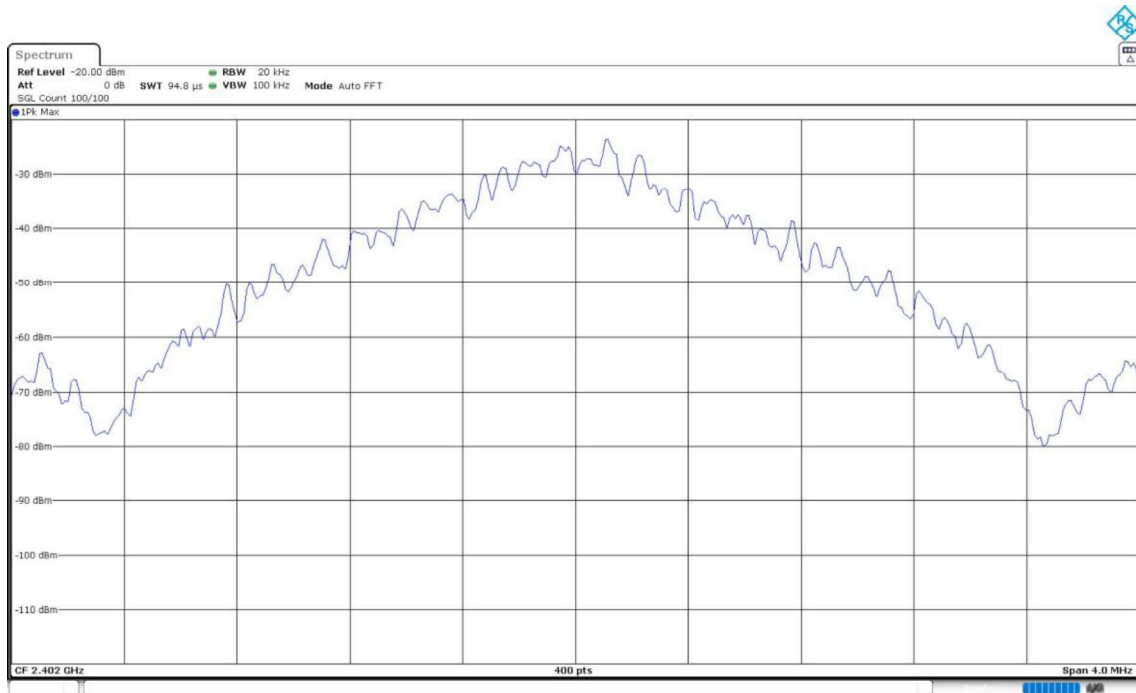
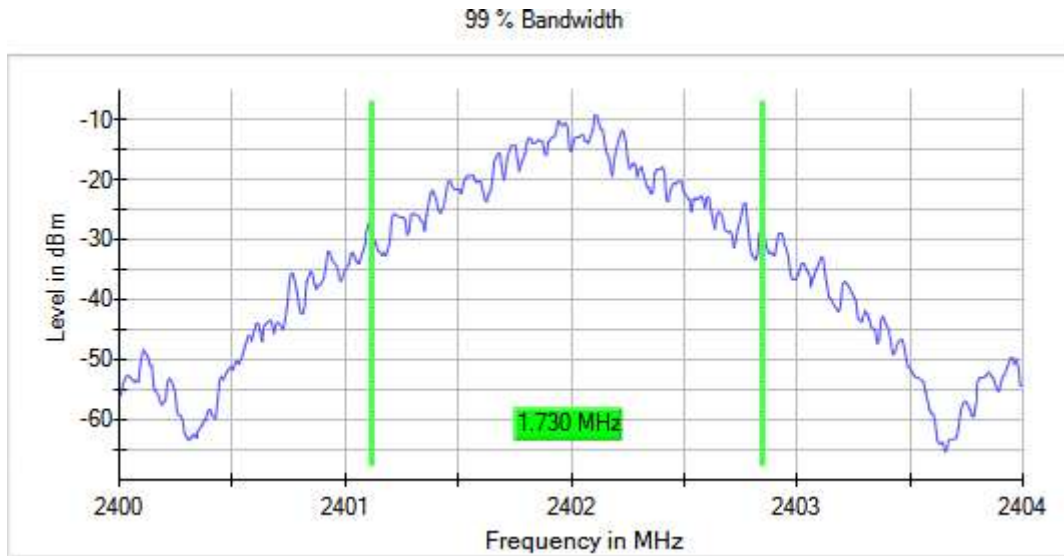
Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000 Active Port = 1

Modulation = DM

Images:

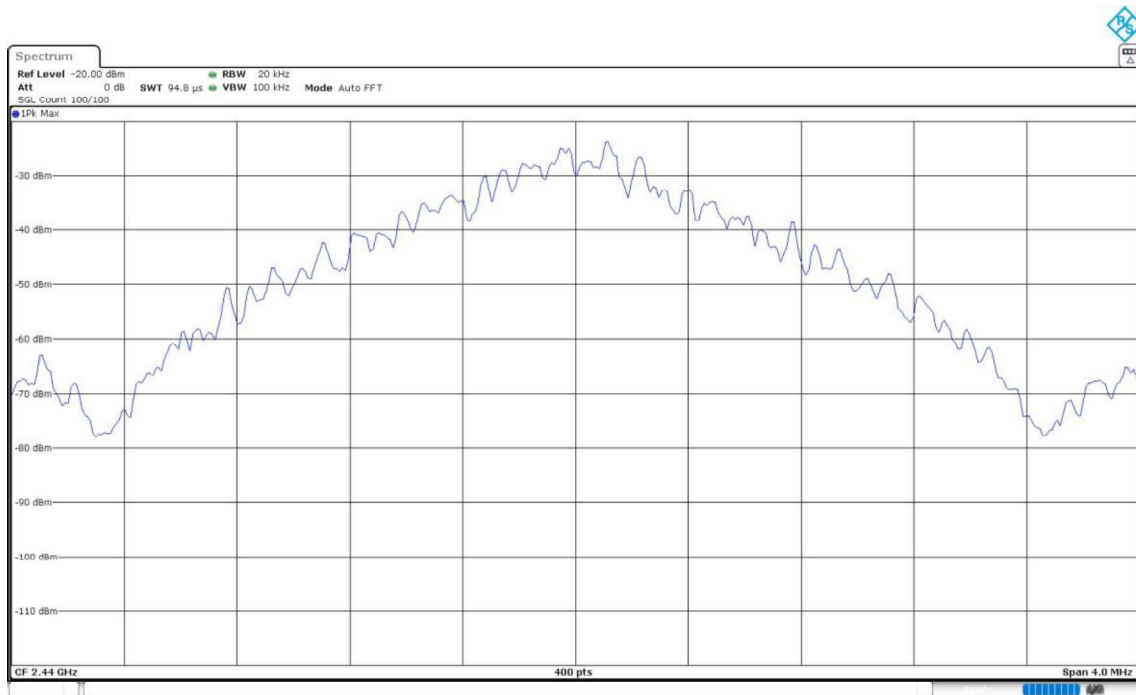
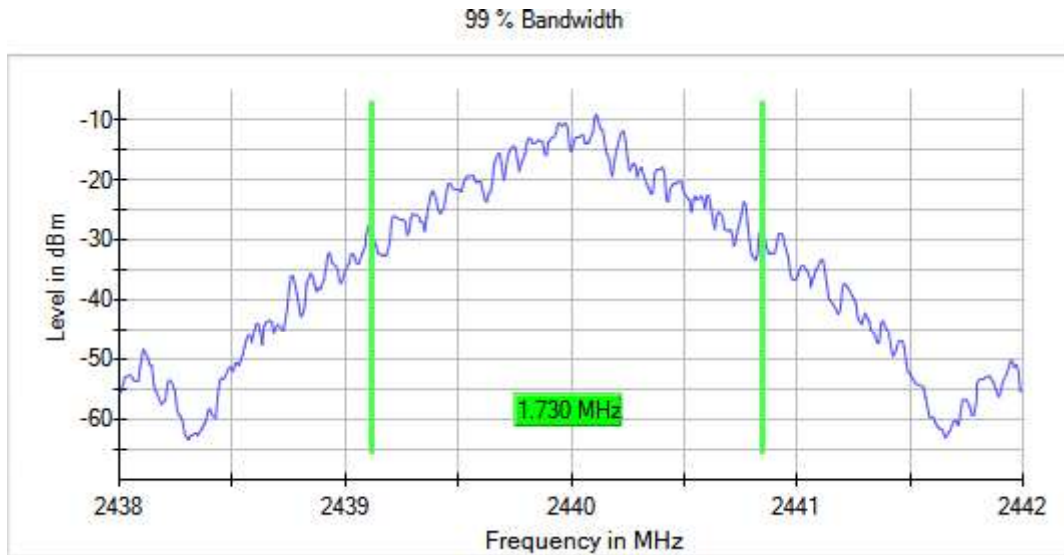


Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2440.00000 Active Port = 1

Modulation = DM

Images:

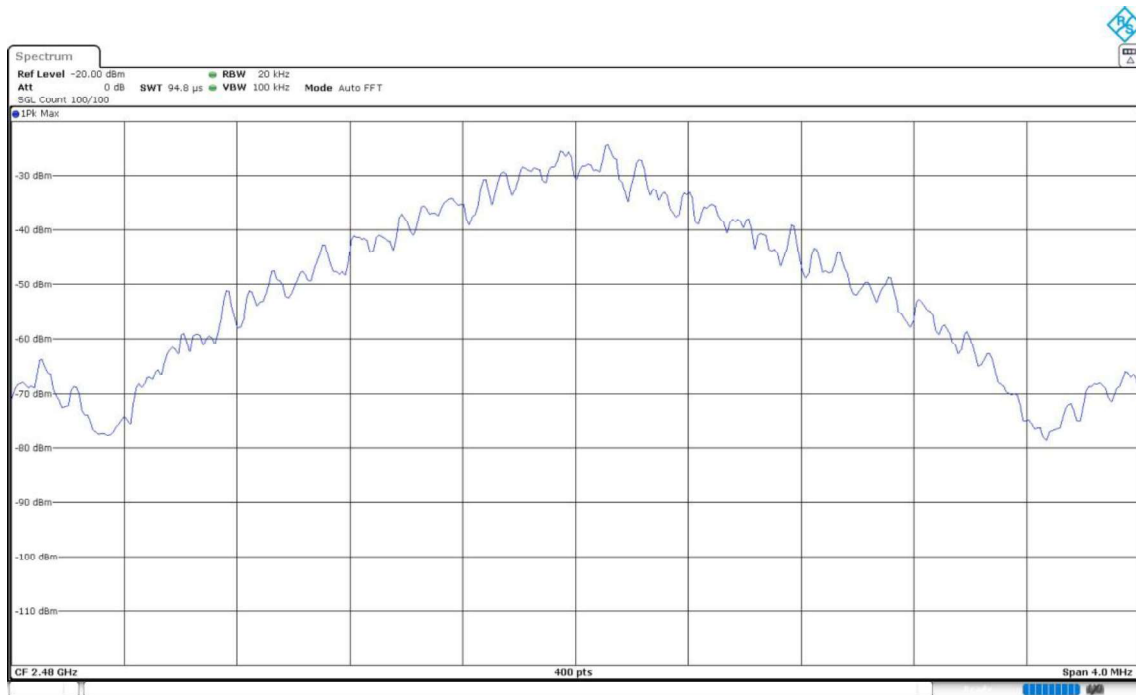
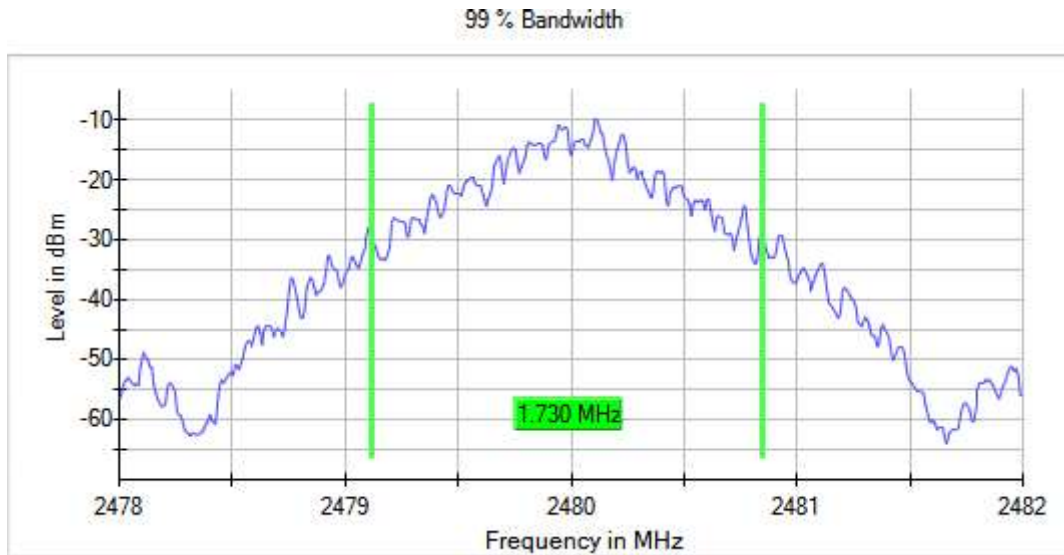


Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2480.00000 Active Port = 1

Modulation = DM

Images:



RSS-247 6.3.1 (a) / FCC 15.247 (a) (2) [6dBw] 6 dB Bandwidth

Limits

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: DM

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Ebw (MHz)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	0.950
		2440.00000		0.950
		2480.00000		0.950

Verdict

Pass

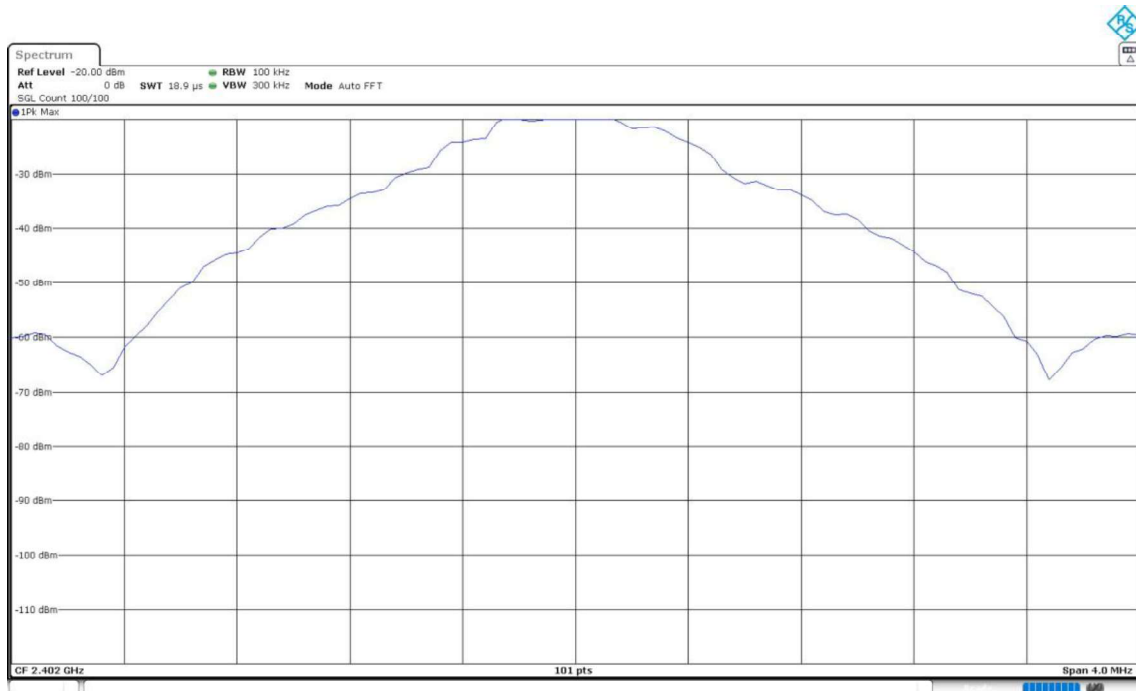
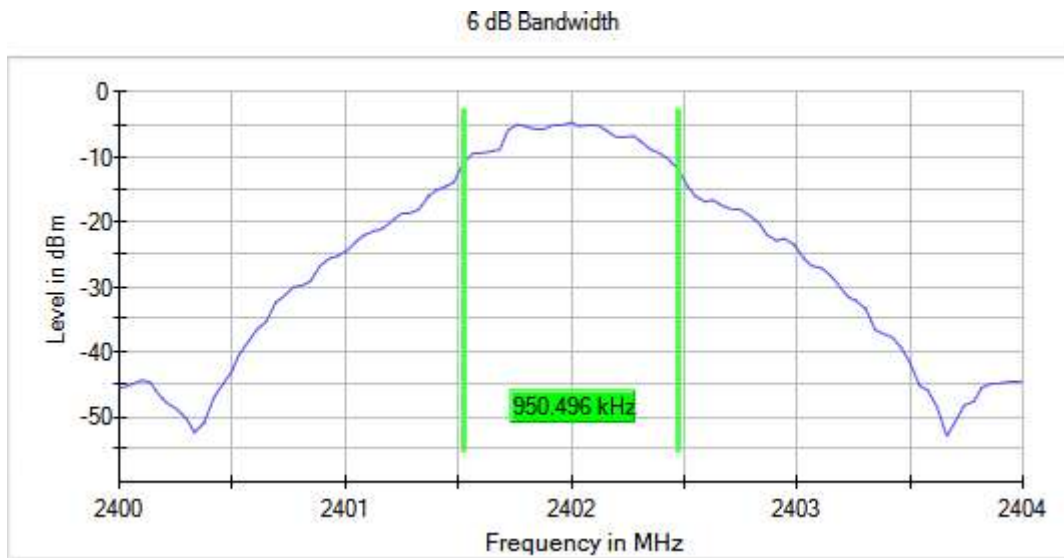
Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000 Active Port = 1

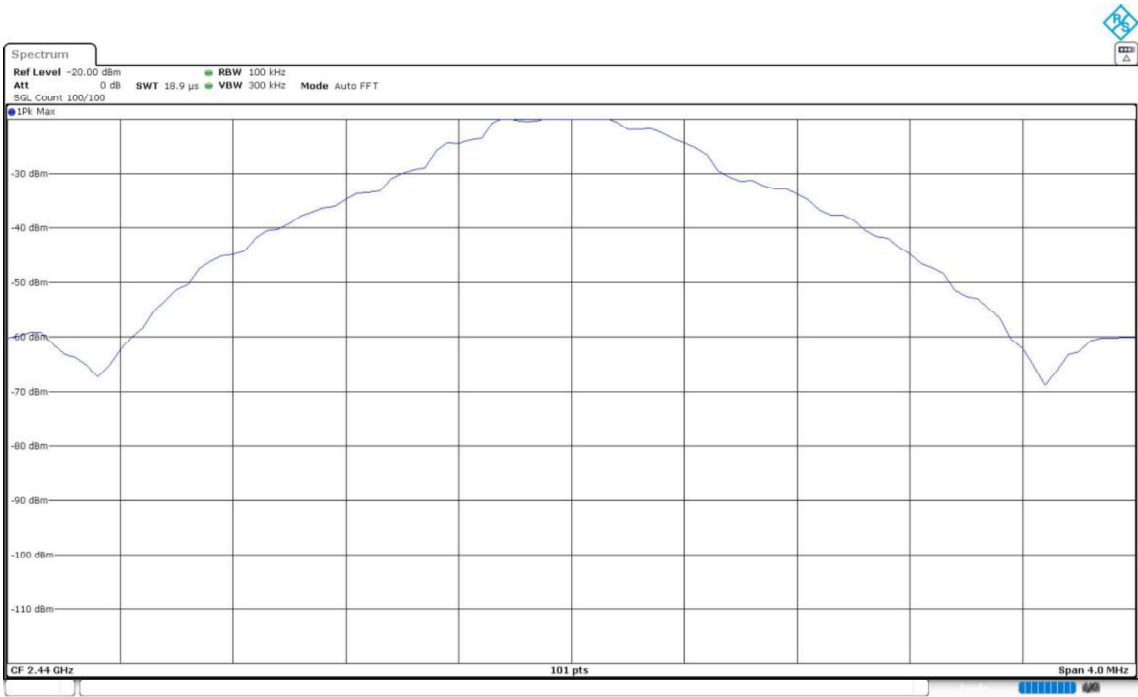
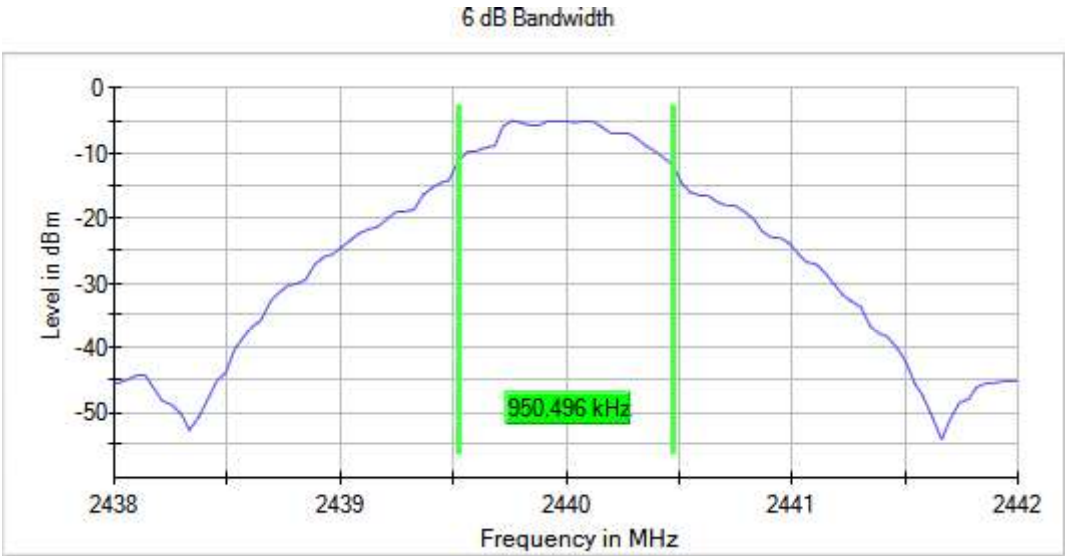
Modulation = DM

Images:



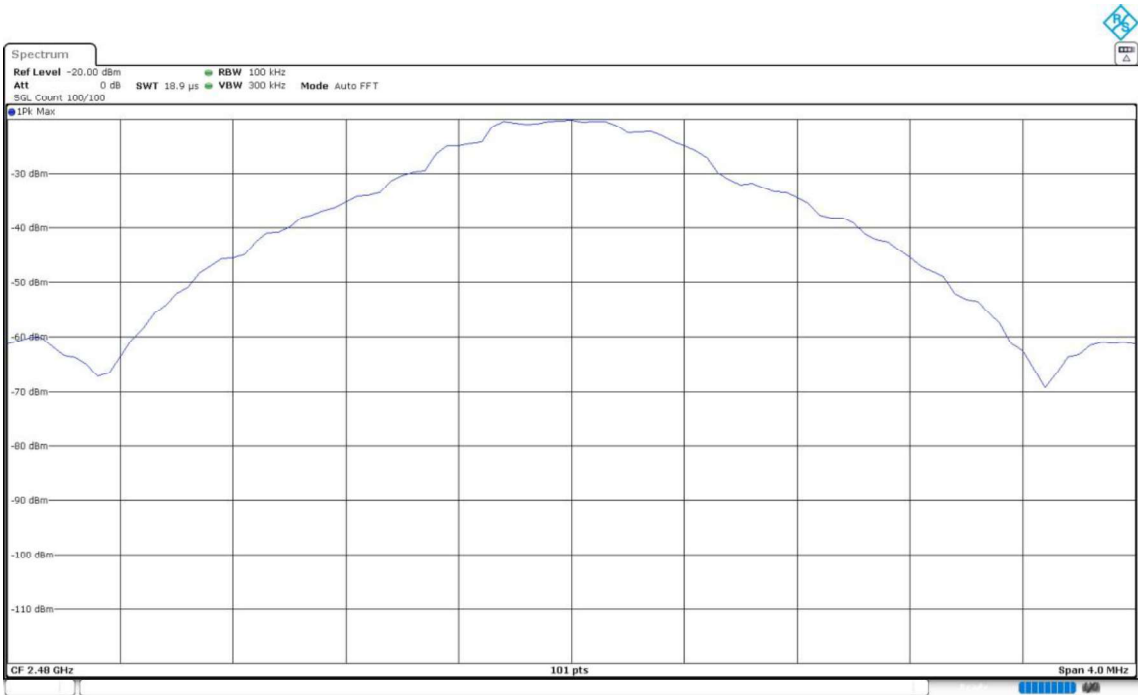
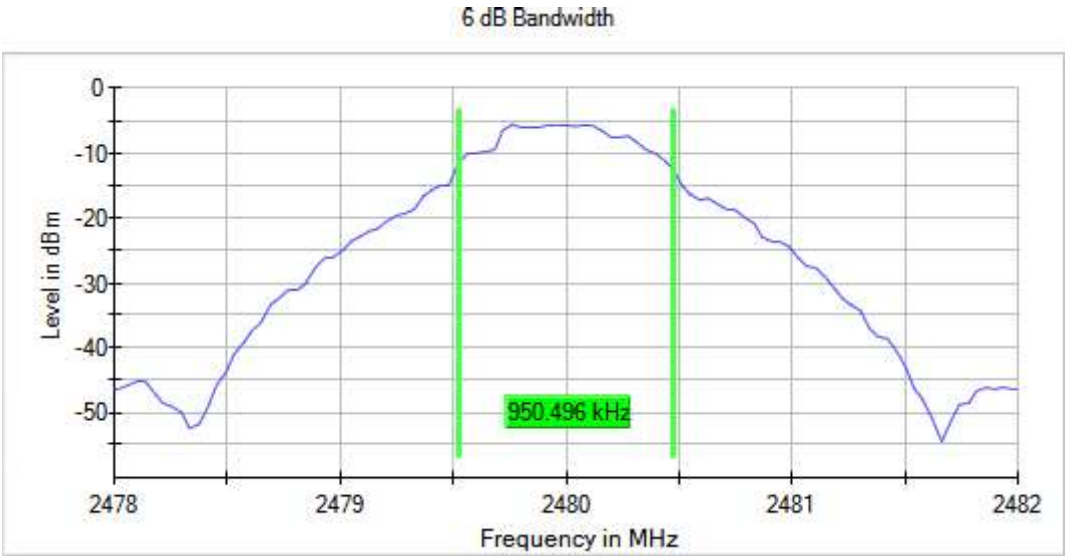
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = DM

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = DM

Images:



RSS-247 6.3.1. (b) / FCC 15.247 (e) [PSD] Power Spectral Density

Limits

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.

Modulation: DM

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	PSD (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	-12.64
		2440.00000		-12.71
		2480.00000		-13.28

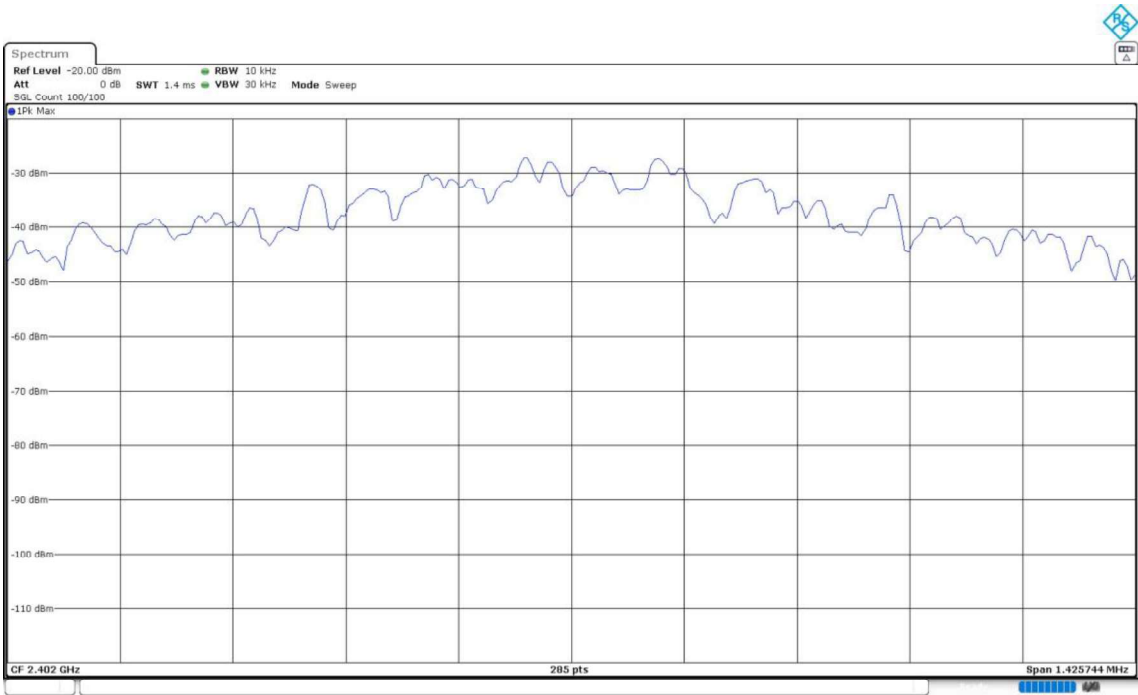
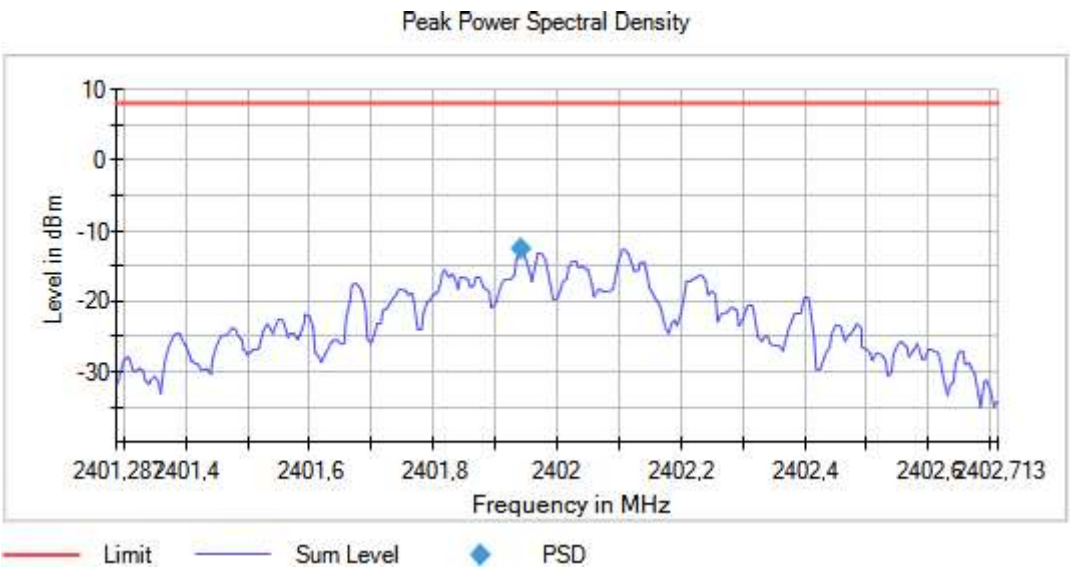
Verdict

Pass

Attachments

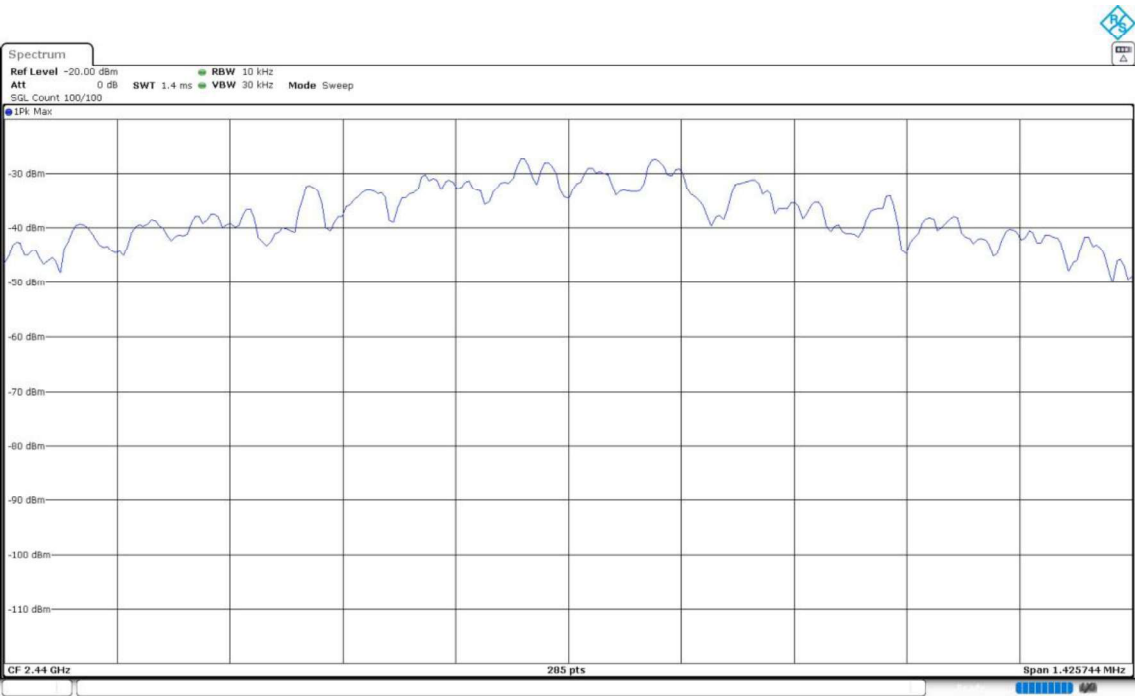
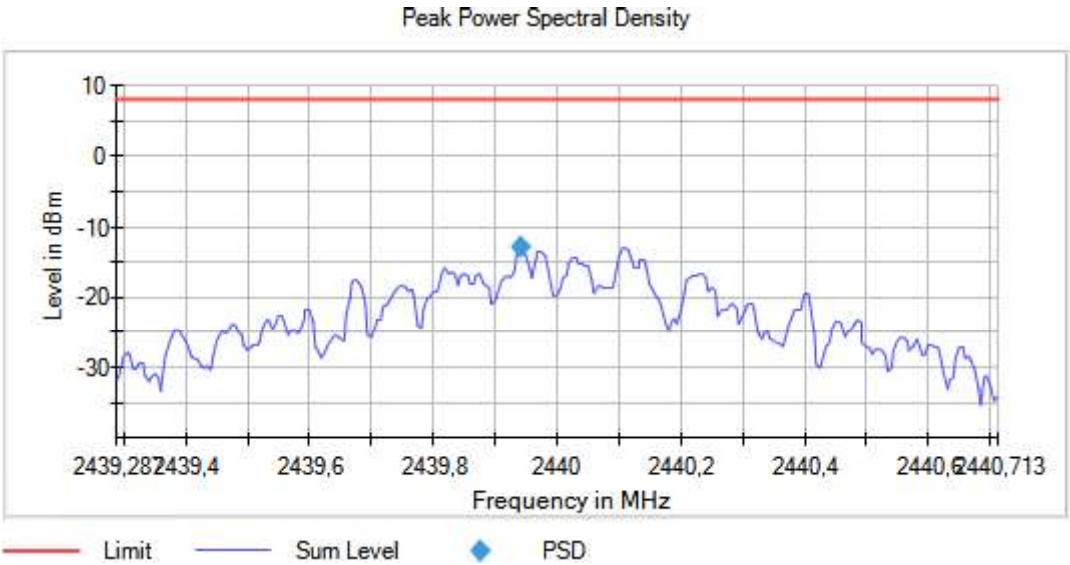
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = DM

Images:



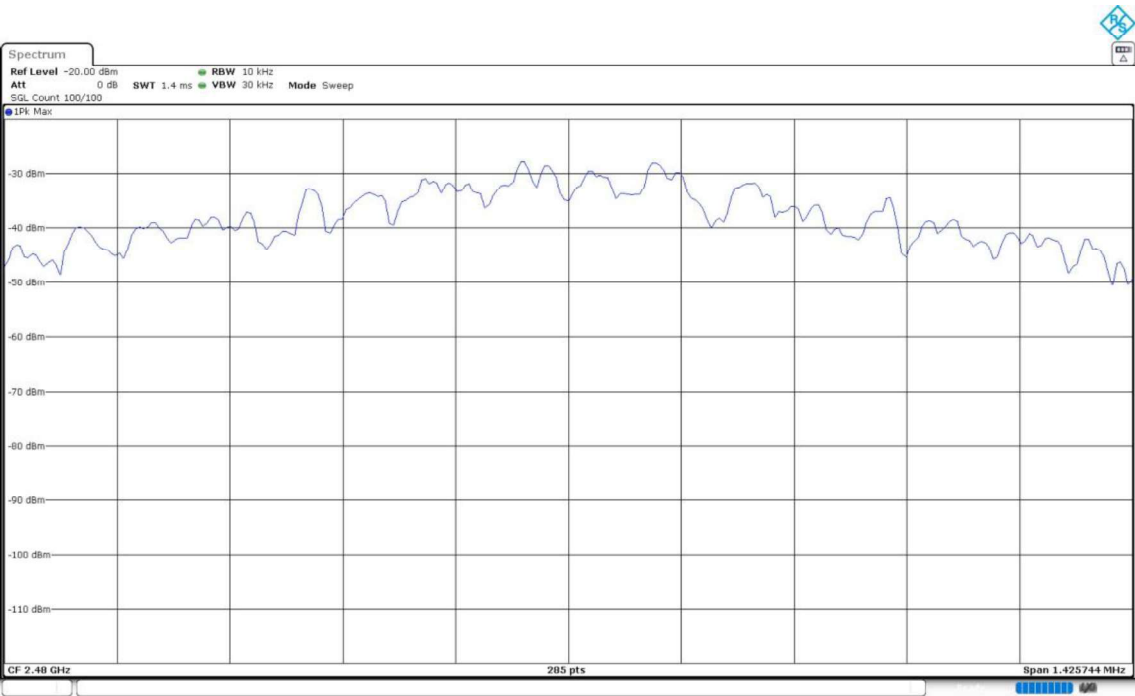
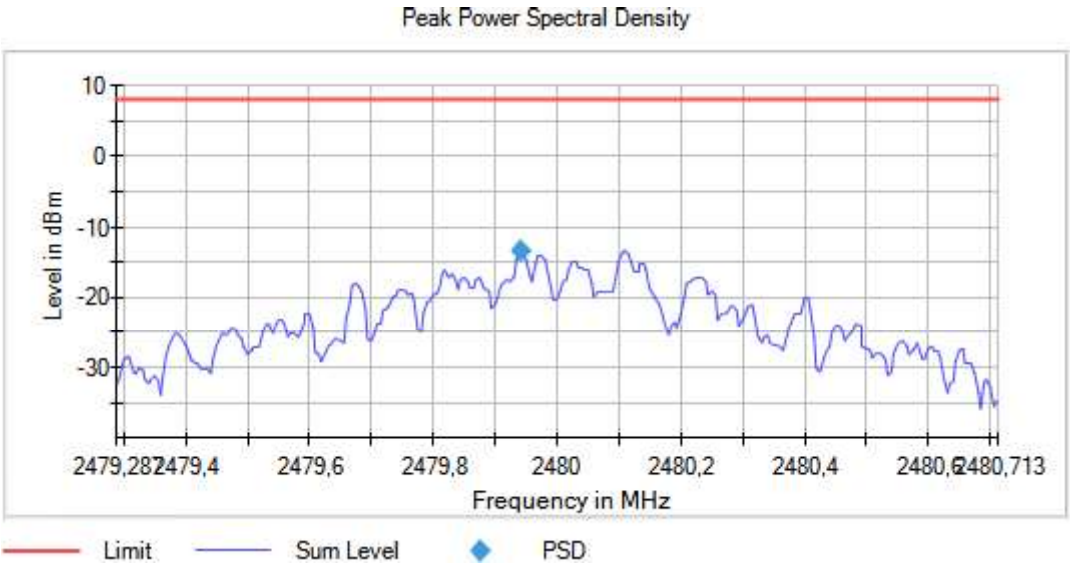
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = DM

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = DM

Images:



RSS-247 6.3.2 / FCC 15.247 (b) [Pkcp] Maximum Peak Conducted Output Power

Limits

FCC 15.247 (b) (3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

RSS 5.4 (d)

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

Modulation: DM

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Peak Power (dBm)	E.I.R.P. (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	-3.4210	-13.921
		2440.00000		-3.5290	-14.029
		2480.00000		-3.9920	-14.492

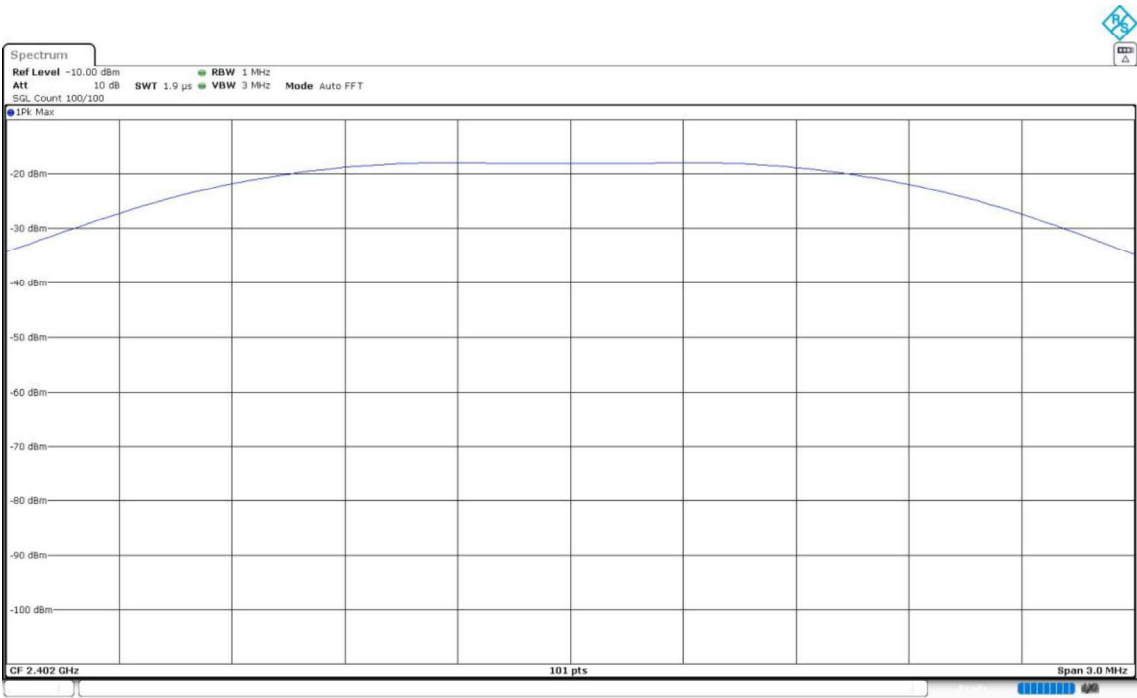
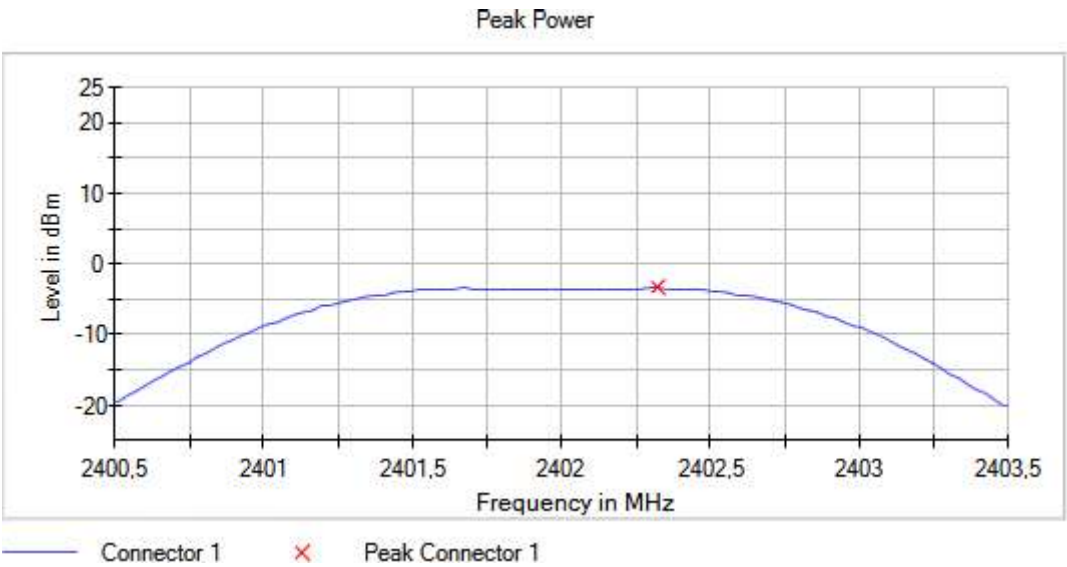
Verdict

Pass

Attachments

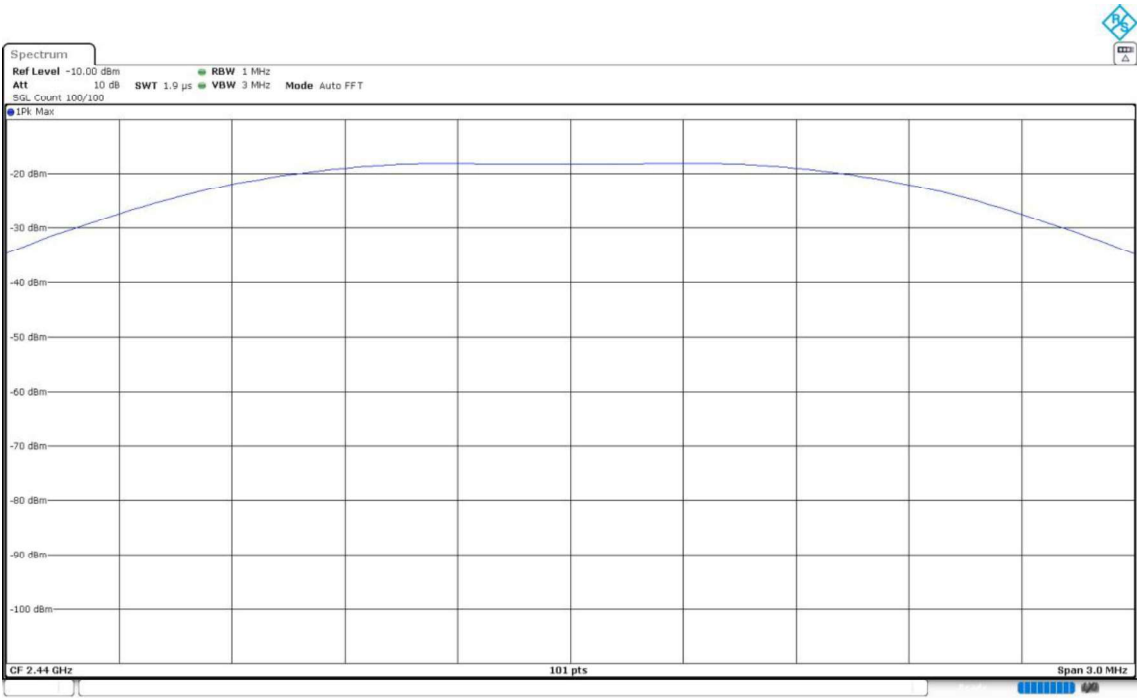
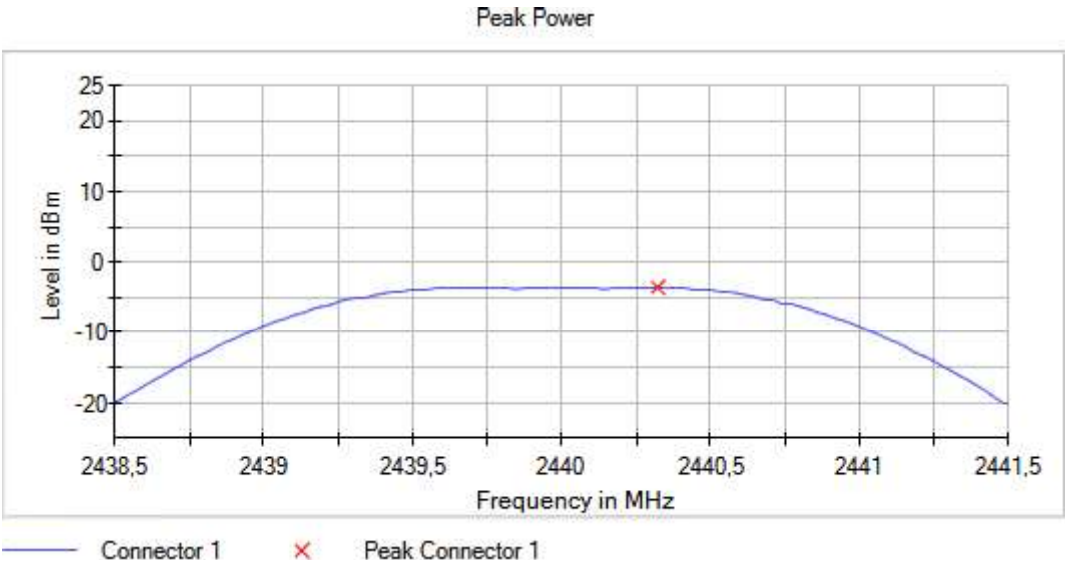
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = DM

Images:



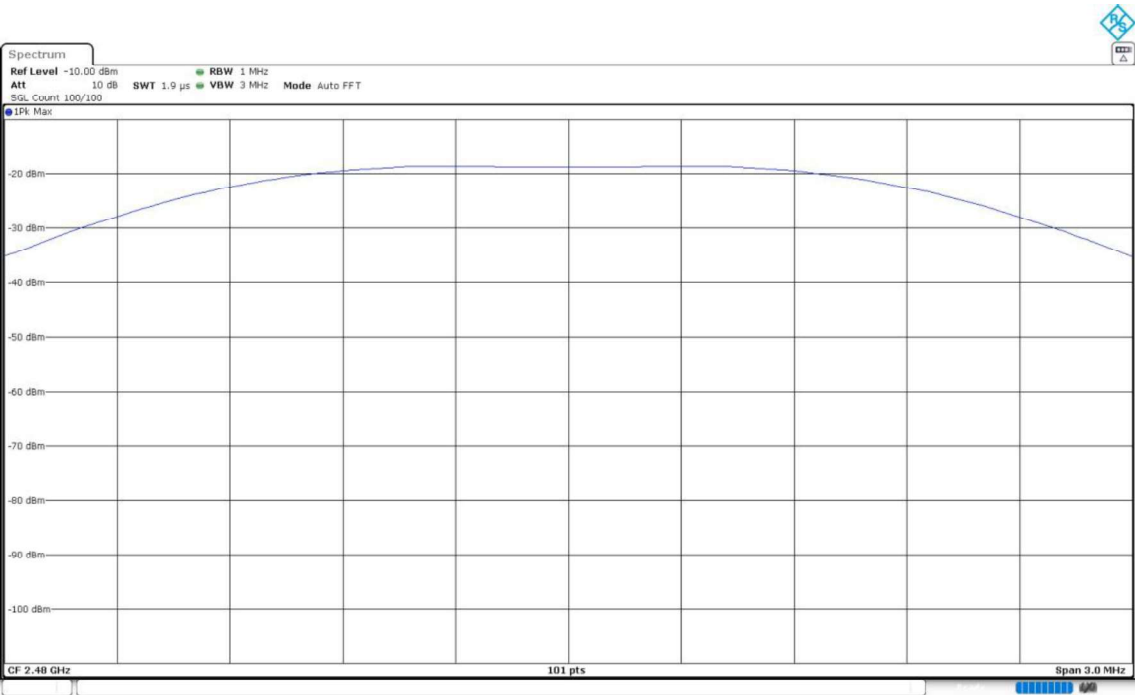
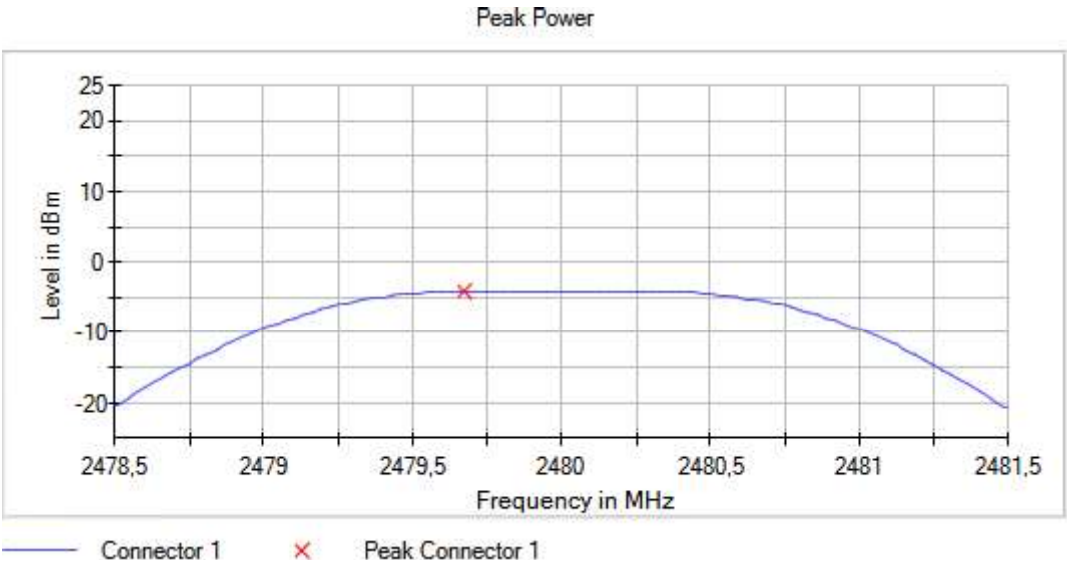
Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2440.00000 Active Port = 1
Modulation = DM

Images:



Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = DM

Images:



RSS-247 6.6 / FCC 15.247 (d) [Bndedge] Band-edge emissions compliance (Transmitter)

Limits

In any 100 kHz bandwidths outside the frequency band in which the 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Modulation: DM

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Inband Peak Lvl (dBm)	Freq (MHz)	Lvl (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	-13.875	2400.000000	-54.8
				-13.875	2399.975000	-54.8
				-13.875	2399.925000	-56.0
				-13.875	2399.875000	-58.1
				-13.875	2399.825000	-59.6
				-13.875	2399.775000	-63.7
				-13.875	2399.725000	-66.8
				-13.875	2399.675000	-71.3
				-13.875	2399.475000	-71.5
				-13.875	2399.425000	-71.7
				-13.875	2399.625000	-72.2
				-13.875	2399.375000	-72.3
				-13.875	2399.525000	-73.0
				-13.875	2399.575000	-73.0
				-13.875	2399.325000	-73.0
		2480.00000		-14.360	2487.075000	-79.0
				-14.360	2483.525000	-79.1
				-14.360	2487.125000	-79.4
				-14.360	2485.475000	-79.8
				-14.360	2483.575000	-79.8
				-14.360	2487.025000	-79.8
				-14.360	2485.525000	-79.9
				-14.360	2483.975000	-80.0
				-14.360	2484.975000	-80.3
				-14.360	2483.625000	-80.3
				-14.360	2483.675000	-80.4
				-14.360	2485.025000	-80.5
				-14.360	2484.875000	-80.5

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Inband Peak Lvl (dBm)	Freq (MHz)	Lvl (dBm)
				-14.360	2483.725000	-80.5
				-14.360	2483.775000	-80.5

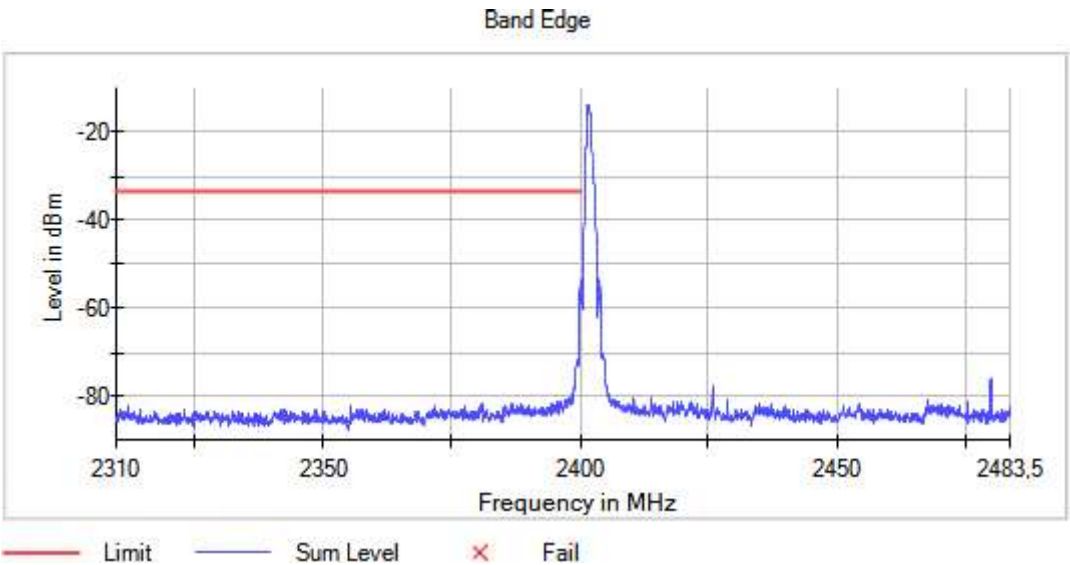
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = DM

Images:



Tables:

Spectrum Analyzer Parameters 1

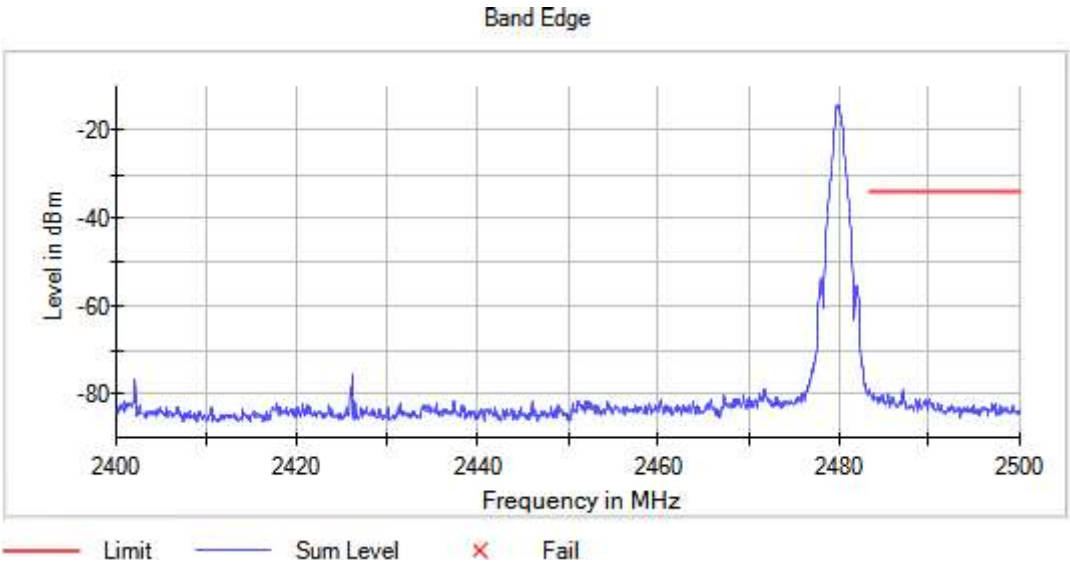
Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

Spectrum Analyzer Parameters 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

Operation Band MHz = [2400, 2483.5] Equipment Type = Digital Transmission System (DTS)
Frequency MHz = 2480.00000 Active Port = 1
Modulation = DM

Images:



Tables:

Spectrum Analyzer Parameters 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
Sweeptime	113.672 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

Spectrum Analyzer Parameters 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

RSS-247 6.6 / FCC 15.247 (d) [RSE] Emission limitations radiated (Transmitter)

Limits

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) (see Section 15.205(c)/RSS-Gen):

Frequency Range (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
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	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

The emission limits shown in the above table are based on measurements employing 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.

RSS-247: Attenuation below the general field strength limits specified in RSS-Gen is not required.

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Modulation: DM

Results

- Frequency range [30MHz - 1GHz]
The spurious frequencies do not depend on modulation and channel operation.
No spurious frequencies detected at less than 20 dB below the limit.
- Frequency range [1 - 17GHz]
No spurious frequencies detected at less than 20 dB below the limit.
- Frequency range [17 - 26GHz]
The spurious frequencies do not depend on modulation and channel operation.
No spurious frequencies detected at less than 20 dB below the limit.

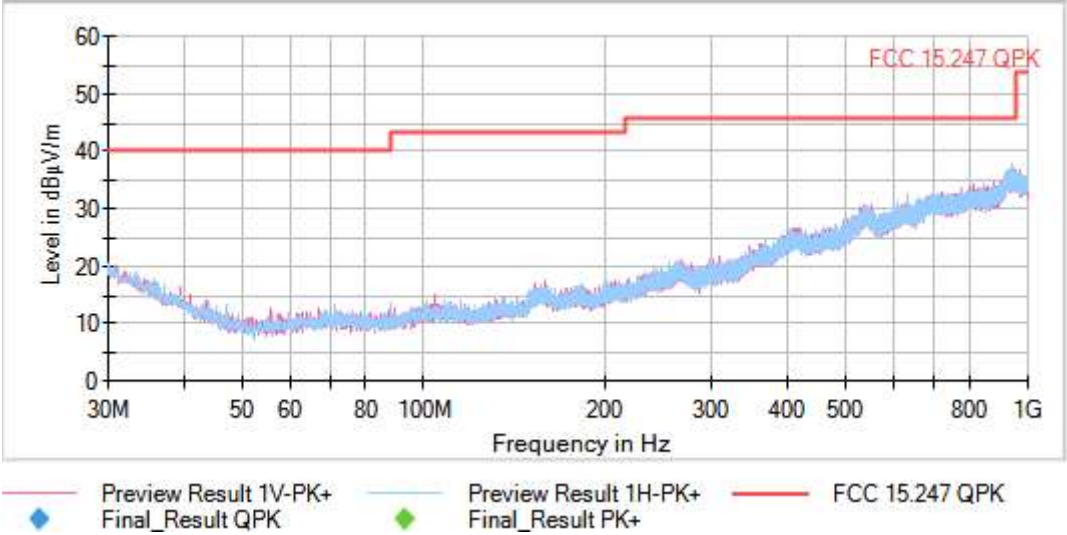
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Frequency Range GHz = [0.03, 1]
Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2440.00000
Active Port = 1 Modulation = DM

Images:



This plot is valid for all channels and modulations

Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	30 dB

Operation Band MHz = [2400, 2483.5]

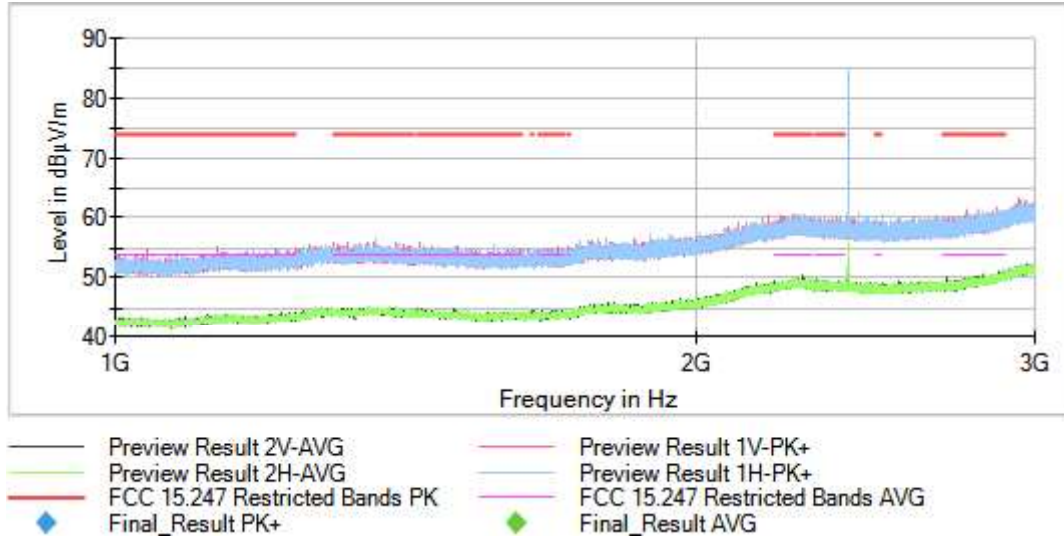
Frequency Range GHz = [1, 3]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2402.00000

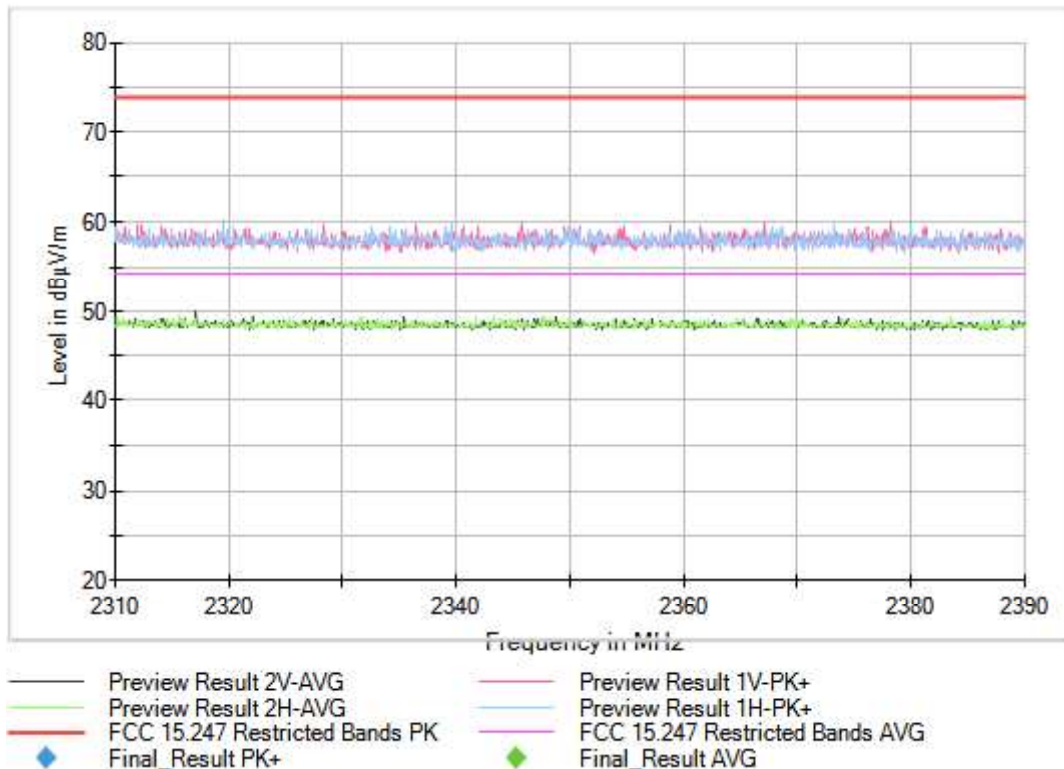
Active Port = 1

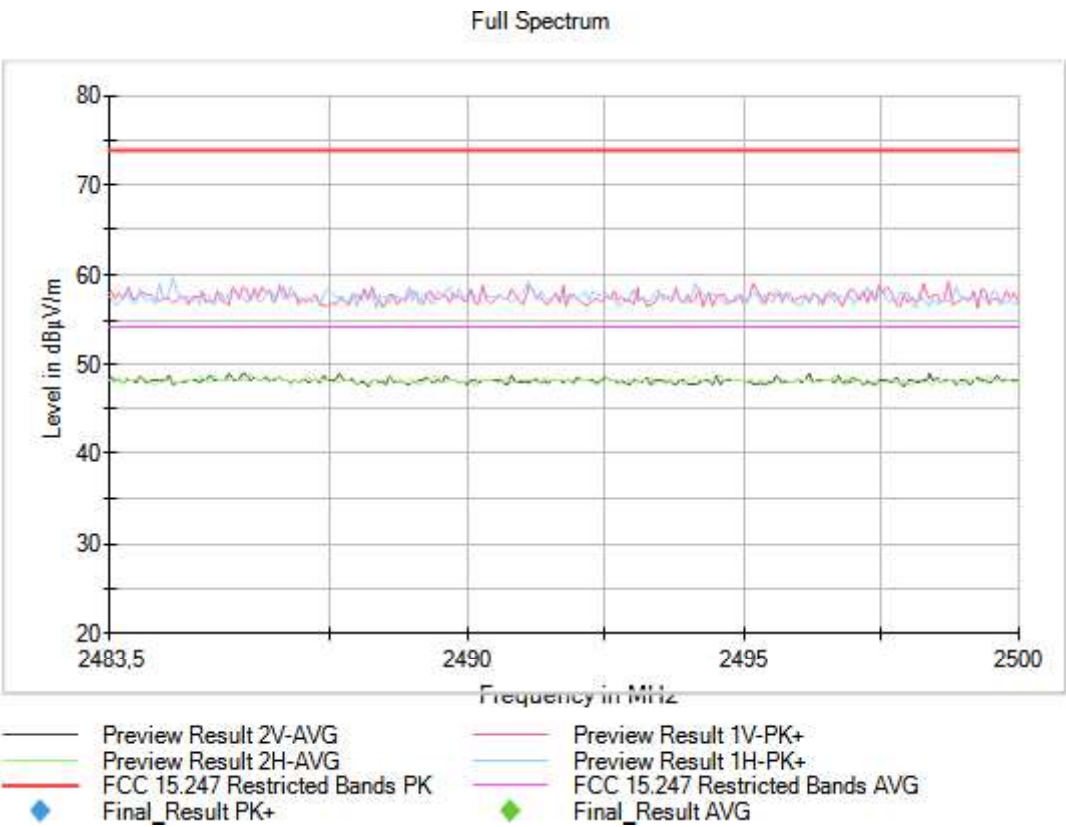
Modulation = DM

Images:



Full Spectrum





Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

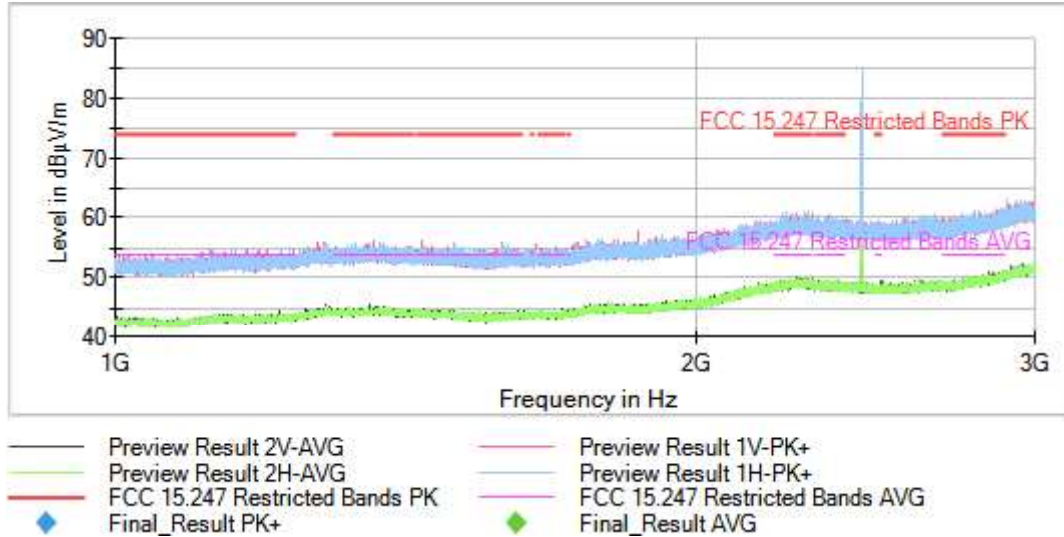
Frequency Range GHz = [1, 3]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2440.00000

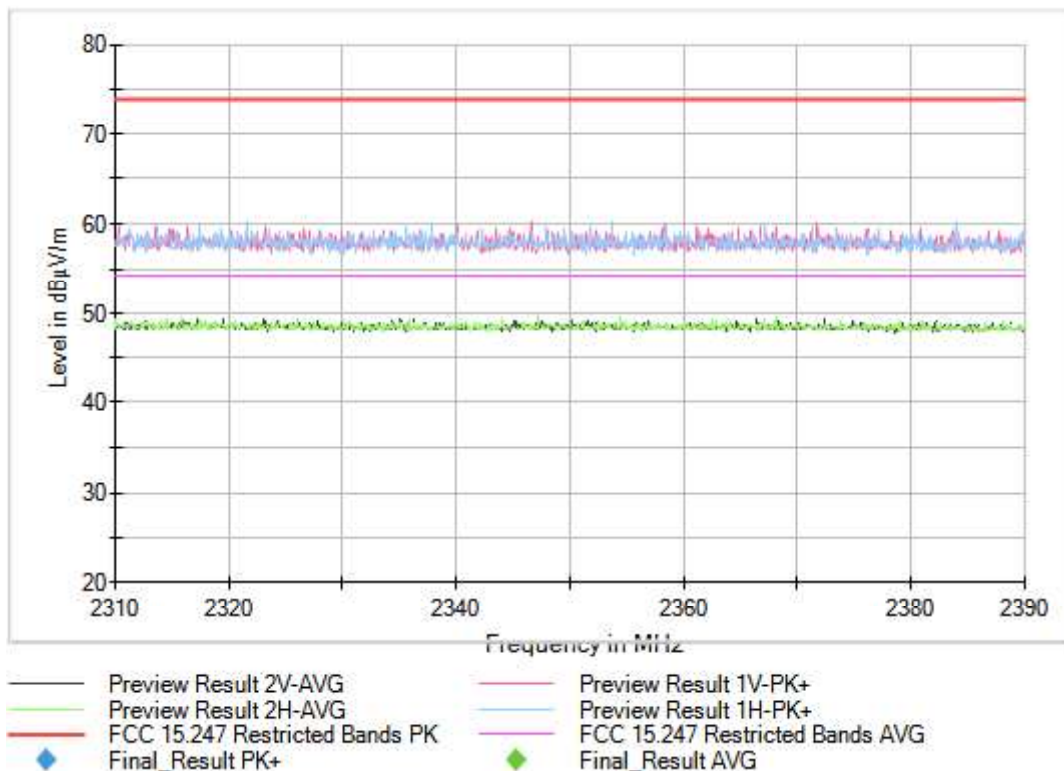
Active Port = 1

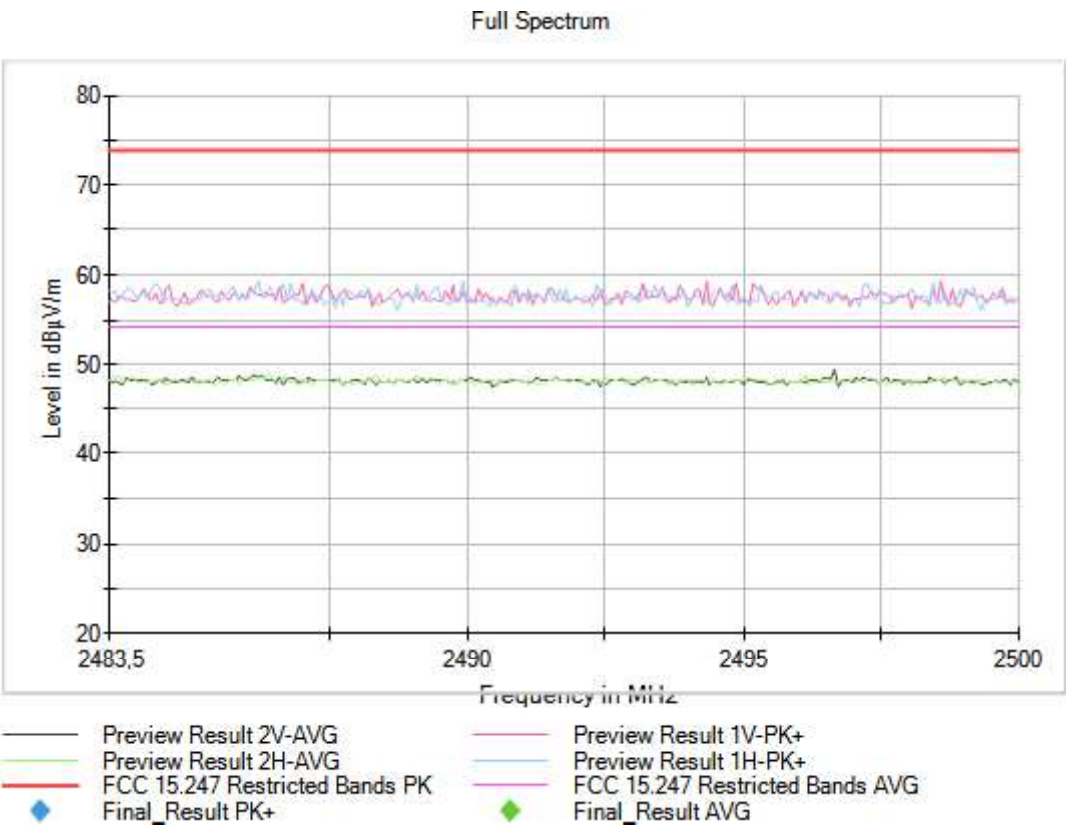
Modulation = DM

Images:



Full Spectrum





Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

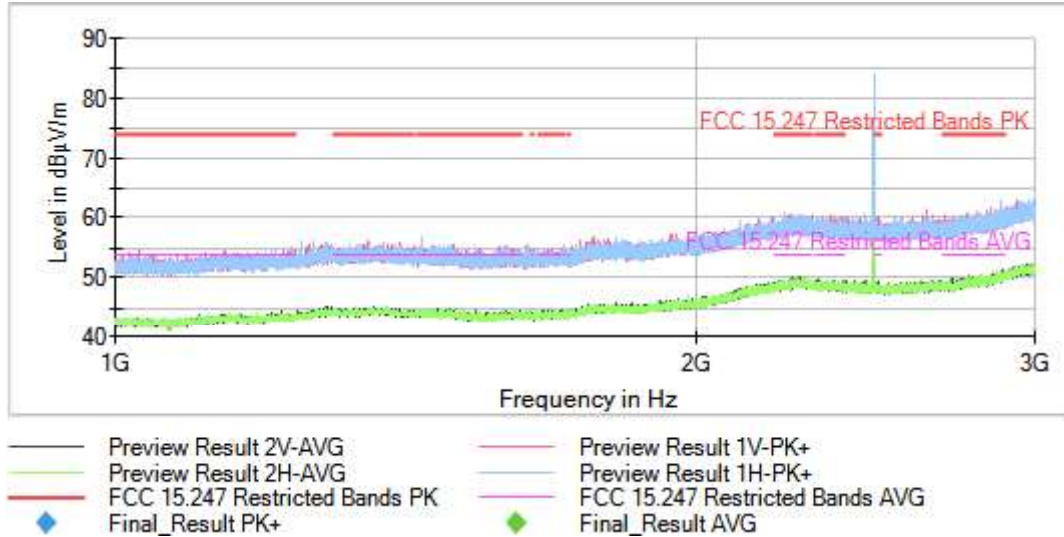
Frequency Range GHz = [1, 3]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2480.00000

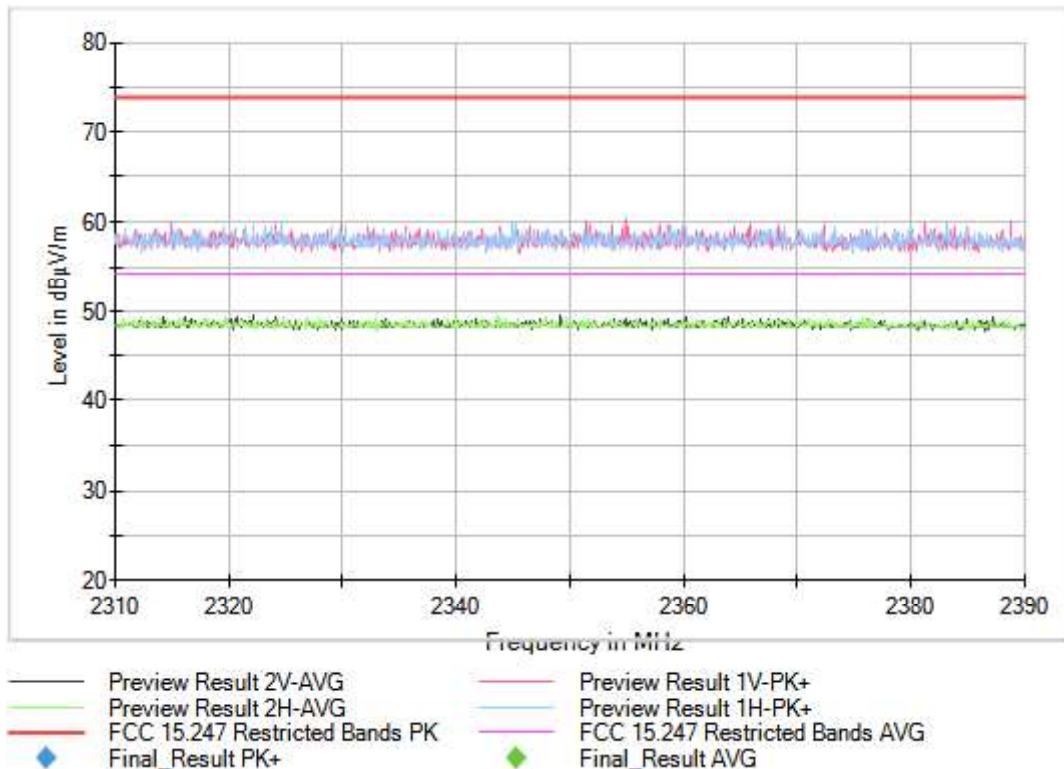
Active Port = 1

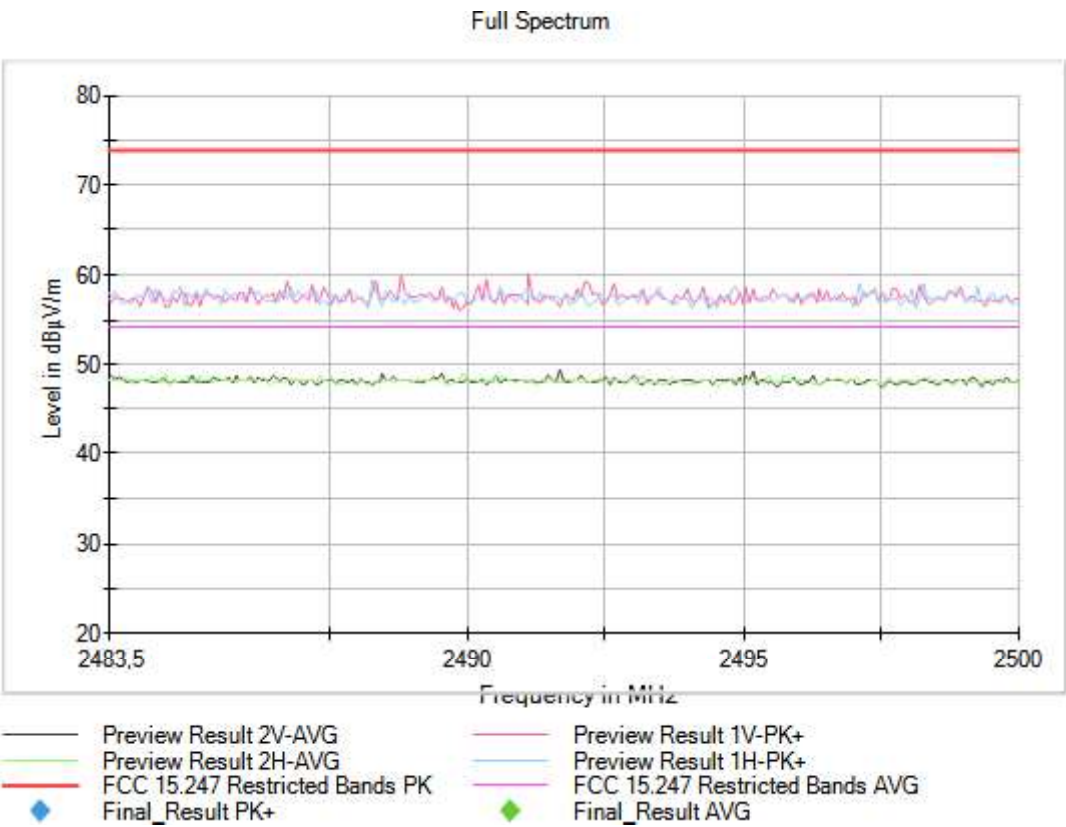
Modulation = DM

Images:



Full Spectrum





Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [3, 17]

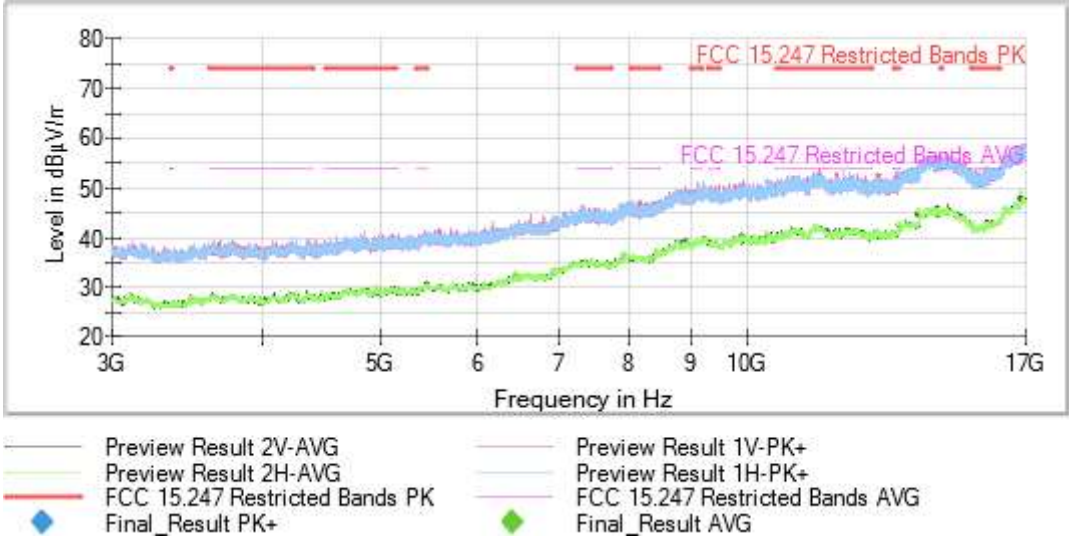
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000

Active Port = 1

Modulation = DM

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [3, 17]

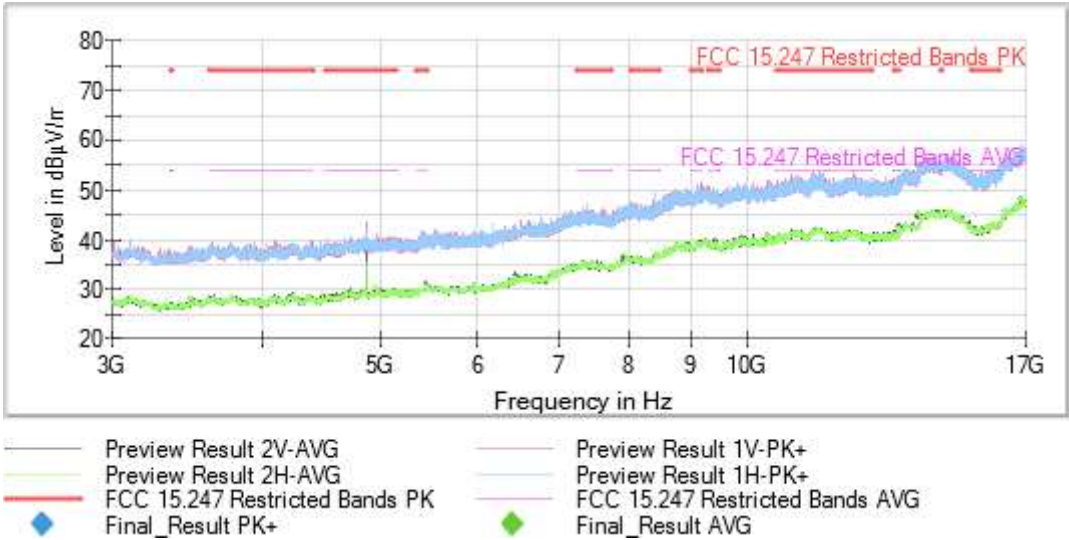
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2440.00000

Active Port = 1

Modulation = DM

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [3, 17]

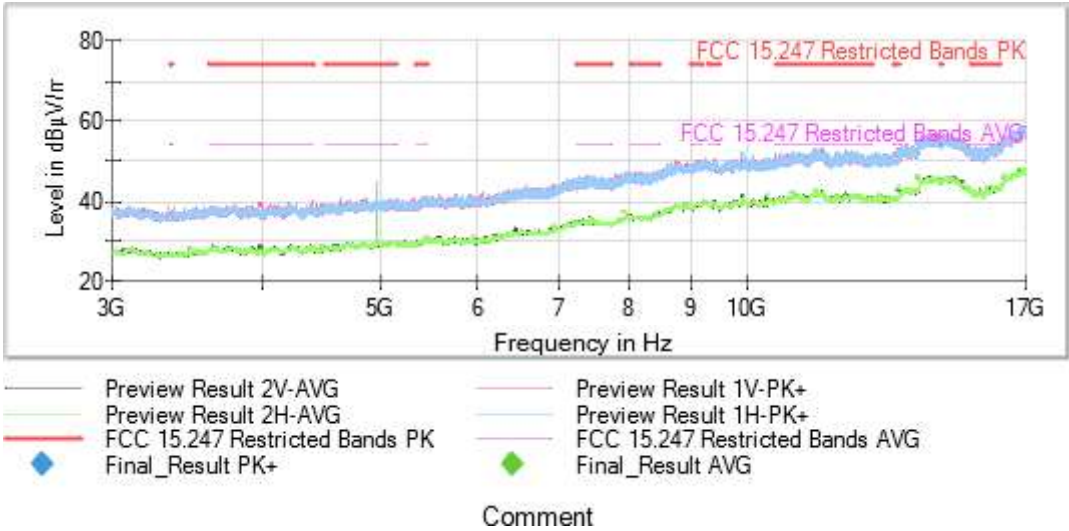
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2480.00000

Active Port = 1

Modulation = DM

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [17, 26]

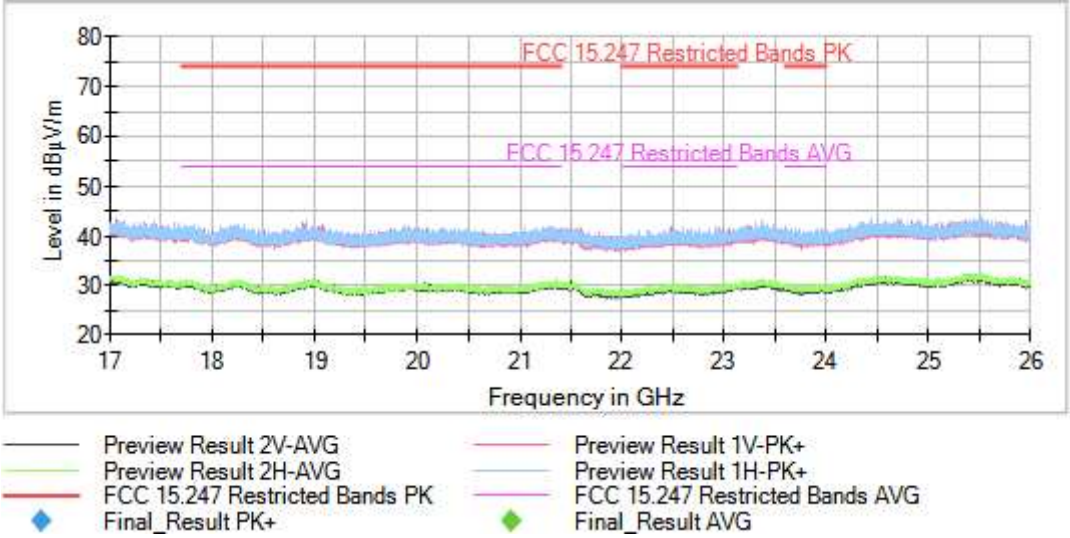
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2402.00000

Active Port = 1

Modulation = DM

Images:



This plot is valid for all channels and modulations

Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	17 GHz - 26 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Appendix D: Test results. Bluetooth Classic.

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 3.7 Vdc
Type of Power Supply: Internal rechargeable battery

ANTENNA (*):

Type of Antenna: Integral Antenna
Maximum Declared Antenna Gain: -10.5 dBi

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel:	Middle Channel	High Channel
GFSK (1-DH5)	1M 1 Mbit/s	2402 MHz	2441 MHz	2480 MHz
Pi/4-DQPSK (2-DH5)	1M 2 Mbit/s	2402 MHz	2441 MHz	2480 MHz
8-DPSK (3-DH5)	1M 3 Mbit/s	2402 MHz	2441 MHz	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

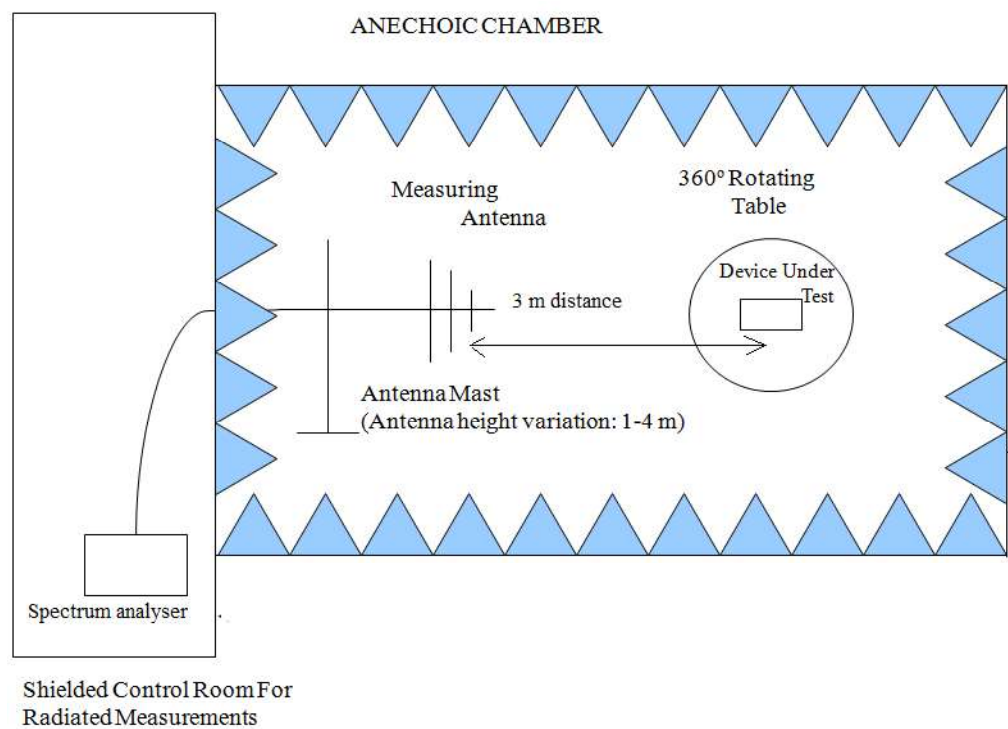
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

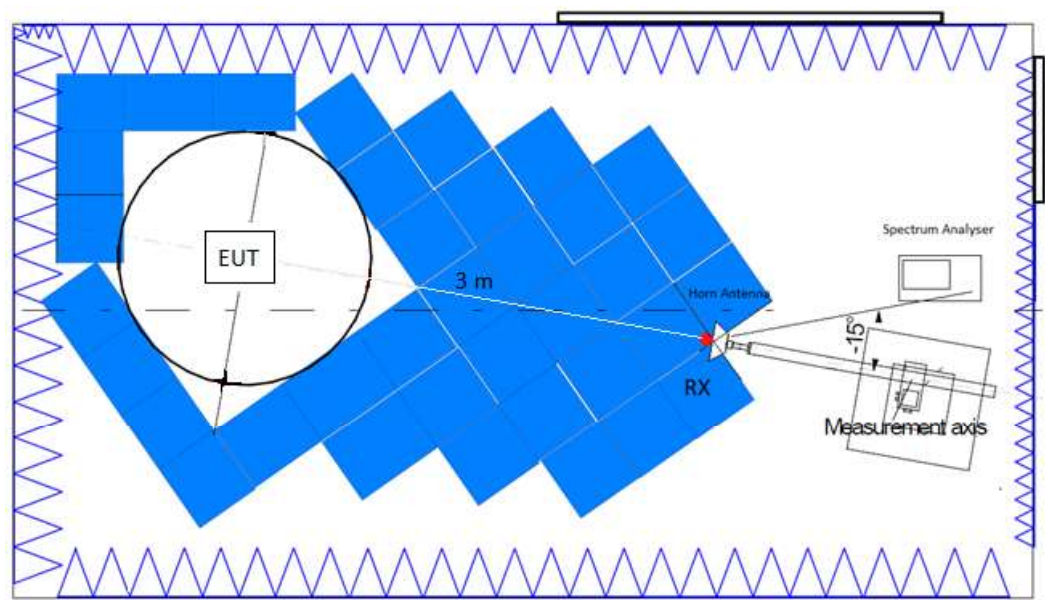
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

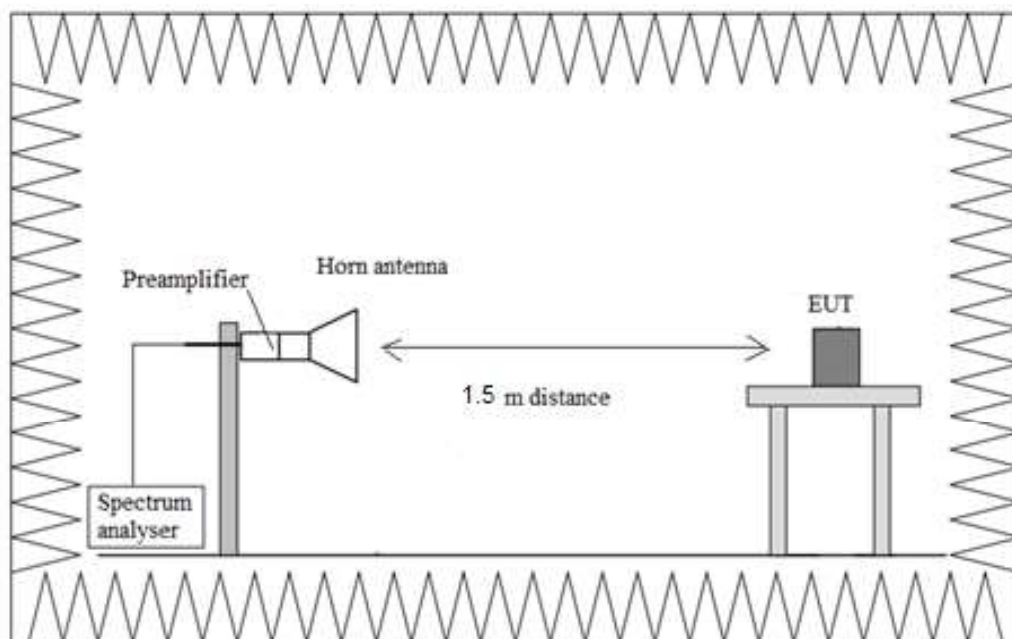
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



SAMPLE CALCULATION

For radiated measurements:

Values measures by the test receiver / analyzer are converted to field strength, in dBuV/m, at the regulatory distance using the following calculation:

$$\text{Unwanted Lvl (dBuV/m)} = \text{Raw Rec (dBuV)} + \text{Preamp (dB)} + \text{Trd Corre. (dB/m)} + \text{SigPath (dB)}$$

Where,

Raw Rec (dBuV): Measured voltage in the receiver / spectrum analyzer in dBuV

Preamp (dB): Path loses due to preamplifier

Trd Corr. (dB/m): Antenna factor in dB/m

SigPath (dB) = Cable loss (dB) – External Gain amplifier (dB) – Distance factor (dB)

Cable loss (dB): Cable loss

External Gain amplifier (dB): Gain from external amplifier (when used)

Distance factor (dB): Distance factor in dB. When measurement distance is different to limit distance

The field strength, calculated by this way is compared with the regulatory limit.

TEST CASES DETAILS

99dBw Occupied Channel Bandwidth 99%

Limits

RSS-Gen 6.7 / FCC 2.1049 - Occupied Channel Bandwidth 99%

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

Modulation: BT (GFSK 1-DH5)

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Occ Ch BW (MHz)
[2400, 2483.5]	Frequency Hopping Spread Spectrum systems (DSS)	2402.00000	1	0.870
		2441.00000		0.870
		2480.00000		0.870

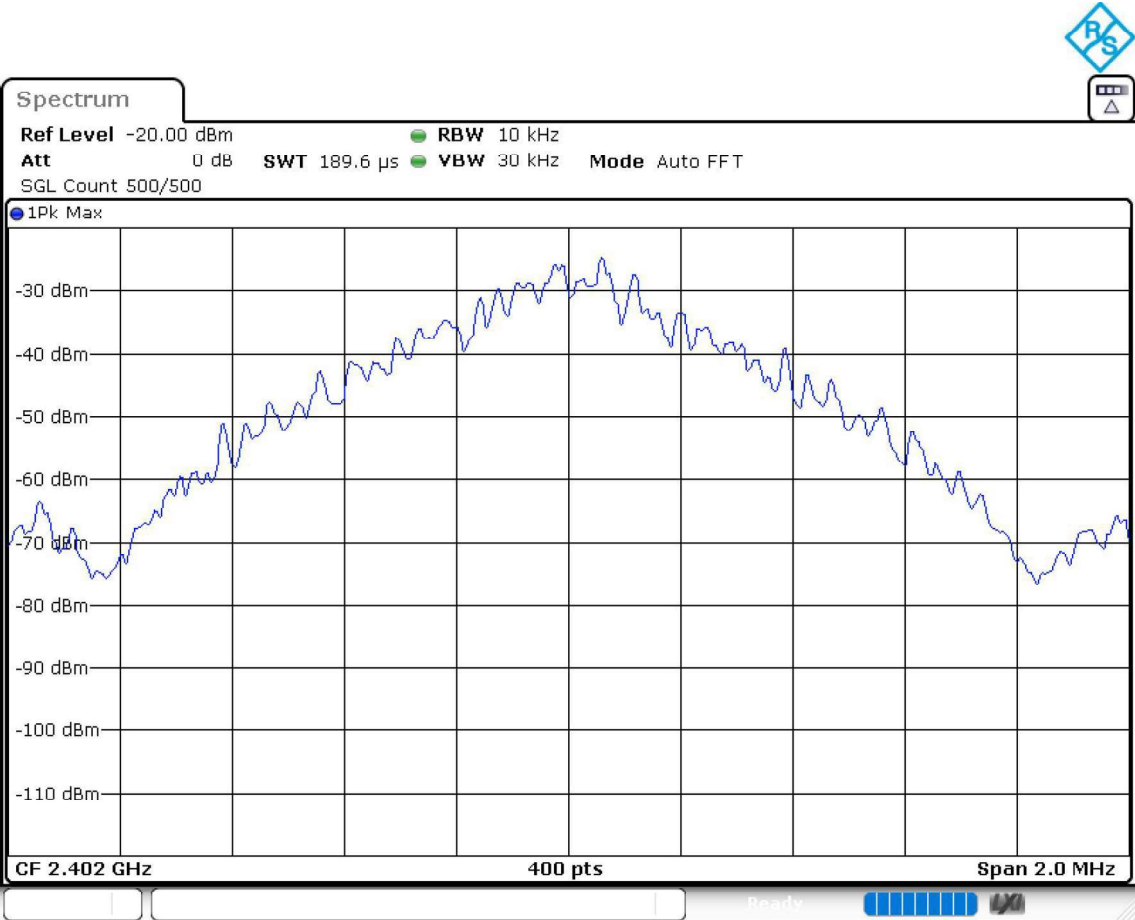
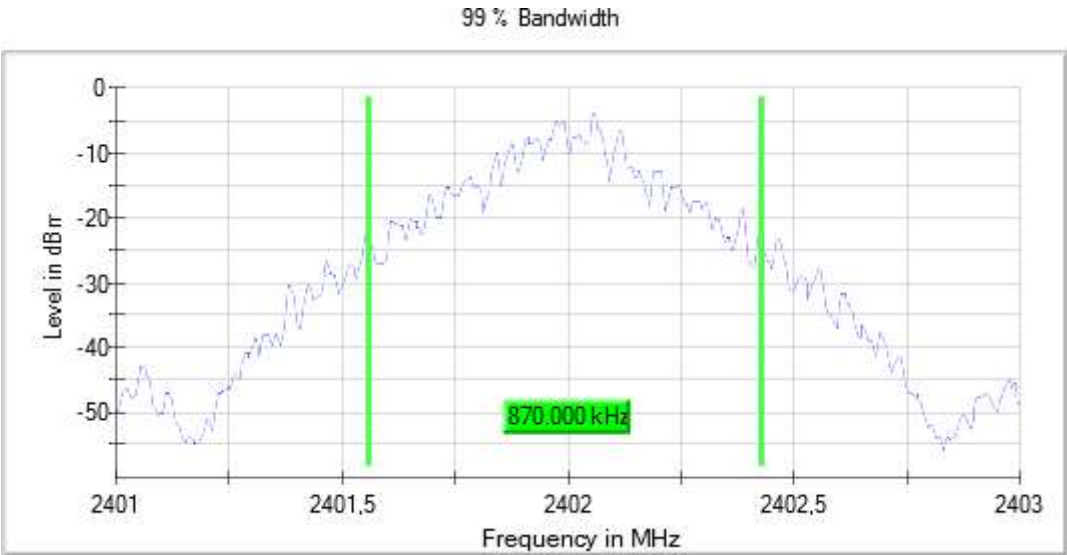
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)
Frequency MHz = 2402.00000 Active Port = 1
Modulation = BT (GFSK 1-DH5)

Images:



Operation Band MHz = [2400,
2483.5]

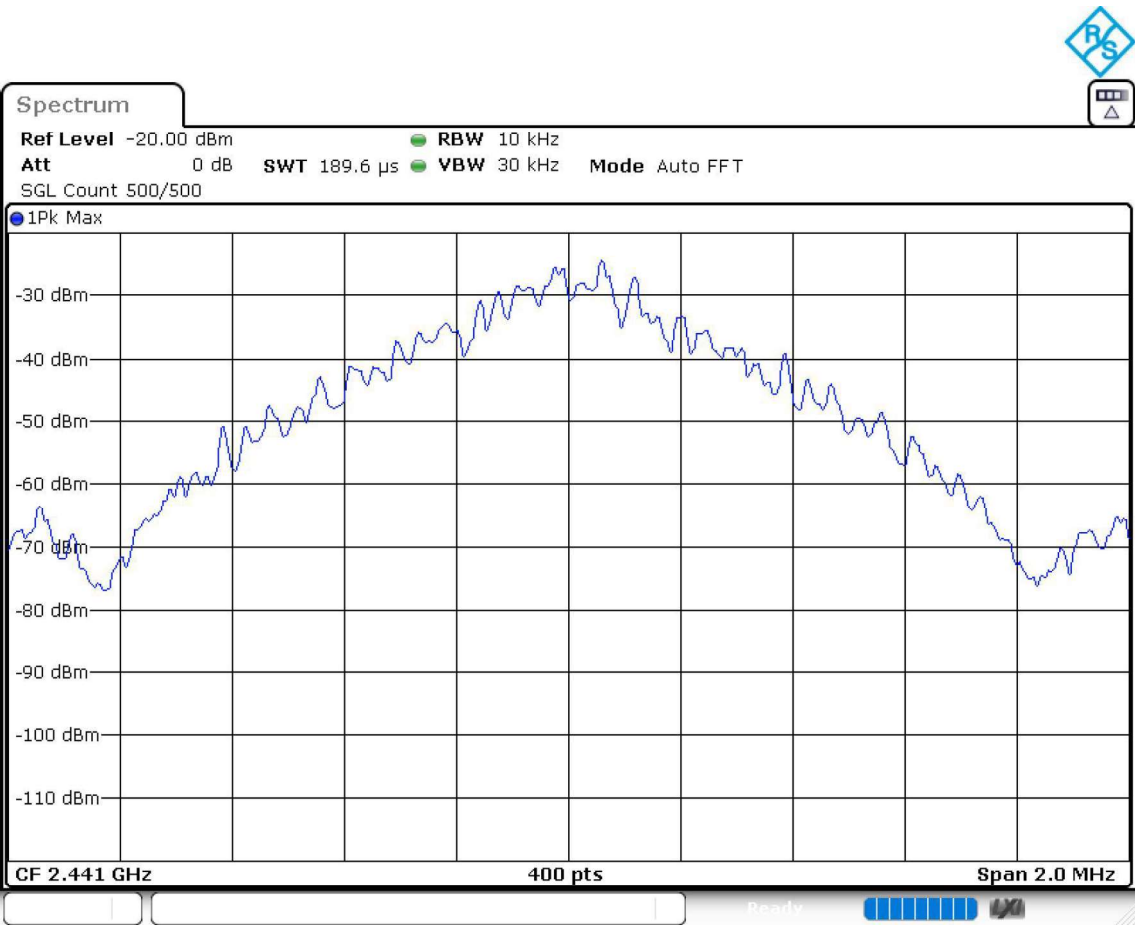
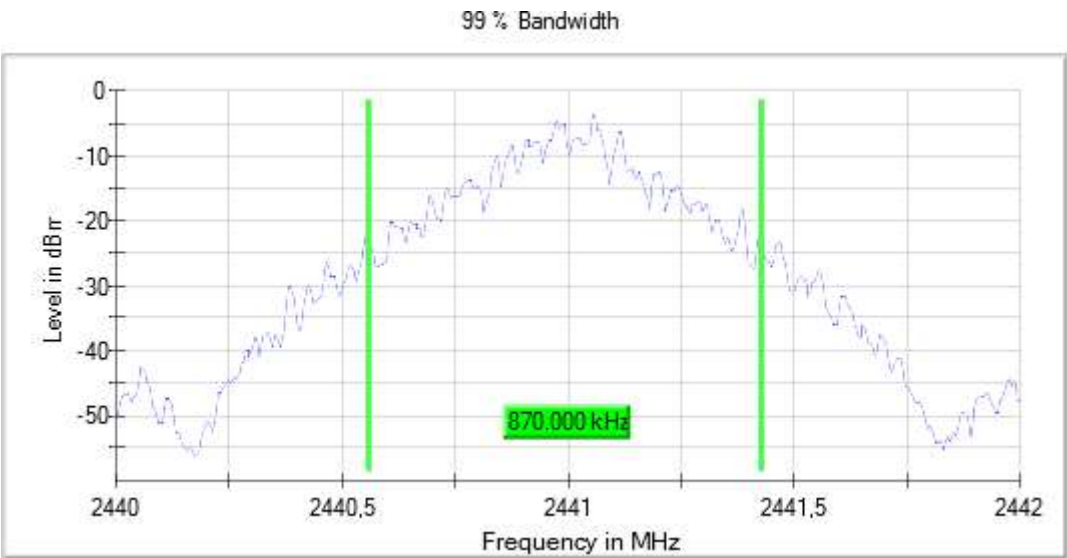
Equipment Type = Frequency Hopping Spread Spectrum systems
(DSS)

Frequency MHz = 2441.00000

Active Port = 1

Modulation = BT (GFSK 1-DH5)

Images:



Operation Band MHz = [2400,
2483.5]

Equipment Type = Frequency Hopping Spread Spectrum systems
(DSS)

Frequency MHz = 2480.00000

Active Port = 1

Modulation = BT (GFSK 1-DH5)

Images:

