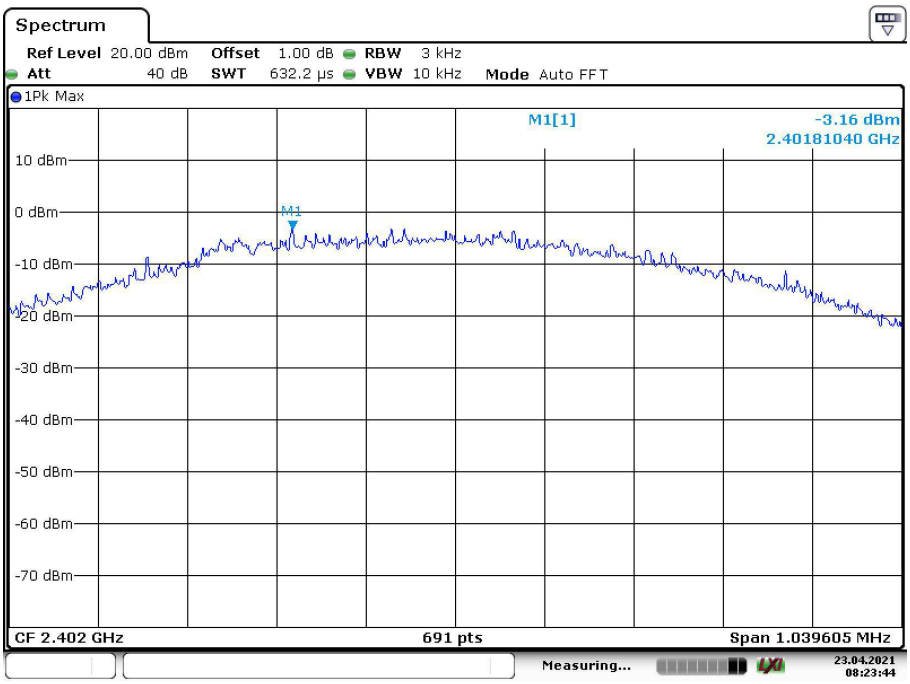
Appendix B: Test Results of BLE

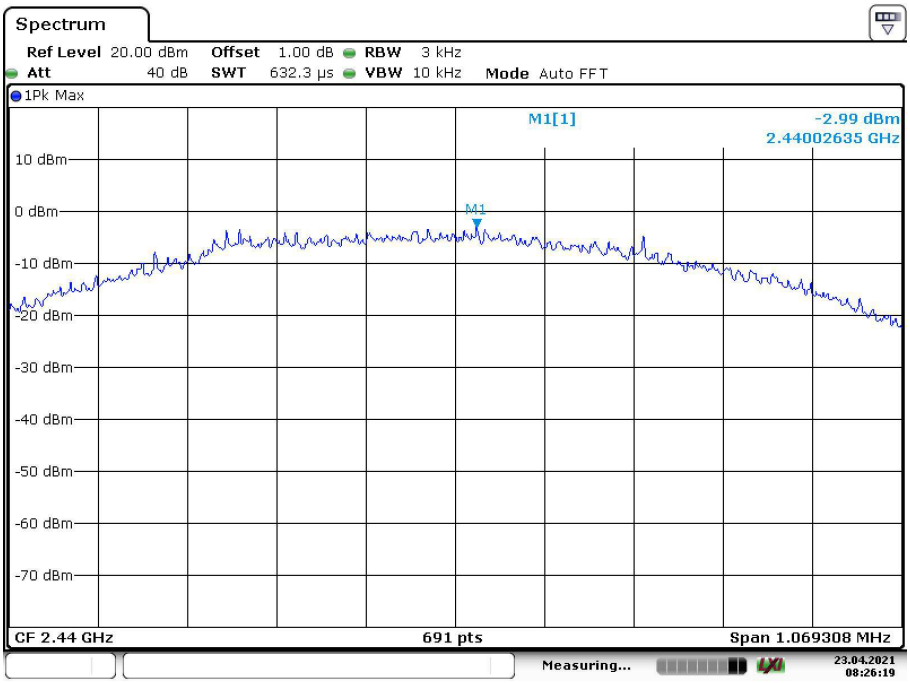
APPENDIX B: TEST RESULTS OF BLE 1
APPENDIX B.1: TEST RESULTS OF CONDUCTED POWER SPECTRAL DENSITY 2
GFSK(BLE) Mode, 1Mbps 2
GFSK(BLE) Mode, 2Mbps 3
APPENDIX B.2: TEST RESULTS OF 6DB BANDWIDTH 5
GFSK(BLE) Mode, 1Mbps 5
GFSK(BLE) Mode, 2Mbps 8
APPENDIX B.3: TEST RESULTS OF 99% BANDWIDTH 11
GFSK(BLE) Mode, 1Mbps 11
GFSK(BLE) Mode, 2Mbps 14
APPENDIX B.4: TEST RESULTS OF CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH 17
GFSK(BLE) Mode, 1Mbps 17
GFSK(BLE) Mode, 2Mbps 21
APPENDIX B.5: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS 25
30 MHz to 1GHz 25
1GHz-18GHz 29
APPENDIX B.6: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS 41
APPENDIX B.7: TEST PLOTS OF CONDUCTED EMISSION ON AC MAINS 45
Normal operation mode 45

Appendix B.1: Test Results of Conducted Power Spectral Density

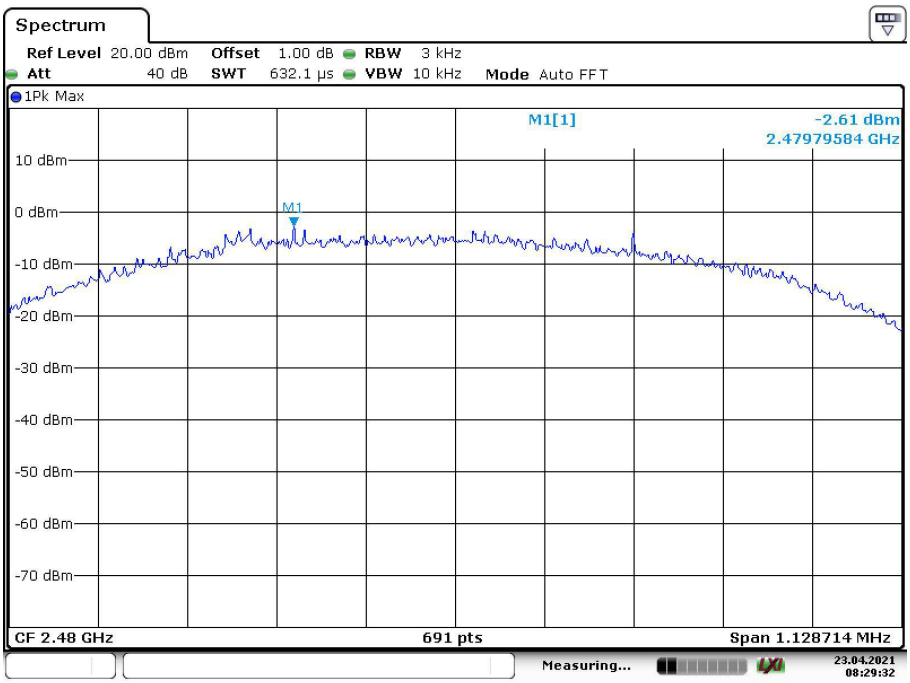
GFSK(BLE) Mode, 1Mbps



Date: 23.APR.2021 08:23:44

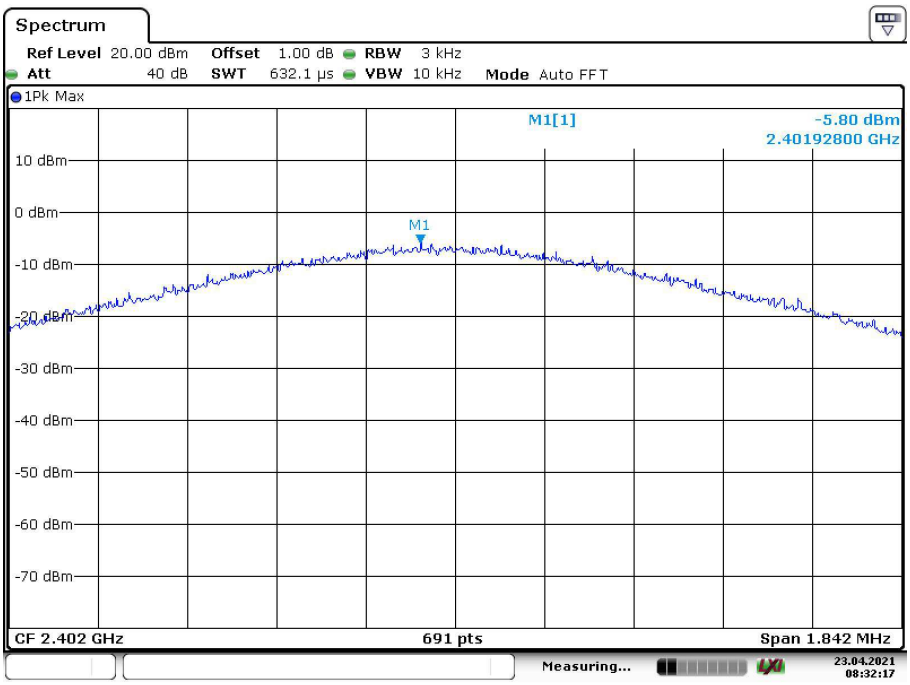


Date: 23.APR.2021 08:26:19



Date: 23.APR.2021 08:29:33

GFSK(BLE) Mode, 2Mbps



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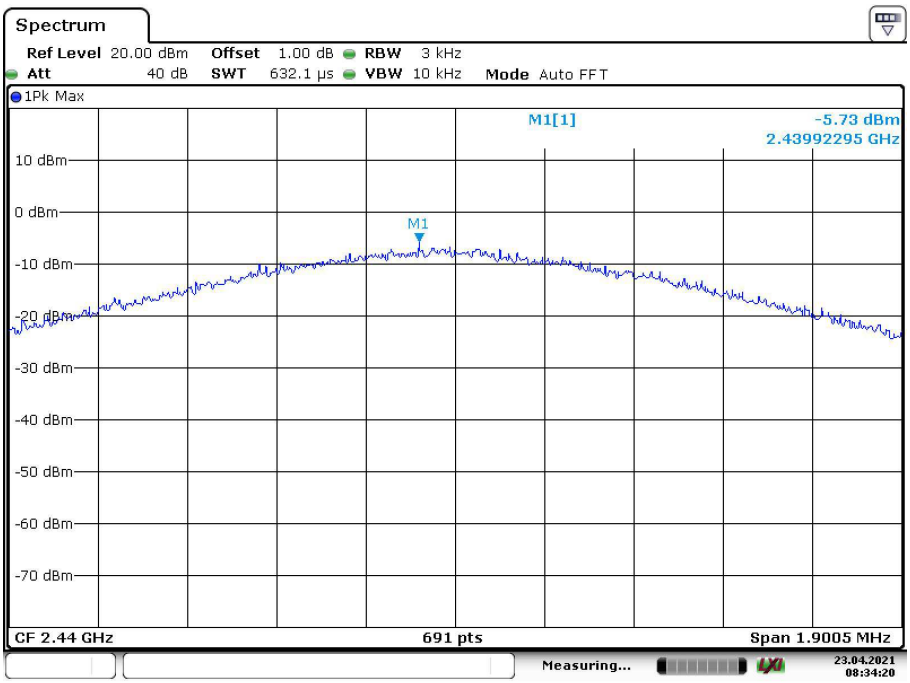
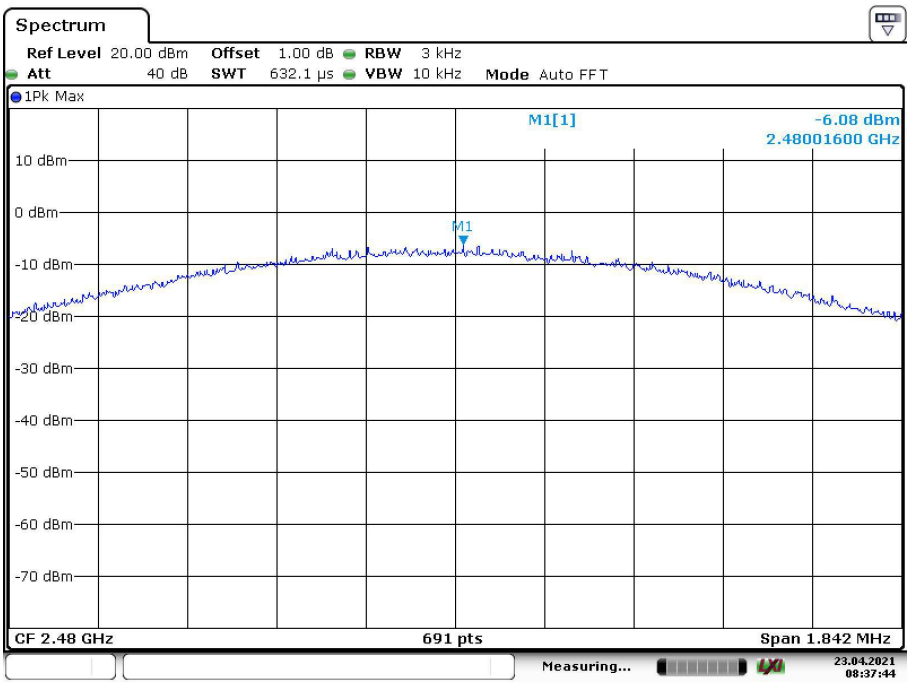


Date: 23.APR.2021 08:34:21



Date: 23.APR.2021 08:37:45

Appendix B.2: Test Results of 6dB Bandwidth

GFSK(BLE) Mode, 1Mbps

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2402 MHz; 10.000 dBm; 1 MHz)

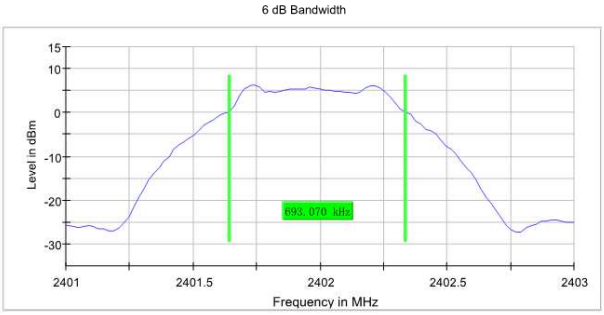
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.693070	0.500000	---	2401.643564	2402.336634

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	6.2	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 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	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.41 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2440 MHz; 10.000 dBm; 1 MHz)

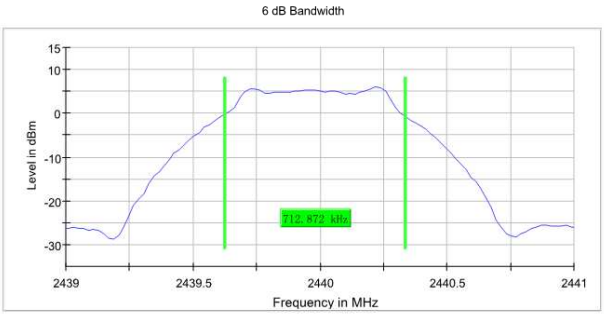
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	0.712872	0.500000	---	2439.623762	2440.336634

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	5.9	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 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	5 / 5	5
Max Stable Difference	0.11 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2480 MHz; 10.000 dBm; 1 MHz)

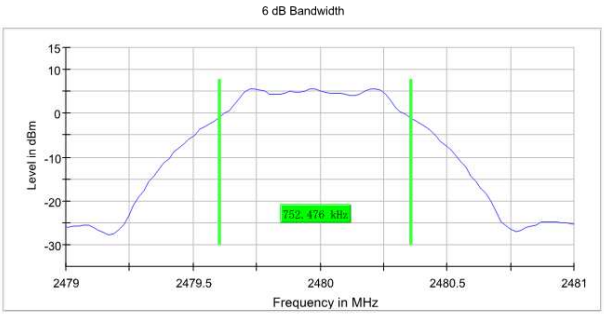
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.752476	0.500000	---	2479.603960	2480.356436

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	5.6	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 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	16 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.18 dB	0.50 dB

GFSK(BLE) Mode, 2Mbps

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2402 MHz; 10.000 dBm; 2 MHz)

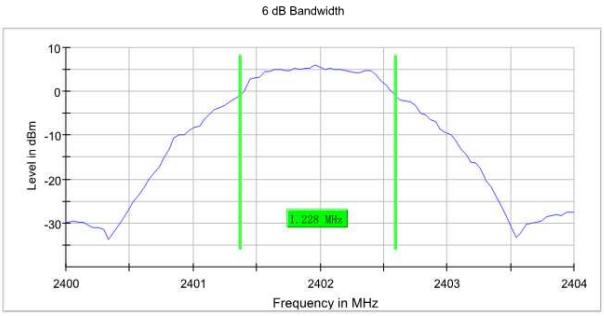
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.227722	0.500000	---	2401.366337	2402.594059

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	5.9	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 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	20 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2440 MHz; 10.000 dBm; 2 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

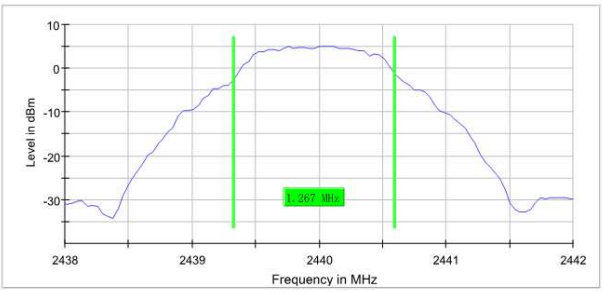
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.267326	0.500000	---	2439.326733	2440.594059

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	5.1	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 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	15 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.34 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Minimum Emission Bandwidth 6 dB (2480 MHz; 10.000 dBm; 2 MHz)

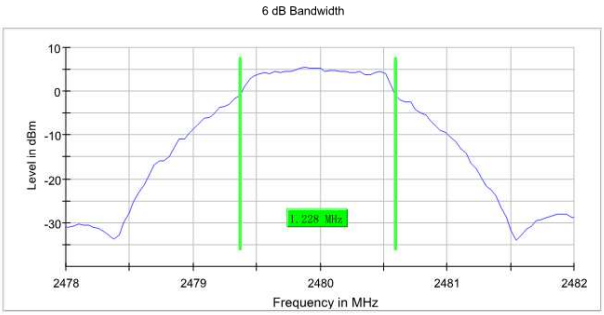
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.227722	0.500000	---	2479.366337	2480.594059

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	5.4	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
Sweeptime	18.938 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	31 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.50 dB

Appendix B.3: Test Results of 99% Bandwidth

GFSK(BLE) Mode, 1Mbps

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 1 MHz)

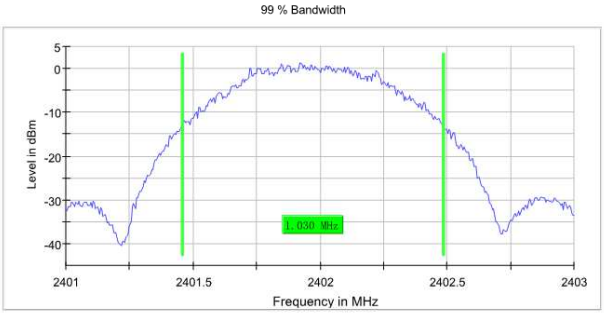
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.030000	---	---	2401.457500	2402.487500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 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	0.30 dB	0.30 dB
Run	71 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.13 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2440 MHz; 10.000 dBm; 1 MHz)

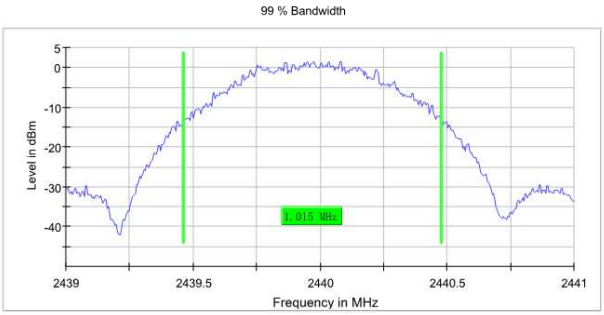
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.015000	---	---	2439.462500	2440.477500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 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	0.30 dB	0.30 dB
Run	68 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.17 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2480 MHz; 10.000 dBm; 1 MHz)

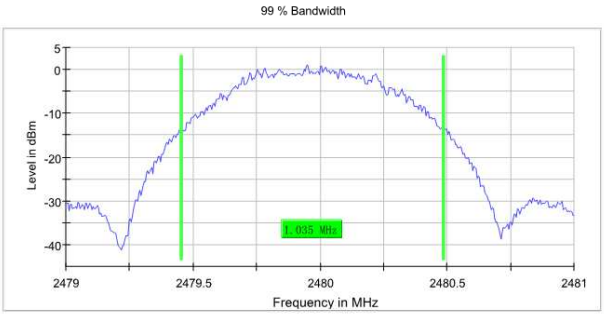
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.035000	---	---	2479.452500	2480.487500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 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	0.30 dB	0.30 dB
Run	54 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.27 dB	0.30 dB

GFSK(BLE) Mode, 2Mbps

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 2 MHz)

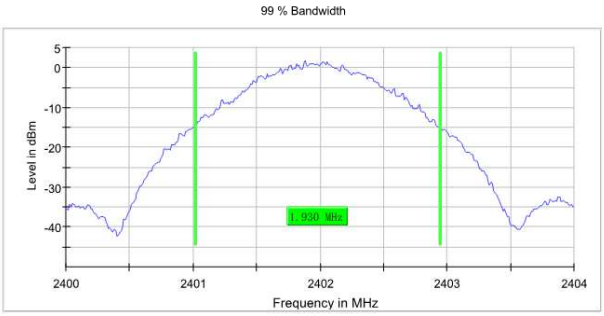
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.930000	---	---	2401.015000	2402.945000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 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	0.30 dB	0.30 dB
Run	63 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2440 MHz; 10.000 dBm; 2 MHz)

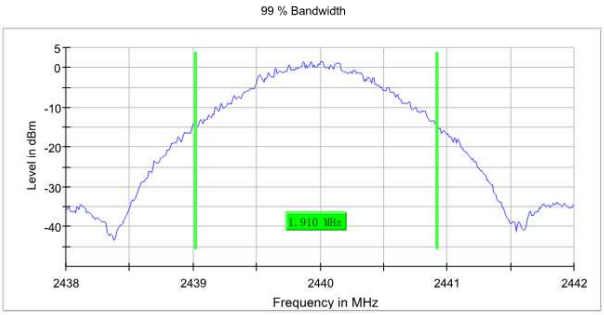
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.910000	---	---	2439.015000	2440.925000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 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	0.30 dB	0.30 dB
Run	48 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.11 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2480 MHz; 10.000 dBm; 2 MHz)

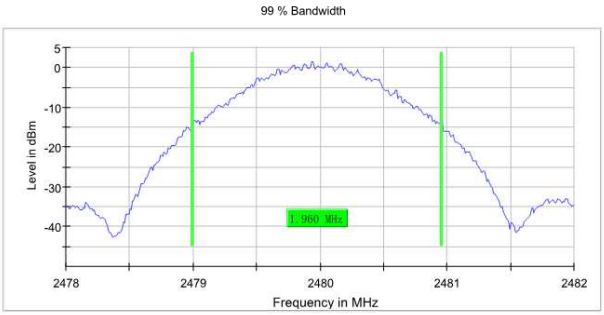
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.960000	---	---	2478.995000	2480.955000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



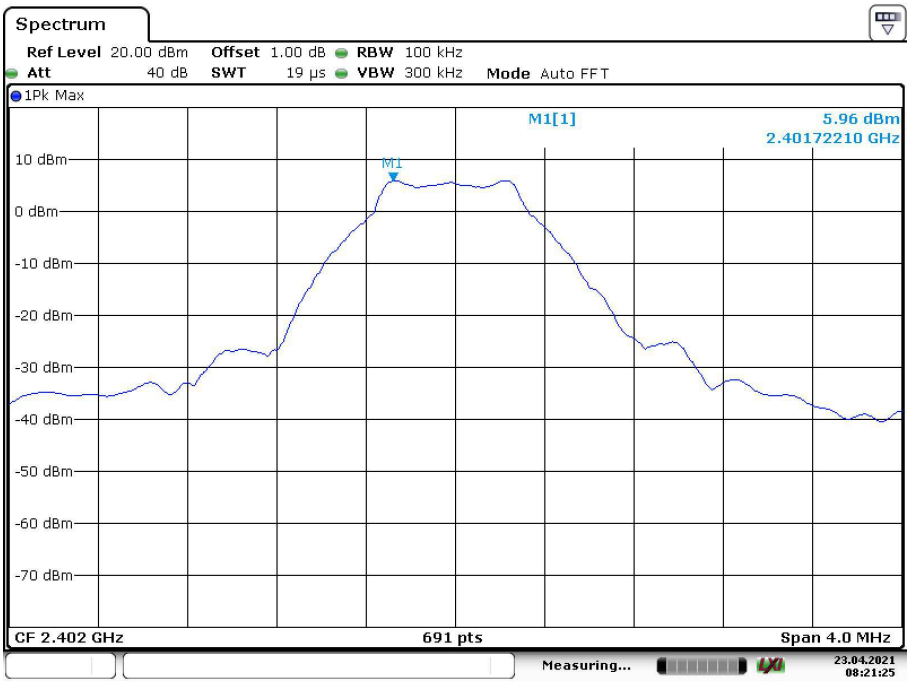
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	400	~ 400
Sweeptime	94.824 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	0.30 dB	0.30 dB
Run	90 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.11 dB	0.30 dB

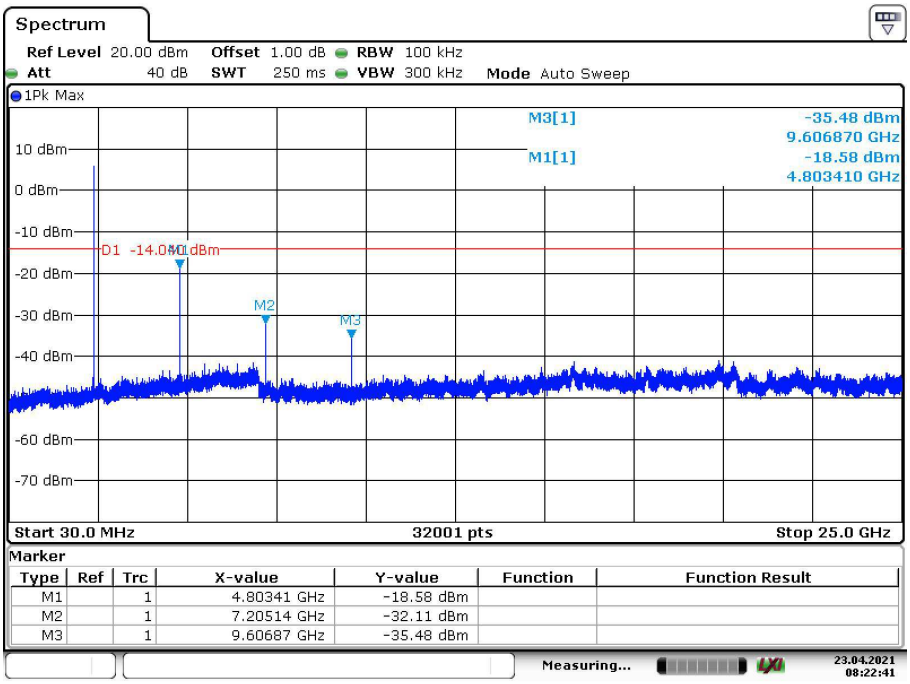
Appendix B.4: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

GFSK(BLE) Mode, 1Mbps

Low Channel:



Date: 23.APR.2021 08:21:25

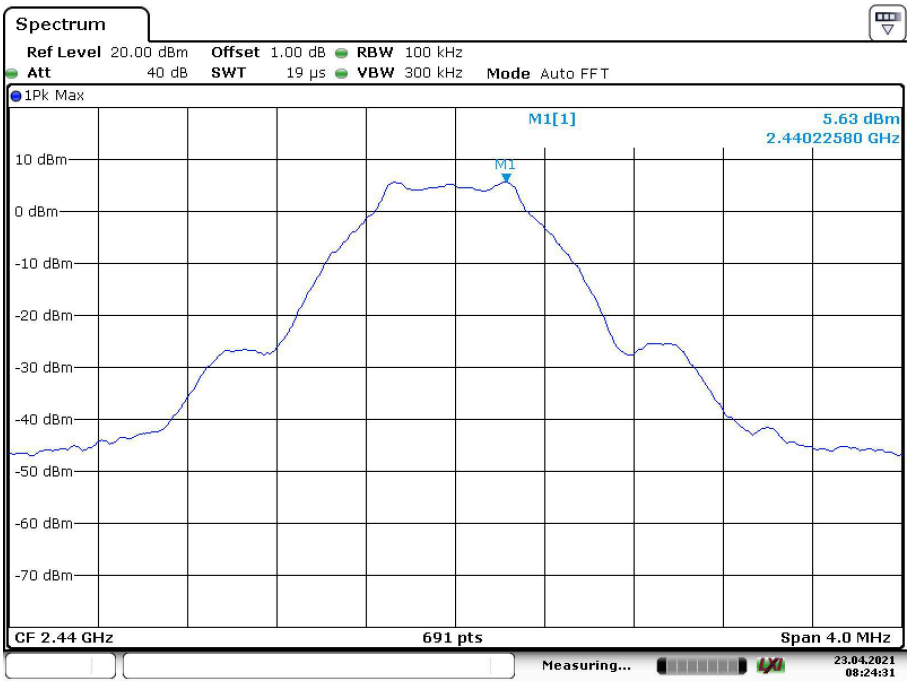


Marker

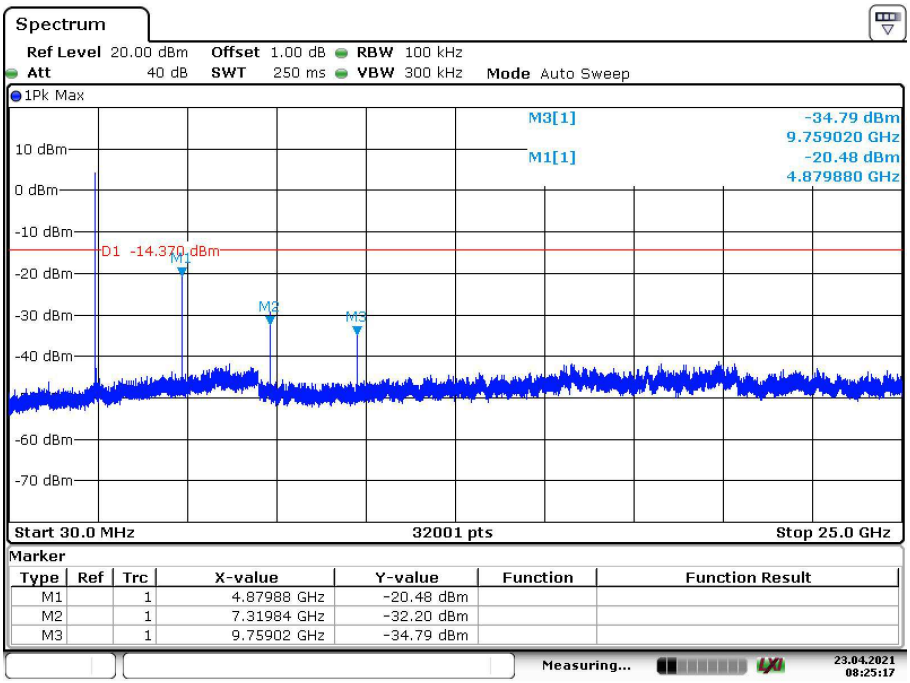
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.80341 GHz	-18.58 dBm		
M2		1	7.20514 GHz	-32.11 dBm		
M3		1	9.60687 GHz	-35.48 dBm		

Date: 23.APR.2021 08:22:41

Middle Channel:



Date: 23.APR.2021 08:24:31



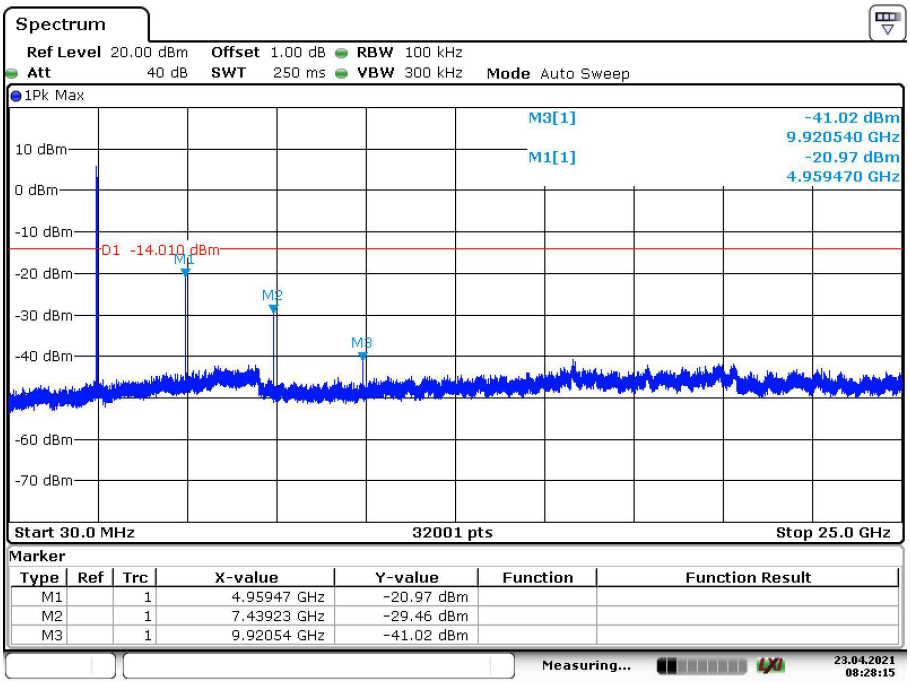
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.87988 GHz	-20.48 dBm		
M2		1	7.31984 GHz	-32.20 dBm		
M3		1	9.75902 GHz	-34.79 dBm		

Date: 23.APR.2021 08:25:17

High Channel:

Date: 23.APR.2021 08:27:01

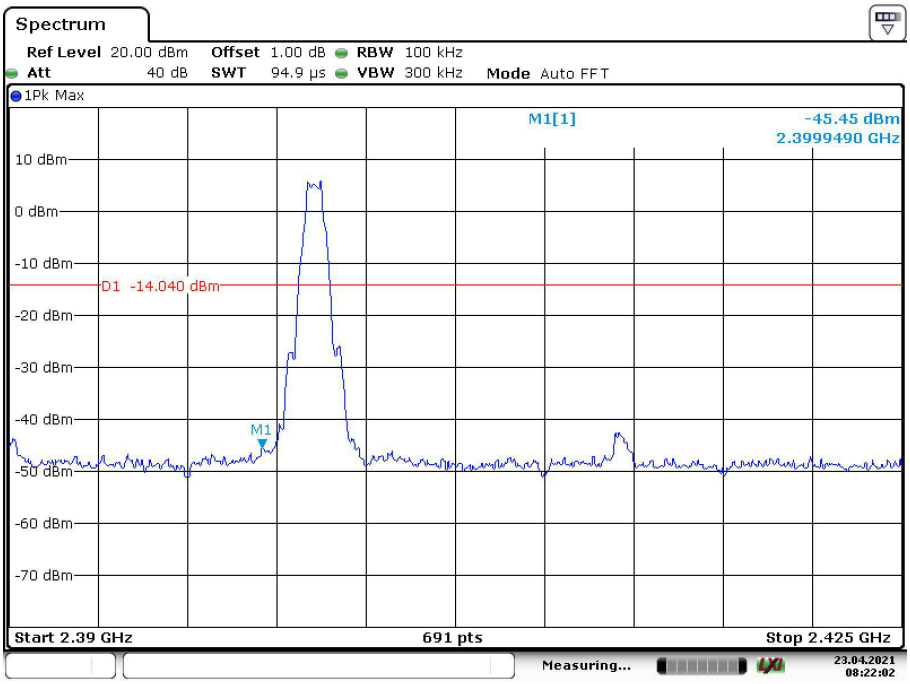


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.95947 GHz	-20.97 dBm		
M2		1	7.43923 GHz	-29.46 dBm		
M3		1	9.92054 GHz	-41.02 dBm		

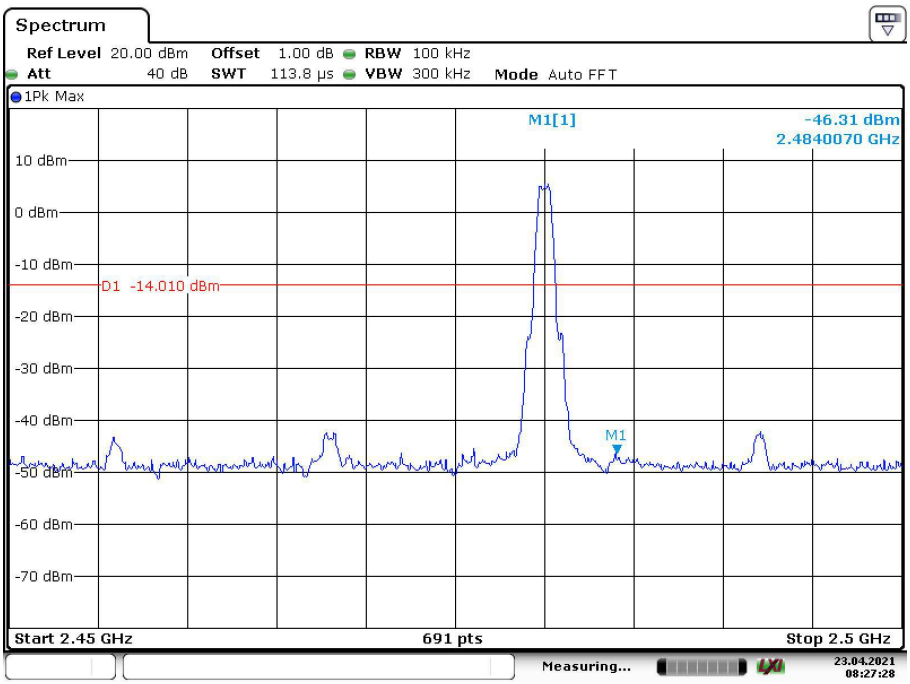
Date: 23.APR.2021 08:28:15

Band Edge, Low Channel:



Date: 23.APR.2021 08:22:02

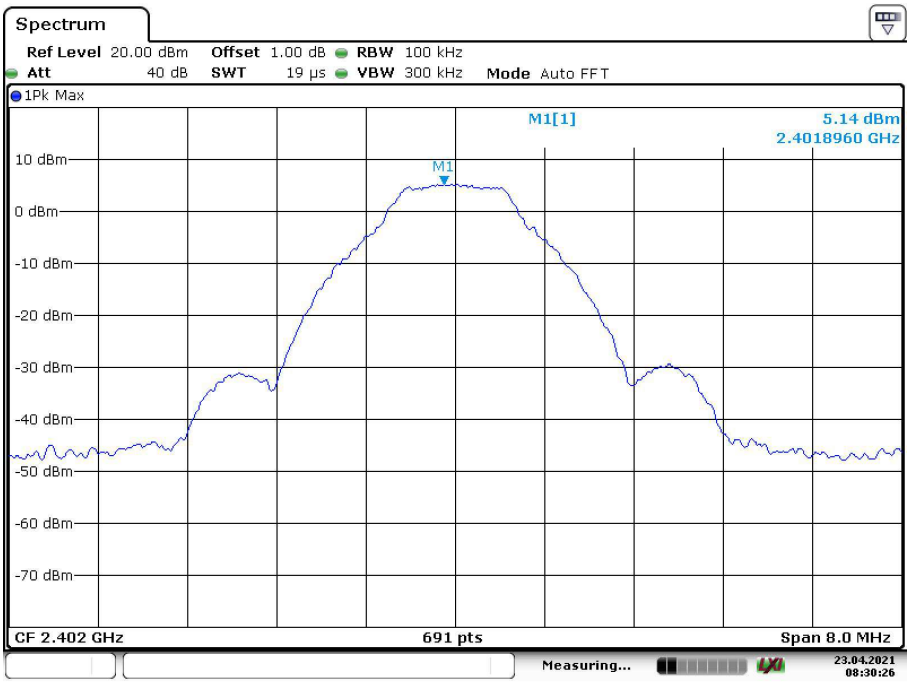
Band Edge, High Channel:



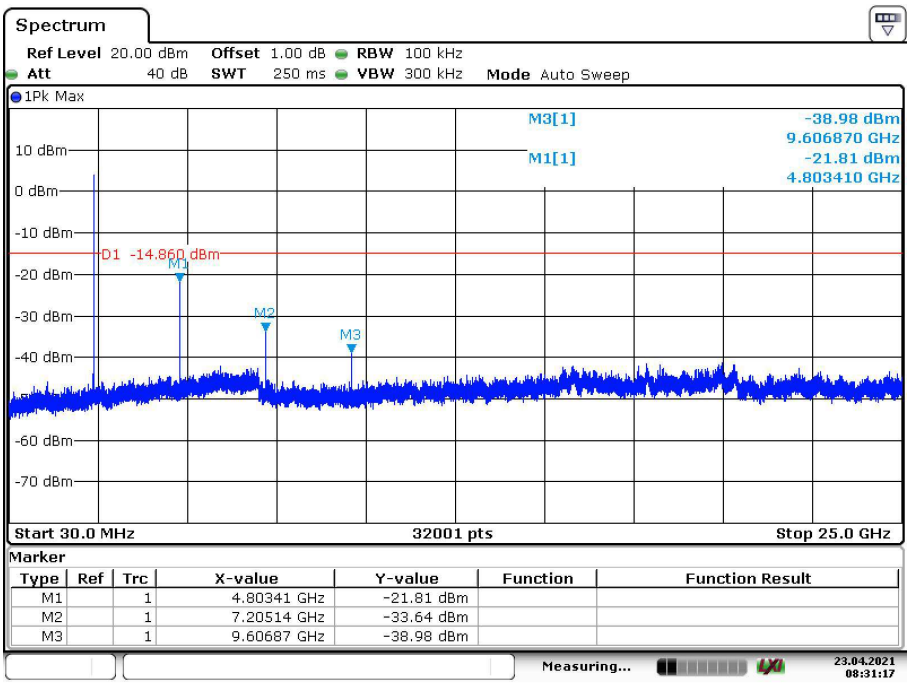
Date: 23.APR.2021 08:27:28

GFSK(BLE) Mode, 2Mbps

Low Channel:



Date: 23.APR.2021 08:30:26

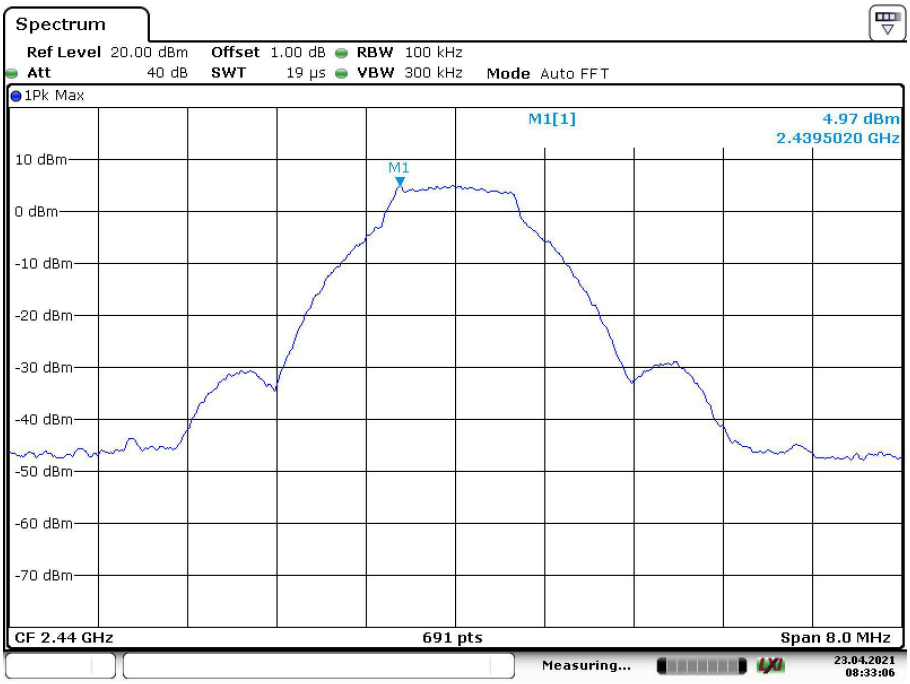


Marker

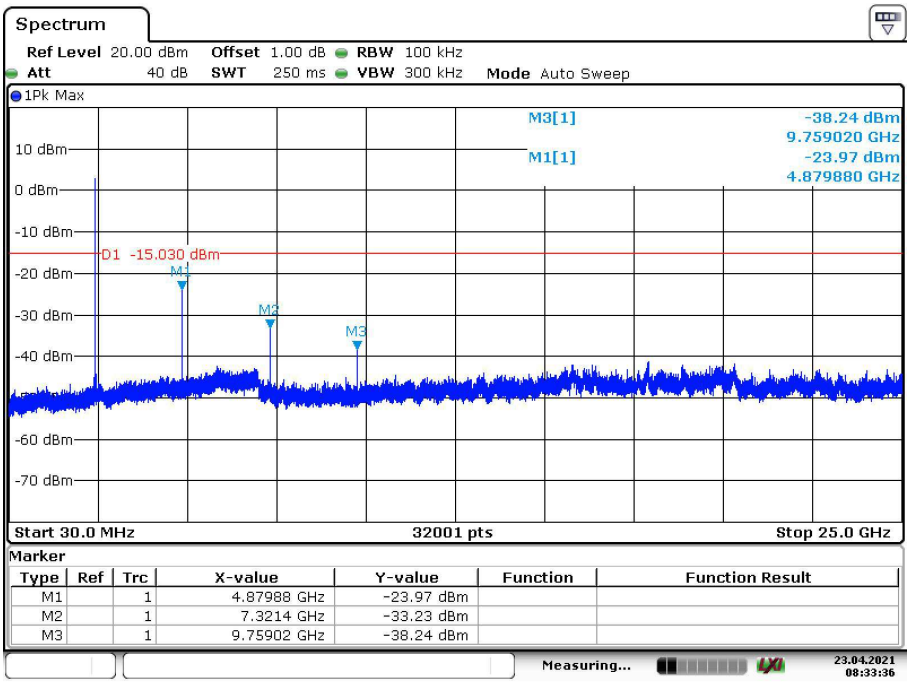
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.80341 GHz	-21.81 dBm		
M2		1	7.20514 GHz	-33.64 dBm		
M3		1	9.60687 GHz	-38.98 dBm		

Date: 23.APR.2021 08:31:17

Middle Channel:



Date: 23.APR.2021 08:33:06

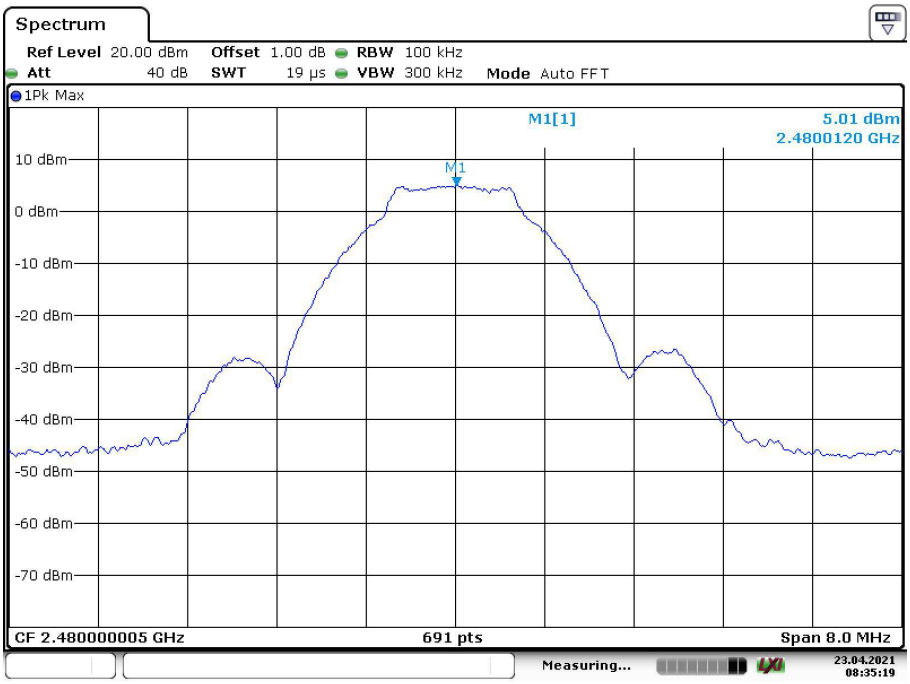


Marker

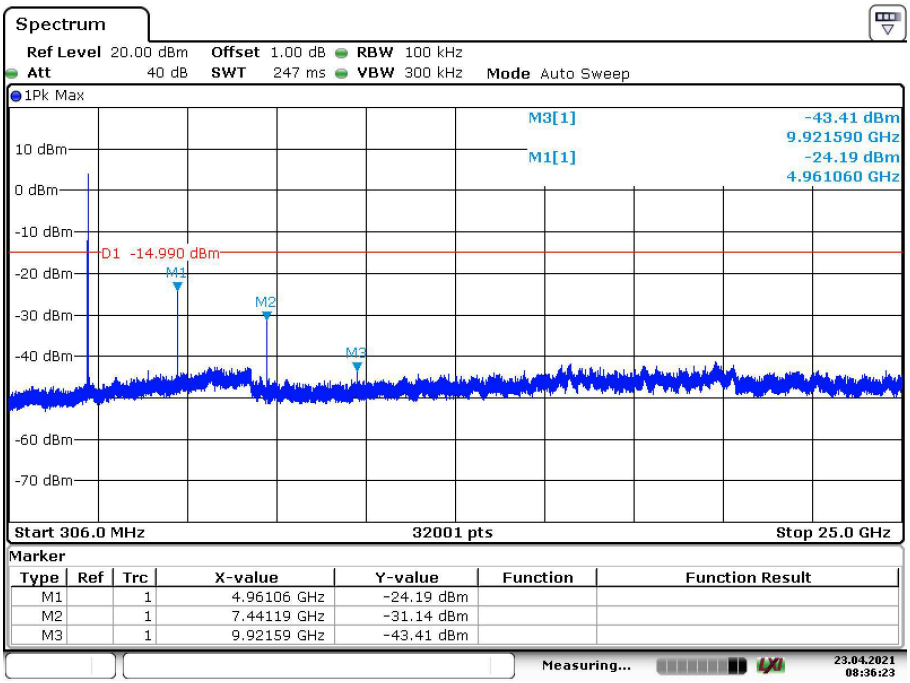
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.87988 GHz	-23.97 dBm		
M2		1	7.3214 GHz	-33.23 dBm		
M3		1	9.75902 GHz	-38.24 dBm		

Date: 23.APR.2021 08:33:36

High Channel:



Date: 23.APR.2021 08:35:20

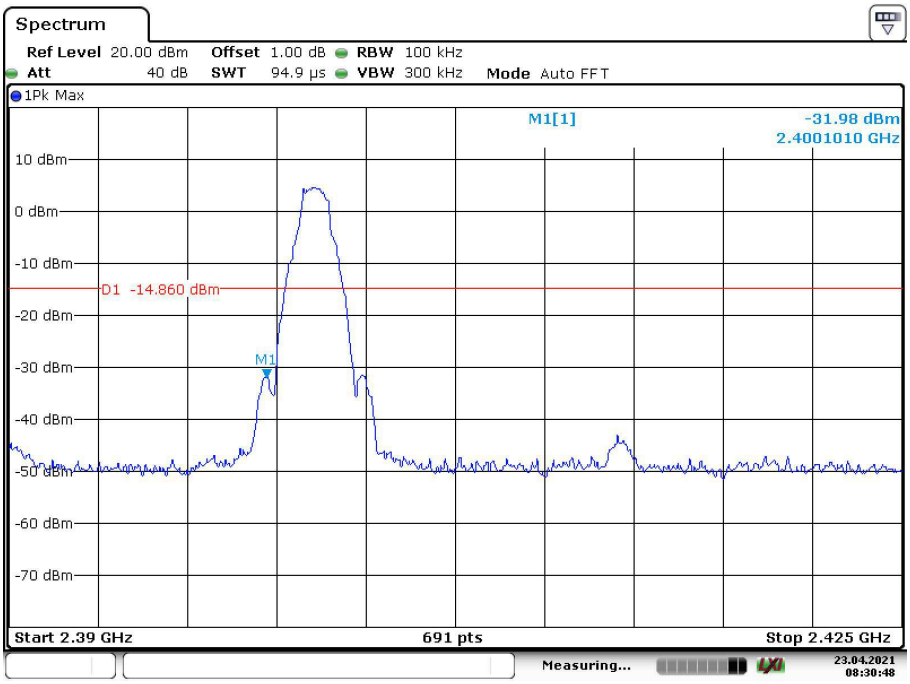


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.96106 GHz	-24.19 dBm		
M2		1	7.44119 GHz	-31.14 dBm		
M3		1	9.92159 GHz	-43.41 dBm		

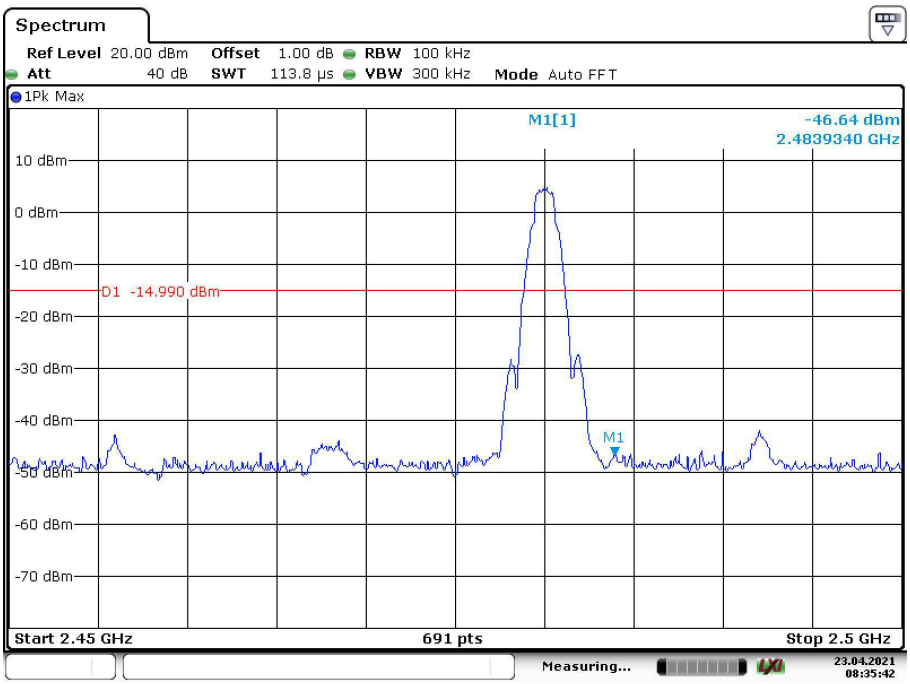
Date: 23.APR.2021 08:36:23

Band Edge, Low Channel:



Date: 23.APR.2021 08:30:48

Band Edge, High Channel:



Date: 23.APR.2021 08:35:42

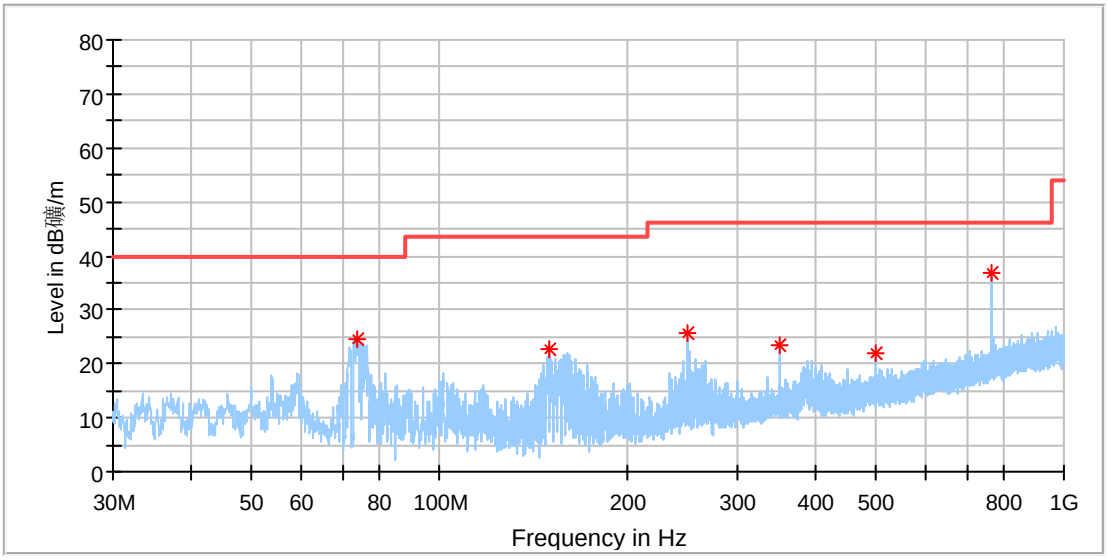
Appendix B.5: Test Results of Radiated Spurious Emissions

Note:
1) This testing was carried out on different modulations, but only the worst case was presented in this report.
2) Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30 MHz to 1GHz

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

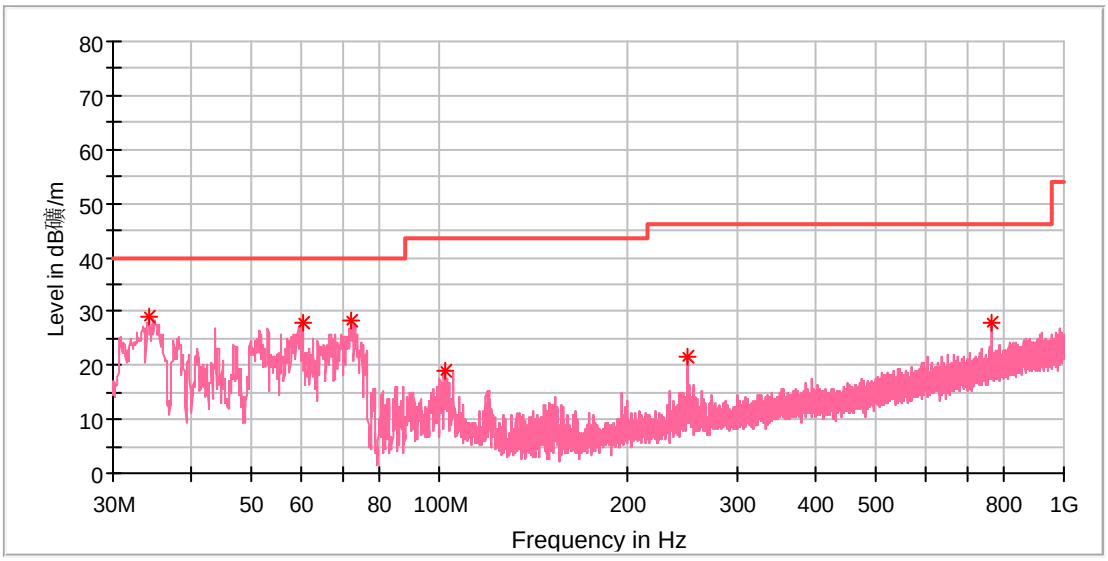
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
73.747000	24.62	40.00	15.38	100.0	H	0.0	-23.0
150.474000	22.56	43.50	20.94	100.0	H	274.0	-22.1
249.996000	25.57	46.00	20.43	100.0	H	328.0	-17.4
350.003000	23.49	46.00	22.51	100.0	H	190.0	-14.8
500.062000	21.85	46.00	24.15	100.0	H	224.0	-11.8
768.024500	36.84	46.00	9.16	100.0	H	0.0	-6.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

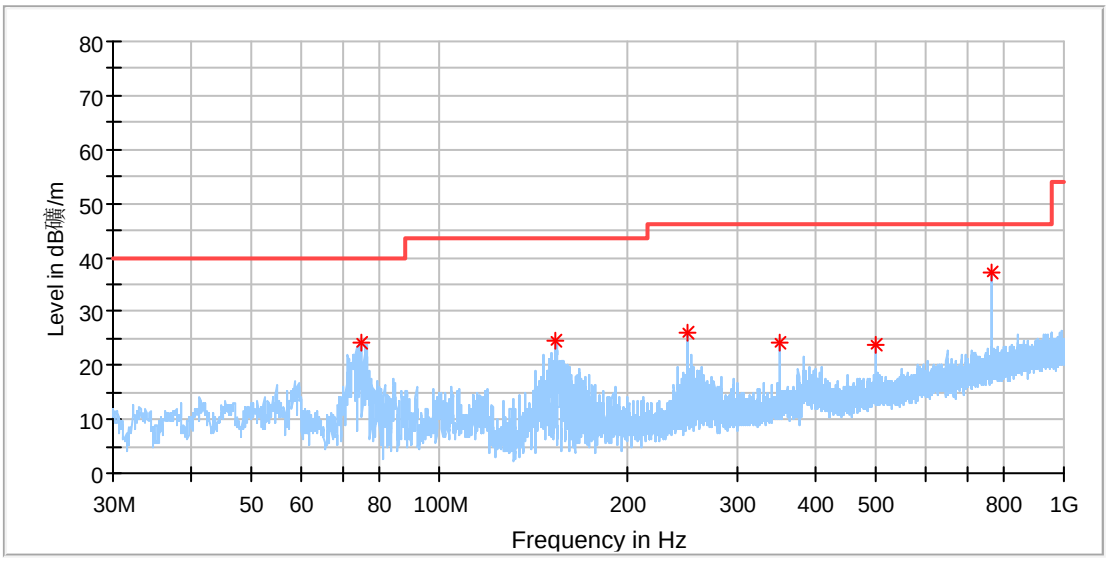
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.268000	29.04	40.00	10.96	100.0	V	0.0	-22.2
60.409500	27.84	40.00	12.16	100.0	V	242.0	-19.1
72.243500	28.46	40.00	11.54	100.0	V	205.0	-22.6
102.410500	18.98	43.50	24.52	100.0	V	279.0	-18.9
249.996000	21.63	46.00	24.37	100.0	V	0.0	-17.4
768.024500	27.76	46.00	18.24	100.0	V	205.0	-6.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

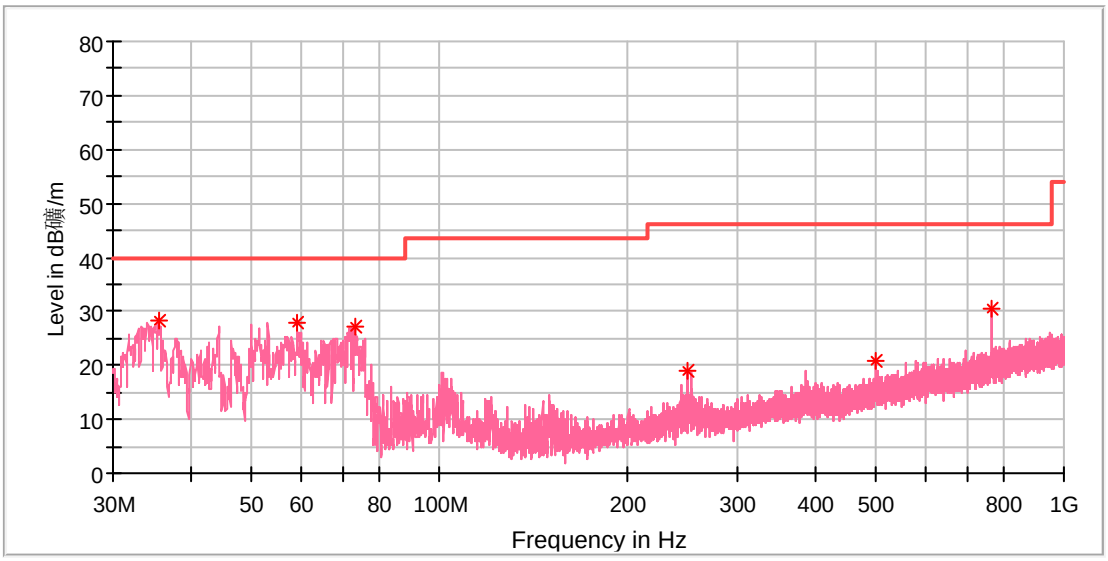
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
74.814000	24.31	40.00	15.69	100.0	H	196.0	-23.4
153.869000	24.66	43.50	18.84	100.0	H	265.0	-22.0
249.996000	26.16	46.00	19.85	100.0	H	339.0	-17.4
350.003000	24.25	46.00	21.75	100.0	H	204.0	-14.8
500.013500	23.63	46.00	22.37	100.0	H	238.0	-11.8
768.024500	37.20	46.00	8.80	100.0	H	73.0	-6.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.432000	28.31	40.00	11.69	100.0	V	63.0	-21.8
59.197000	27.80	40.00	12.20	100.0	V	20.0	-18.9
73.116500	27.17	40.00	12.83	100.0	V	268.0	-22.8
249.996000	18.95	46.00	27.05	100.0	V	0.0	-17.4
500.013500	20.81	46.00	25.19	100.0	V	331.0	-11.8
768.024500	30.33	46.00	15.67	100.0	V	1.0	-6.9

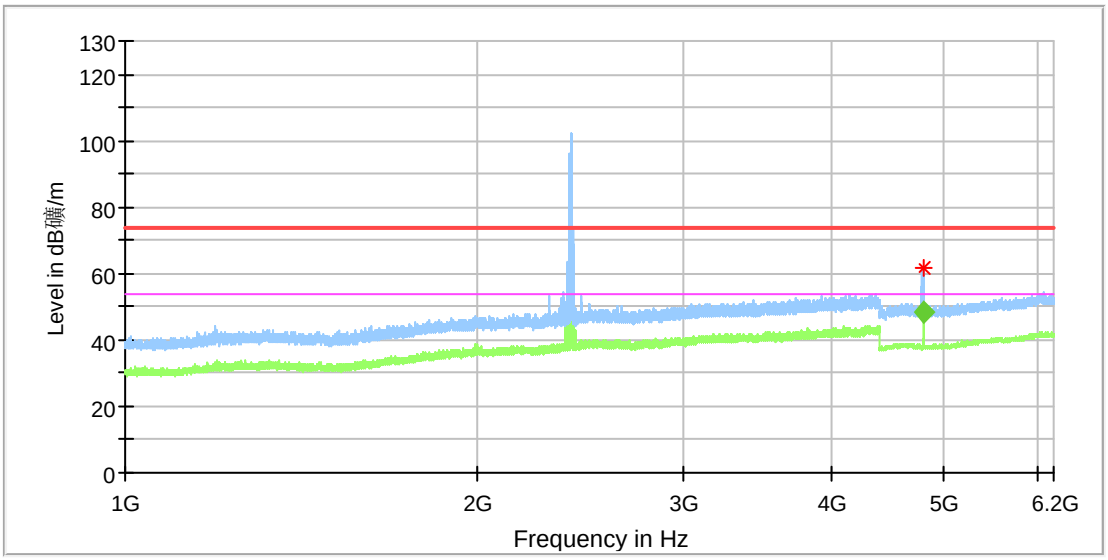
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

1GHz-18GHz
Note: The highest waveform in the figure is Bluetooth Fundamental.

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

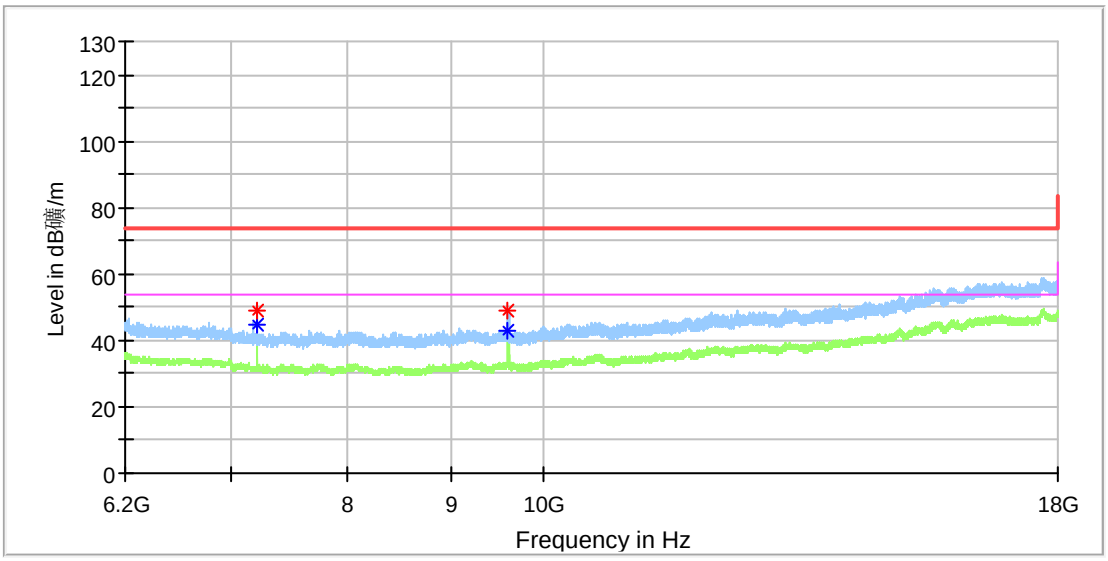
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.500000	61.81	---	74.00	12.19	100.0	H	258.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.897222	48.25	54.00	5.75	100.0	H	263.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

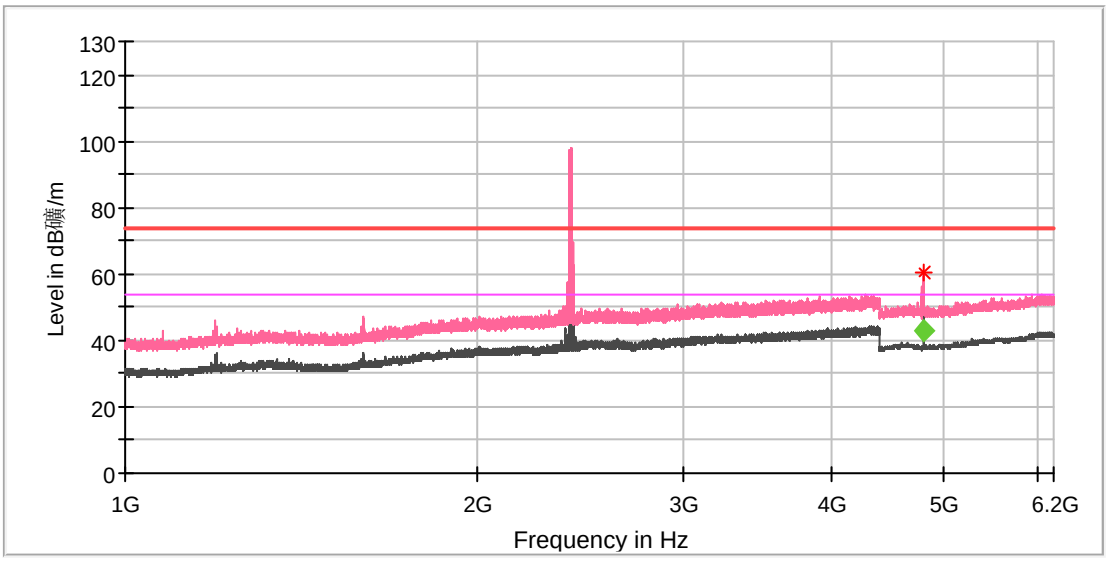
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	49.05	---	74.00	24.95	100.0	H	273.0	8.8
7205.458333	---	44.52	54.00	9.48	100.0	H	273.0	8.8
9607.250000	48.68	---	74.00	25.32	100.0	H	178.0	10.4
9607.250000	---	42.76	54.00	11.25	100.0	H	178.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

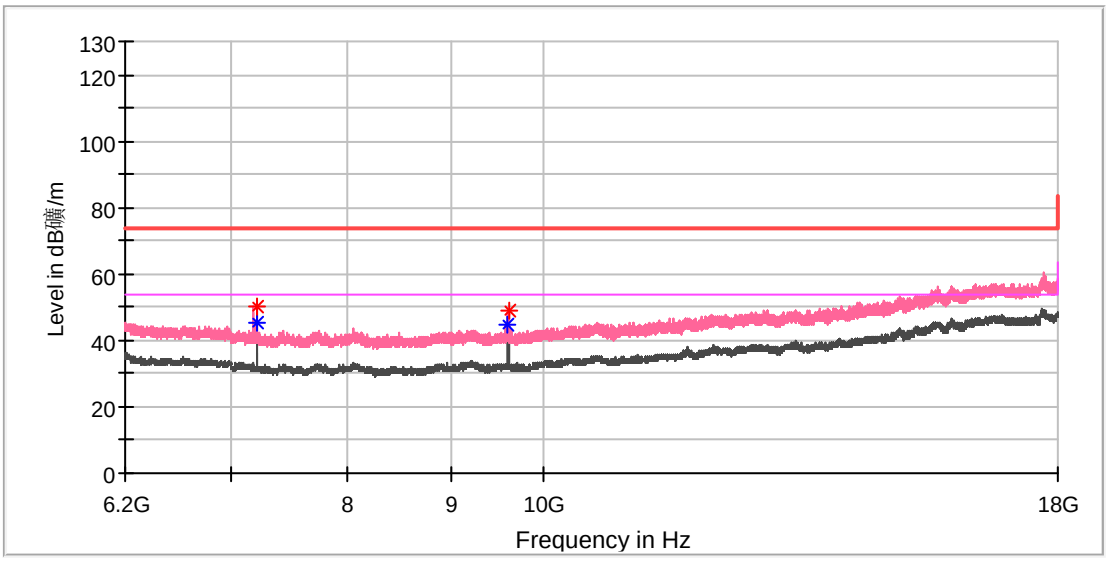
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4807.000000	60.20	---	74.00	13.80	100.0	V	85.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	42.72	54.00	11.28	100.0	V	132.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

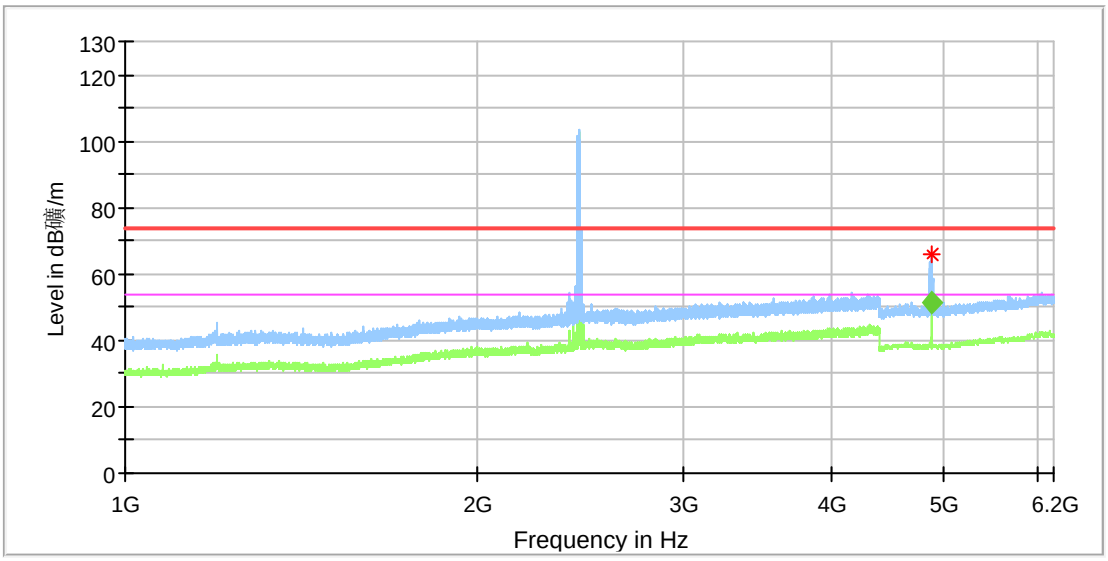
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7205.950000	---	45.30	54.00	8.70	100.0	V	74.0	8.8
7209.391667	50.19	---	74.00	23.81	100.0	V	19.0	8.8
9607.250000	---	44.66	54.00	9.34	100.0	V	19.0	10.4
9608.233333	49.27	---	74.00	24.73	100.0	V	19.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Mid channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

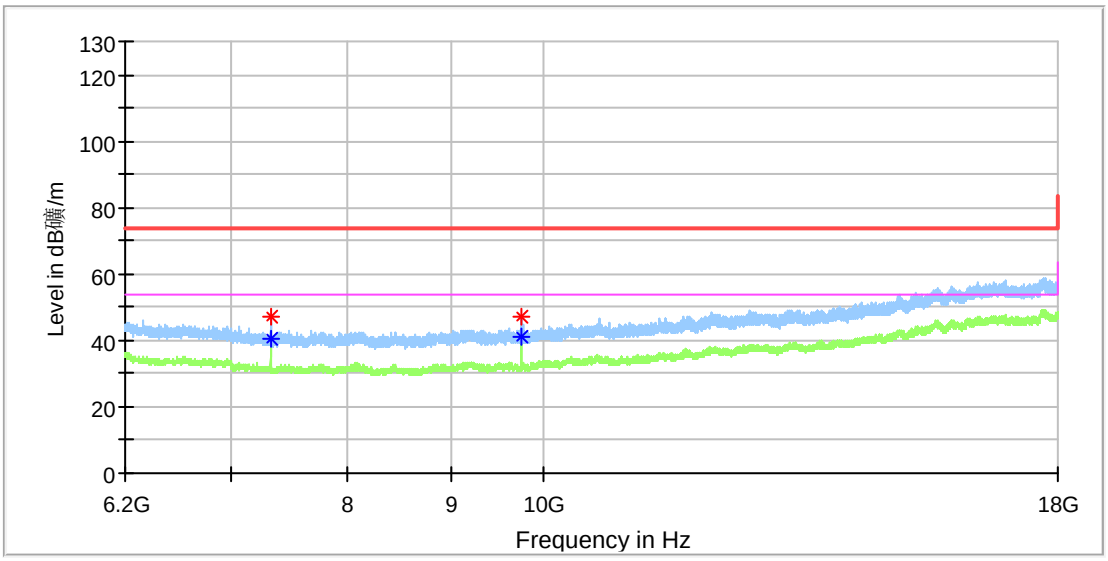
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	65.77	---	74.00	8.23	100.0	H	253.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.844444	50.48	54.00	3.52	100.0	H	248.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Mid channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

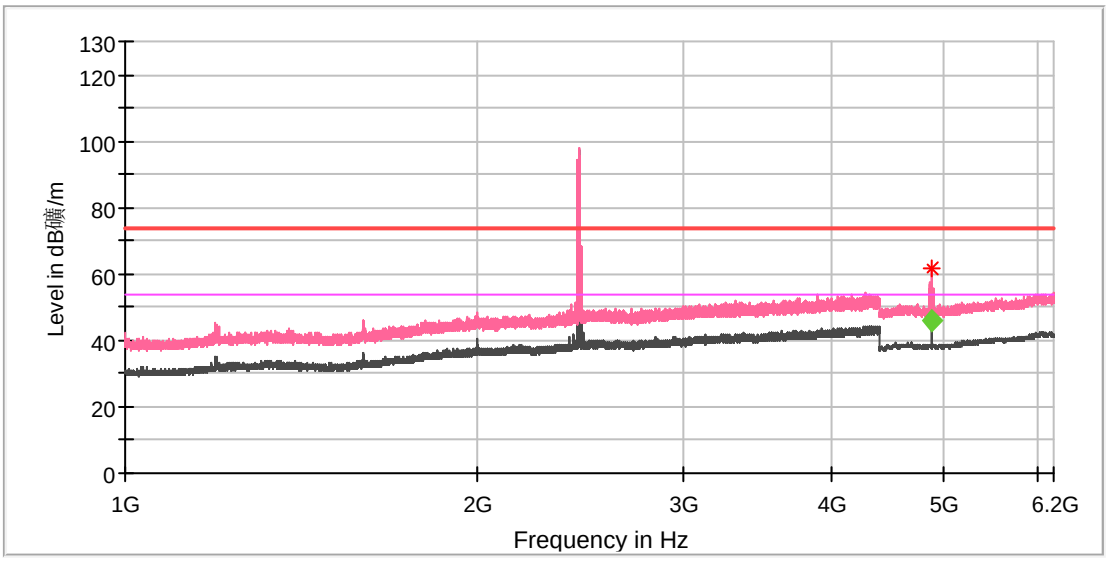
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7319.525000	---	40.29	54.00	13.71	100.0	H	250.0	8.2
7320.508333	46.93	---	74.00	27.07	100.0	H	250.0	8.2
9759.666667	---	41.08	54.00	12.92	100.0	H	292.0	10.4
9761.141667	47.21	---	74.00	26.79	100.0	H	292.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Mid channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

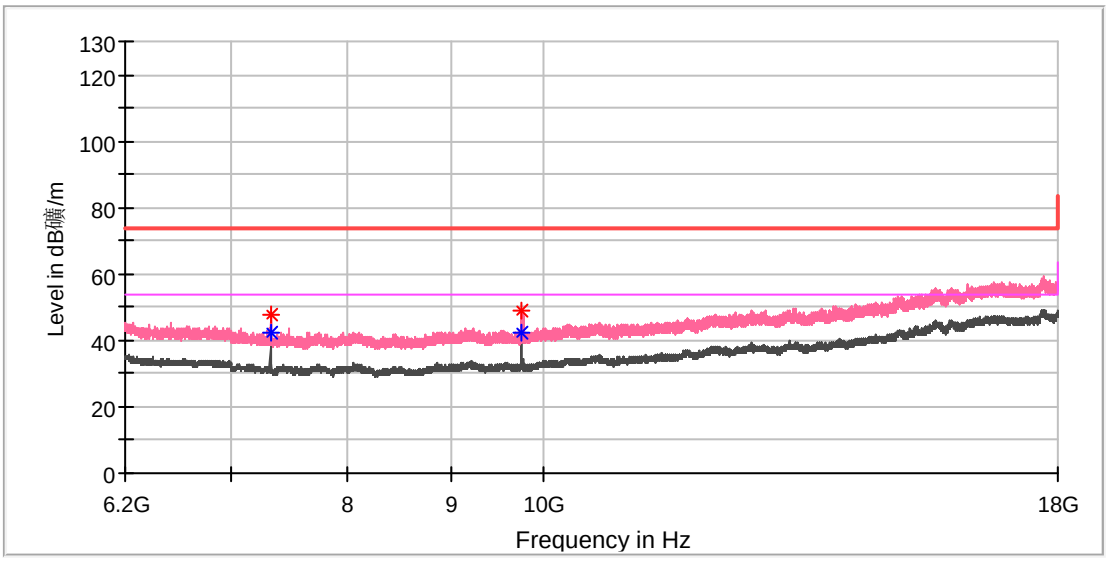
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4880.000000	61.61	---	74.00	12.39	100.0	V	259.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.969444	46.06	54.00	7.94	100.0	V	84.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Mid channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

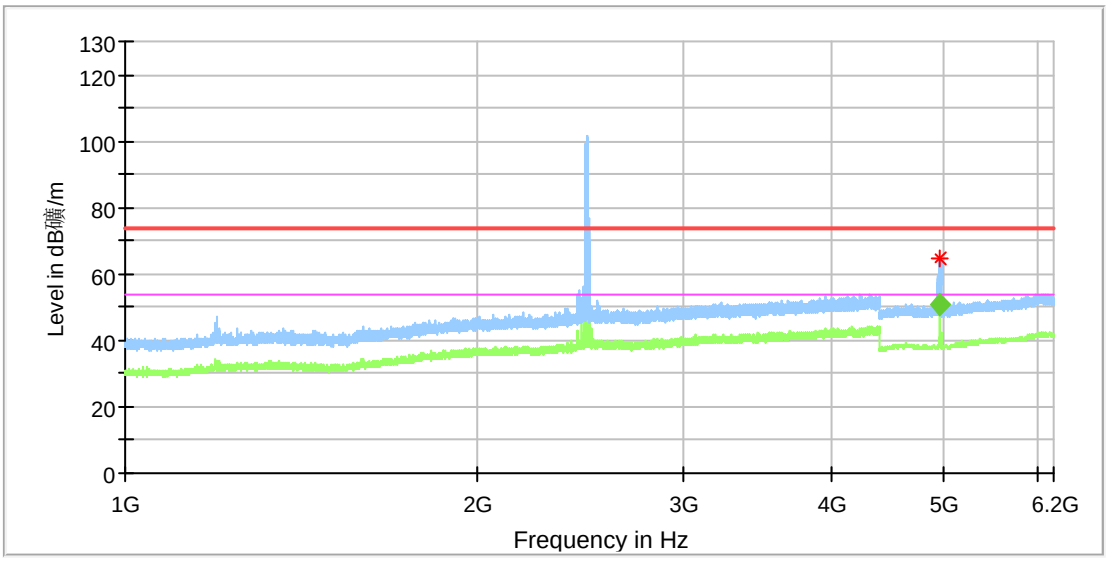
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7319.525000	---	42.30	54.00	11.70	100.0	V	111.0	8.2
7321.000000	47.47	---	74.00	26.53	100.0	V	0.0	8.2
9760.650000	---	42.54	54.00	11.46	100.0	V	83.0	10.4
9761.141667	49.03	---	74.00	24.97	100.0	V	263.0	10.4

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

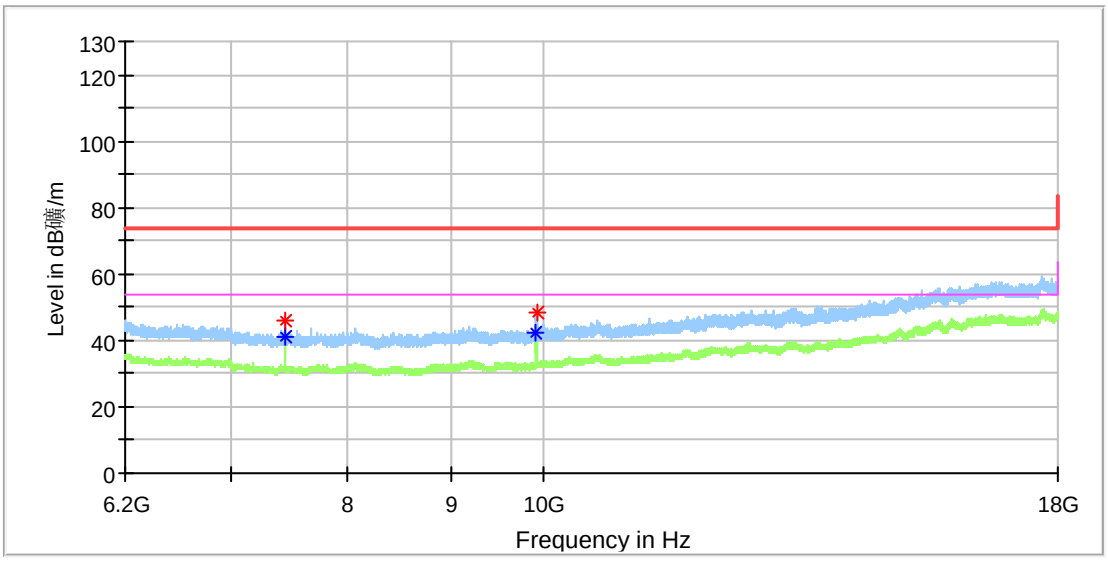
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.500000	64.77	---	74.00	9.23	100.0	H	249.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.950000	50.60	54.00	3.40	105.0	H	248.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

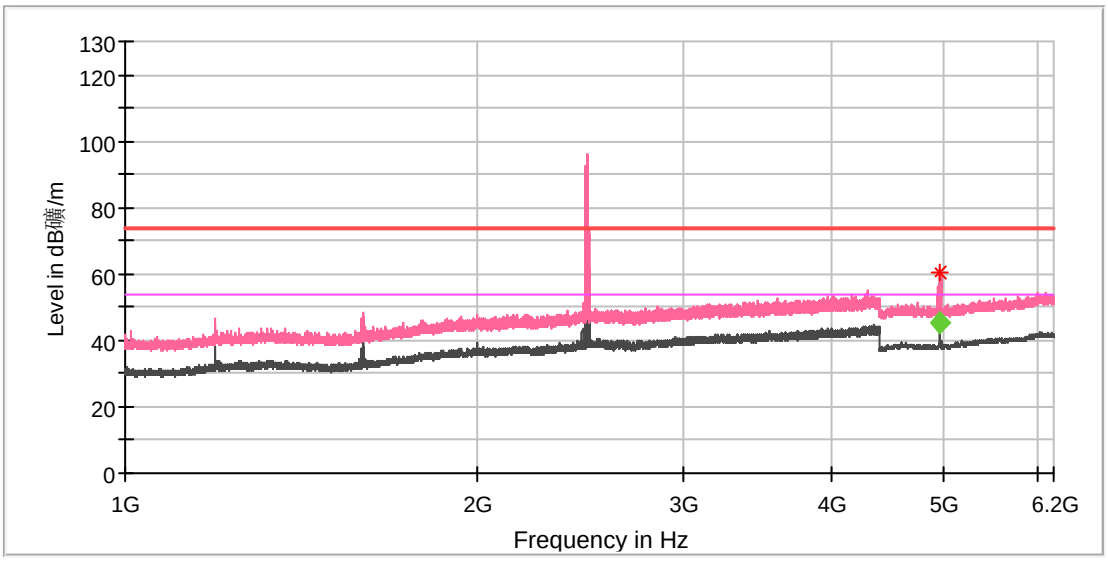
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.000000	46.04	---	74.00	27.96	100.0	H	254.0	8.4
7439.983333	---	41.26	54.00	12.74	100.0	H	267.0	8.4
9919.458333	---	42.57	54.00	11.43	100.0	H	309.0	10.8
9920.933333	48.35	---	74.00	25.65	100.0	H	183.0	10.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

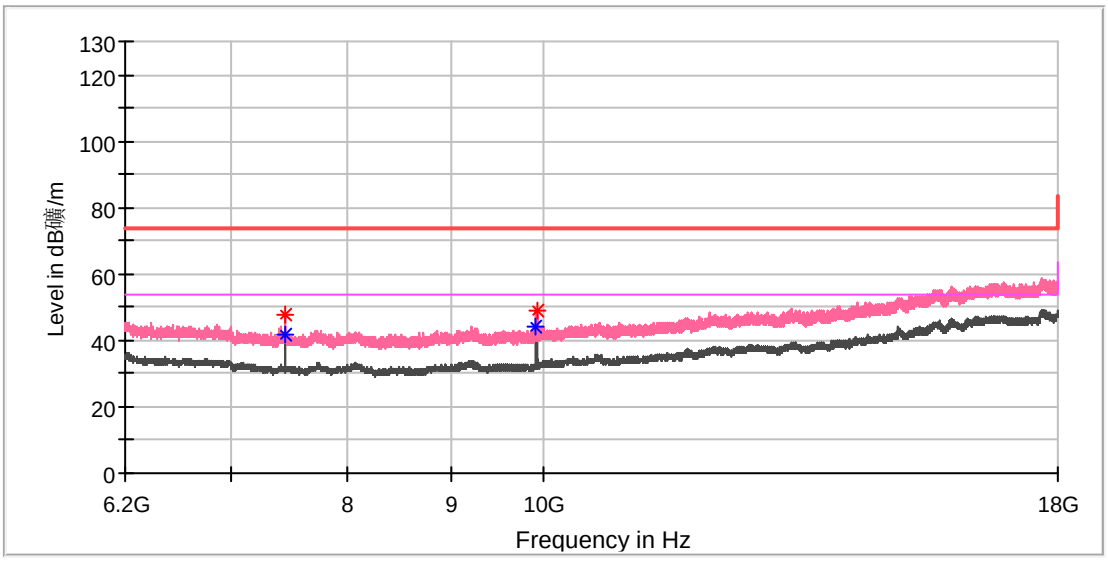
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	60.55	---	74.00	13.45	100.0	V	86.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.025000	45.22	54.00	8.78	100.0	V	84.0	11.8

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.000000	---	41.88	54.00	12.12	100.0	V	5.0	8.4
7439.000000	47.83	---	74.00	26.17	100.0	V	5.0	8.4
9919.458333	---	43.90	54.00	10.10	100.0	V	90.0	10.8
9920.441667	49.25	---	74.00	24.75	100.0	V	34.0	10.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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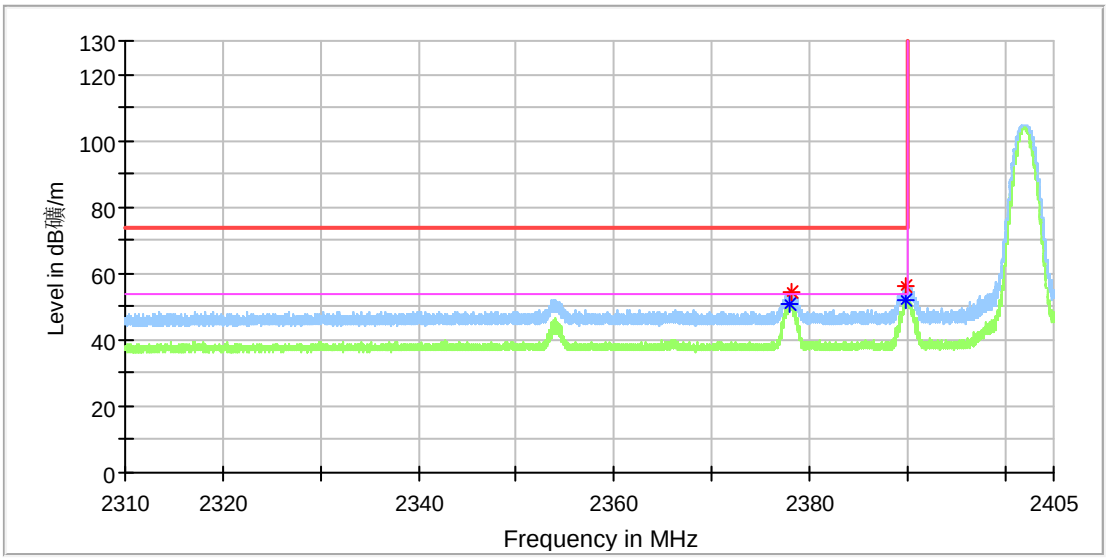
Appendix B.6: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

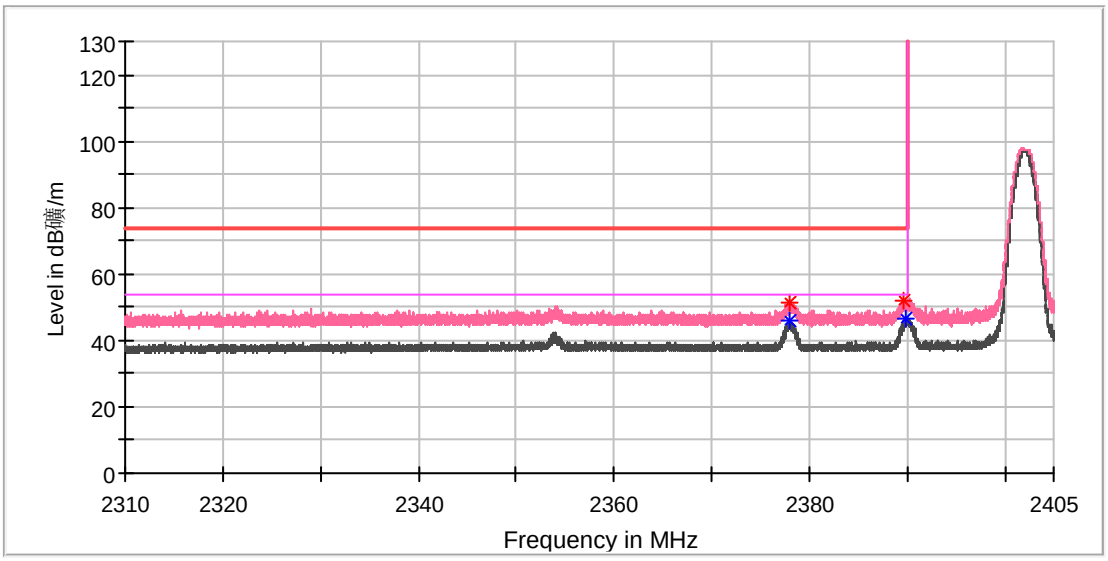
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2378.020000	---	50.16	54.00	3.84	100.0	H	303.0	6.9
2378.157750	54.38	---	74.00	19.62	100.0	H	303.0	6.9
2389.842750	56.36	---	74.00	17.64	100.0	H	303.0	7.0
2389.890250	---	50.94	54.00	3.06	100.0	H	303.0	7.0

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_Low channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

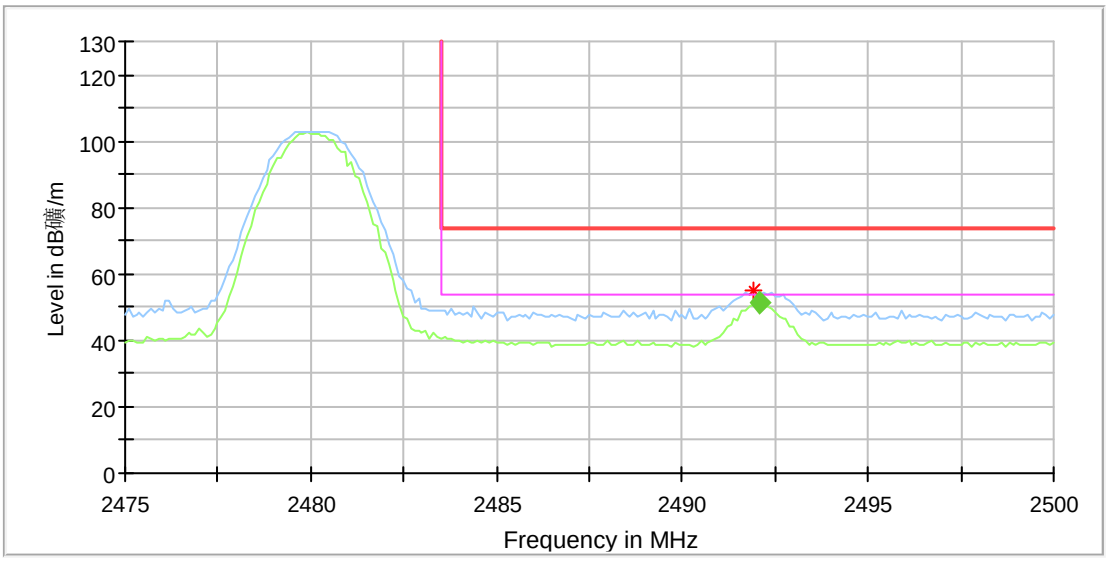
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2377.877500	---	45.86	54.00	8.14	100.0	V	207.0	6.9
2377.910750	51.15	---	74.00	22.85	100.0	V	295.0	6.9
2389.576750	51.91	---	74.00	22.09	100.0	V	295.0	7.0
2389.914000	---	46.63	54.00	7.37	100.0	V	174.0	7.0

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

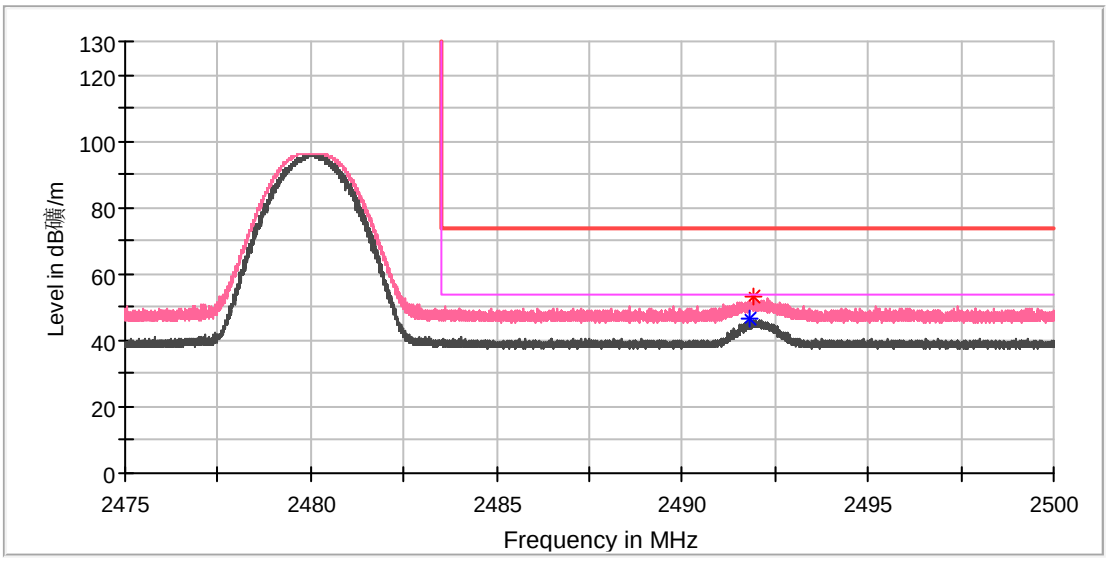
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.900000	54.81	---	74.00	19.19	100.0	H	312.0	7.4

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2492.106550	50.77	54.00	3.23	100.0	H	314.0	7.4

EUT Information

EUT Name:	Data Terminal
Model:	eCube-CP-AU
Test Mode:	BLE_High channel
Test Voltage::	DC 12V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.788750	---	46.27	54.00	7.73	100.0	V	173.0	7.4
2491.926250	53.05	---	74.00	20.95	100.0	V	150.0	7.4

Final_Result

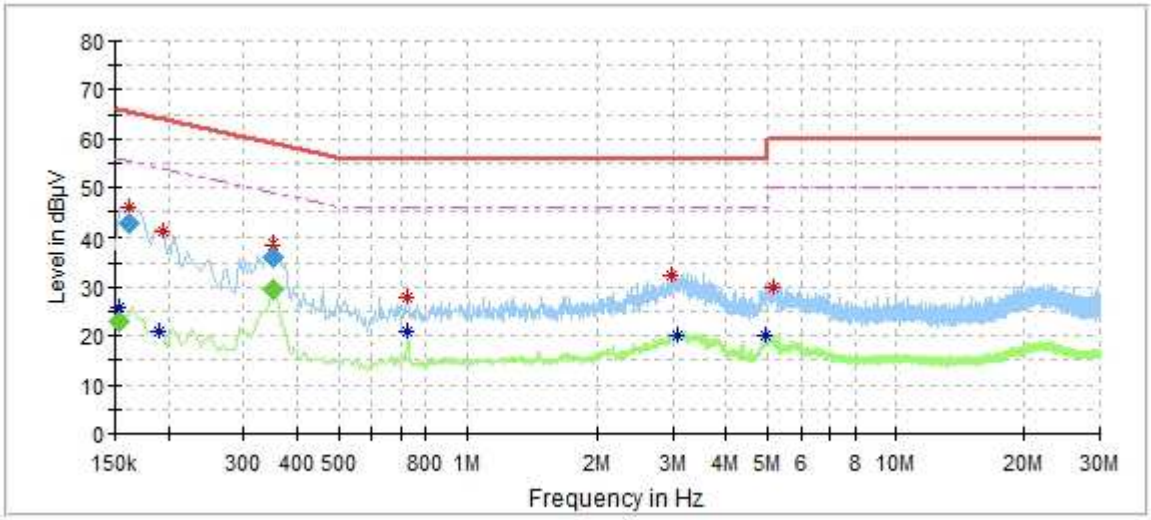
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

Appendix B.7: Test Plots of Conducted Emission on AC Mains

Normal operation mode

EUT Information

EUT Name:	Data Terminal
Order No.:	168313547
Model:	eCube-CP-AU
Test Mode:	ON
Test Voltage:	AC 120V/60Hz
Test By:	Jianhua Lu
Review By:	Gary Chen
Remark:	SR1



Critical_Freqs

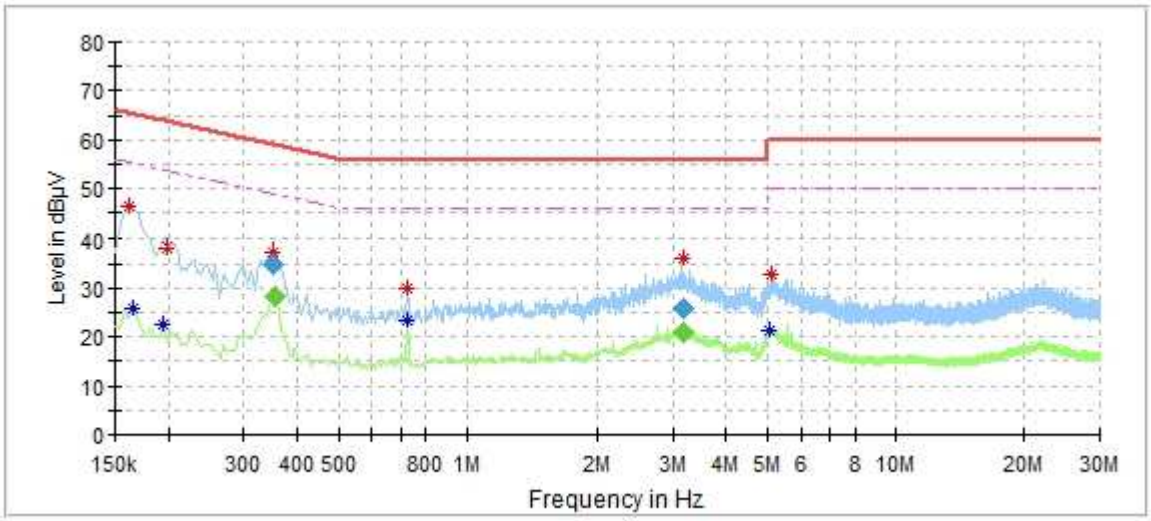
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.152500	---	25.86	55.16	29.30	L1	9.6
0.162000	45.99	---	65.36	19.37	L1	9.6
0.190000	---	20.84	54.04	33.20	L1	9.6
0.194000	41.21	---	63.86	22.66	L1	9.6
0.352500	38.41	---	58.87	20.46	L1	9.7
0.352500	---	29.63	48.87	19.24	L1	9.7
0.728000	---	20.98	46.00	25.02	L1	9.7
0.728000	27.73	---	56.00	28.27	L1	9.7
2.992000	32.40	---	56.00	23.60	L1	9.8
3.084000	---	20.05	46.00	25.95	L1	9.8
4.932000	---	20.11	46.00	25.89	L1	9.9
5.144000	30.14	---	60.00	29.86	L1	10.0

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.152500	---	22.82	55.86	33.04	200.0	9.000	L1	9.6
0.162000	42.61	---	65.36	22.75	200.0	9.000	L1	9.6
0.352500	---	29.71	48.90	19.20	200.0	9.000	L1	9.7
0.352500	35.93	---	58.90	22.98	200.0	9.000	L1	9.7

EUT Information

EUT Name:	Data Terminal
Order No.:	168313547
Model:	eCube-CP-AU
Test Mode:	ON
Test Voltage:	AC 120V/60Hz
Test By:	Jianhua Lu
Review By:	Gary Chen
Remark:	SR1



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.162000	46.55	---	65.36	18.81	N	9.6
0.166000	---	25.67	55.16	29.48	N	9.6
0.194000	---	22.68	53.86	31.18	N	9.6
0.198000	38.21	---	63.69	25.48	N	9.6
0.352500	37.32	---	58.96	21.65	N	9.7
0.356500	---	28.47	48.87	20.40	N	9.7
0.728000	---	23.26	46.00	22.74	N	9.7
0.728000	30.13	---	56.00	25.87	N	9.7
3.169500	36.28	---	56.00	19.72	N	9.8
3.170500	---	21.44	46.00	24.56	N	9.8
5.052000	---	21.42	50.00	28.58	N	9.9
5.104000	32.97	---	60.00	27.03	N	9.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.352500	34.85	---	58.90	24.05	200.0	9.000	N	9.7
0.356500	---	28.34	48.81	20.47	200.0	9.000	N	9.7
3.169500	25.90	---	56.00	30.10	200.0	9.000	N	9.8
3.170500	---	20.85	46.00	25.15	200.0	9.000	N	9.8