

Namespace BasicScanner.NativeMethods

Classes

[kernel32Methods](#)

Structs

[CHAR_INFO](#)

[COORD](#)

[SMALL_RECT](#)

Struct CHAR_INFO

Namespace: [BasicScanner.NativeMethods](#)

Assembly: BasicScanner.dll

```
public struct CHAR_INFO
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

Attributes

```
public short Attributes
```

Field Value

[short](#)

UnicodeChar

```
public char UnicodeChar
```

Field Value

[char](#)

Struct COORD

Namespace: [BasicScanner.NativeMethods](#)

Assembly: BasicScanner.dll

```
public struct COORD
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

COORD(short, short)

```
public COORD(short x, short y)
```

Parameters

x [short](#)

y [short](#)

Fields

X

```
public short X
```

Field Value

[short](#)

Y

```
public short Y
```

Field Value

[short](#) ↗

Struct SMALL_RECT

Namespace: [BasicScanner.NativeMethods](#)

Assembly: BasicScanner.dll

```
public struct SMALL_RECT
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

Bottom

```
public short Bottom
```

Field Value

[short](#)

Left

```
public short Left
```

Field Value

[short](#)

Right

```
public short Right
```

Field Value

[short ↗](#)

Top

`public short Top`

Field Value

[short ↗](#)

Class kernel32Methods

Namespace: [BasicScanner.NativeMethods](#)

Assembly: BasicScanner.dll

```
public static class kernel32Methods
```

Inheritance

[object](#) ← kernel32Methods

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

STD_OUTPUT_HANDLE

```
public const int STD_OUTPUT_HANDLE = -11
```

Field Value

[int](#)

Methods

GetStdHandle(int)

```
public static extern nint GetStdHandle(int nStdHandle)
```

Parameters

nStdHandle [int](#)

Returns

[nint](#)

WriteConsoleOutputW(nint, CHAR_INFO*, COORD, COORD, ref
SMALL_RECT)

```
public static extern bool WriteConsoleOutputW(nint hConsoleOutput, CHAR_INFO* lpBuffer,  
COORD dwBufferSize, COORD dwBufferCoord, ref SMALL_RECT lpWriteRegion)
```

Parameters

hConsoleOutput [nint](#)

lpBuffer [CHAR_INFO*](#)

dwBufferSize [COORD](#)

dwBufferCoord [COORD](#)

lpWriteRegion [SMALL_RECT](#)

Returns

[bool](#)

Namespace BasicScanner.Services

Classes

[SpectrumDisplayService](#)

Class SpectrumDisplayService

Namespace: [BasicScanner.Services](#)

Assembly: BasicScanner.dll

```
public class SpectrumDisplayService
```

Inheritance

[object](#) ← SpectrumDisplayService

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SpectrumDisplayService()

```
public SpectrumDisplayService()
```

Methods

StartAsync(DigitalRadioDevice, SignalStream, CancellationToken)

```
public Task StartAsync(DigitalRadioDevice rfDevice, SignalStream signalStream,  
CancellationToken cancellationToken)
```

Parameters

rfDevice [DigitalRadioDevice](#)

signalStream [SignalStream](#)

cancellationToken [CancellationToken](#)

Returns

Task ↗

Namespace FftwF.Dotnet

Classes

[Direction](#)

[FftwPlan](#)

[Limits](#)

Enums

[FftwFlags](#)

Class Direction

Namespace: [FftwF.Dotnet](#)

Assembly: FftwF.Dotnet.dll

```
public static class Direction
```

Inheritance

[object](#) ← Direction

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

Backward

```
public const int Backward = 1
```

Field Value

[int](#)

Forward

```
public const int Forward = -1
```

Field Value

[int](#)

Enum FftwFlags

Namespace: [FftwF.Dotnet](#)

Assembly: FftwF.Dotnet.dll

```
[Flags]
public enum FftwFlags : uint
```

Fields

AllowLargeGeneric = 8192

AllowPruning = 1048576

BelievePcost = 256

ConserveMemory = 4

DestroyInput = 1

Estimate = 64

EstimatePatient = 128

Exhaustive = 8

Measure = 0

NoBuffering = 2048

NoDftR2Hc = 512

NoFixedRadixLargeN = 524288

NoIndirectOp = 4096

NoNonthreaded = 1024

NoRankSplits = 16384

NoSimd = 131072

NoSlow = 262144

NoVrankSplits = 32768

NoVrecourse = 65536

Patient = 32

PreserveInput = 16

Unaligned = 2

WisdomOnly = 2097152

Class FftwPlan

Namespace: [FftwF.Dotnet](#)

Assembly: FftwF.Dotnet.dll

```
public class FftwPlan : IDisposable
```

Inheritance

[object](#) ← FftwPlan

Implements

[IDisposable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

FftwPlan(int, Span<Complex32>, Span<Complex32>, bool, FftwFlags)

```
public FftwPlan(int length, Span<Complex32> complexIn, Span<Complex32> complexOut, bool  
forward = true, FftwFlags flags = FftwFlags.Measure)
```

Parameters

length [int](#)

complexIn [Span](#)<Complex32>

complexOut [Span](#)<Complex32>

forward [bool](#)

flags [FftwFlags](#)

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

Execute()

```
public void Execute()
```

Class Limits

Namespace: [FftwF.Dotnet](#)

Assembly: FftwF.Dotnet.dll

```
public static class Limits
```

Inheritance

[object](#) ← Limits

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

NoTimeLimit

```
public const double NoTimeLimit = -1
```

Field Value

[double](#)

Namespace FftwF.Dotnet.Native

Classes

[NativeMethods](#)

Class NativeMethods

Namespace: [FftwF.Dotnet.Native](#)

Assembly: FftwF.Dotnet.dll

```
public class NativeMethods
```

Inheritance

[object](#) ← NativeMethods

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Fields

FFTW_BACKWARD

```
public const int FFTW_BACKWARD = 1
```

Field Value

[int](#)

FFTW_FORWARD

```
public const int FFTW_FORWARD = -1
```

Field Value

[int](#)

FFTW_NO_TIMELIMIT

```
public const float FFTW_NO_TIMELIMIT = -1
```

Field Value

[float](#)

Methods

DestroyPlan(void*)

```
public static extern void DestroyPlan(void* plan)
```

Parameters

plan [void](#)*

ExecutePlan(void*)

```
public static extern void ExecutePlan(void* plan)
```

Parameters

plan [void](#)*

GetSingleDimensionDftPlan(int, Complex32*, Complex32*, int, FftwFlags)

```
public static extern void* GetSingleDimensionDftPlan(int n, Complex32* input, Complex32* output, int sign, FftwFlags flags)
```

Parameters

n [int](#)

input Complex32*

output Complex32*

sign [int](#)*

flags [FftwFlags](#)

Returns

[void](#)*

Namespace HackRFDotnet.Benchmarks

Classes

[IQConvertBytesBenchmarks](#)

[IQCorrectionBenchmarks](#)

[Program](#)

Class IQConvertBytesBenchmarks

Namespace: [HackRFDotnet.Benchmarks](#)

Assembly: HackRFDotnet.Benchmarks.dll

```
public class IQConvertBytesBenchmarks
```

Inheritance

[object](#) ← IQConvertBytesBenchmarks

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Properties

IqBytesLength

```
[Params(new object?[] { 262144 })]  
public int IqBytesLength { get; set; }
```

Property Value

[int](#)

Methods

IQConvertBytes_QuadAccess()

```
[Benchmark(26,  
"C:\\\\Users\\\\poofi\\\\source\\\\repos\\\\HackRFDotnet\\\\HackRFDotnet.Benchmarks\\\\IQConvertBytesBench  
marks.cs")]  
public Complex[] IQConvertBytes_QuadAccess()
```

Returns

[Complex](#)[]

IQConvertBytes_SingleAccess()

```
[Benchmark(58,
"C:\\\\Users\\\\poofi\\\\source\\\\repos\\\\HackRFDotnet\\\\HackRFDotnet.Benchmarks\\\\IQConvertBytesBench
marks.cs", Baseline = true)]
public Complex[] IQConvertBytes_SingleAccess()
```

Returns

[Complex](#)[]

Setup()

```
[GlobalSetup]
public void Setup()
```

Class IQCorrectionBenchmarks

Namespace: [HackRFDotnet.Benchmarks](#)

Assembly: HackRFDotnet.Benchmarks.dll

```
public class IQCorrectionBenchmarks
```

Inheritance

[object](#) ← IQCorrectionBenchmarks

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Properties

IqLength

```
[Params(new object?[] { 131072 })]  
public int IqLength { get; set; }
```

Property Value

[int](#)

Methods

IQCorrection_QuadAccess()

```
[Benchmark(27,  
"C:\\\\Users\\\\poofi\\\\source\\\\repos\\\\HackRFDotnet\\\\HackRFDotnet.Benchmarks\\\\IQCorrectionBenchma  
rks.cs")]  
public Complex[] IQCorrection_QuadAccess()
```

Returns

[Complex](#)[]

IQCorrection_SingleAccess()

```
[Benchmark(69,
"C:\\\\Users\\\\poofi\\\\source\\\\repos\\\\HackRFDotnet\\\\HackRFDotnet.Benchmarks\\\\IQCorrectionBenchma
rks.cs", Baseline = true)]
public Complex[] IQCorrection_SingleAccess()
```

Returns

[Complex](#)[]

Setup()

```
[GlobalSetup]
public void Setup()
```

Class Program

Namespace: [HackRFDotnet.Benchmarks](#)

Assembly: HackRFDotnet.Benchmarks.dll

```
public static class Program
```

Inheritance

[object](#) ← Program

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Main(string[])

```
public static void Main(string[] args)
```

Parameters

args [string](#)[]

Namespace HackRFDotnet.ManagedApi

Classes

[DigitalRadioDevice](#)

Class DigitalRadioDevice

Namespace: [HackRFDotnet.ManagedApi](#)

Assembly: HackRFDotnet.dll

```
public class DigitalRadioDevice : IDisposable
```

Inheritance

[object](#) ← DigitalRadioDevice

Implements

[IDisposable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Extension Methods

[RfDeviceExtensions.AttenuateAmplification\(DigitalRadioDevice\)](#)

Fields

DevicePtr

```
public readonly HackRFDevice* DevicePtr
```

Field Value

[HackRFDevice](#)*

Properties

Bandwidth

```
public RadioBand Bandwidth { get; set; }
```

Property Value

[RadioBand](#)

DeviceSamplingRate

```
public SampleRate DeviceSamplingRate { get; set; }
```

Property Value

[SampleRate](#)

Frequency

```
public RadioBand Frequency { get; set; }
```

Property Value

[RadioBand](#)

IsConnected

```
public bool IsConnected { get; }
```

Property Value

[bool](#) 

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

SetAmplifications(uint, uint, bool)

```
public void SetAmplifications(uint lna, uint vga, bool internalAmp)
```

Parameters

lna [uint](#)

vga [uint](#)

internalAmp [bool](#)

SetFrequency(RadioBand)

```
public bool SetFrequency(RadioBand radioFrequency)
```

Parameters

radioFrequency [RadioBand](#)

Returns

[bool](#)

SetFrequency(RadioBand, RadioBand)

```
public bool SetFrequency(RadioBand radioFrequency, RadioBand bandwidth)
```

Parameters

radioFrequency [RadioBand](#)

bandwidth [RadioBand](#)

Returns

[bool](#)

SetSampleRate(SampleRate)

```
public void SetSampleRate(SampleRate sampleRate)
```

Parameters

sampleRate [SampleRate](#)

StartRx(HackRFSampleBlockCallback)

```
public bool StartRx(HackRFSampleBlockCallback rxCallback)
```

Parameters

rxCallback [HackRFSampleBlockCallback](#)

Returns

[bool](#)

StopRx()

```
public bool StopRx()
```

Returns

[bool](#)

Namespace HackRFDotnet.ManagedApi.Extensions

Classes

[RfDeviceExtensions](#)

Class RfDeviceExtensions

Namespace: [HackRFDotnet.ManagedApi.Extensions](#)

Assembly: HackRFDotnet.dll

```
public static class RfDeviceExtensions
```

Inheritance

[object](#) ← RfDeviceExtensions

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

AttenuateAmplification(DigitalRadioDevice)

```
public static void AttenuateAmplification(this DigitalRadioDevice rfDevice)
```

Parameters

rfDevice [DigitalRadioDevice](#)

Namespace HackRFDotnet.ManagedApi.Services

Classes

[AnaloguePlayer](#)

[DigitalPlayer](#)

[RfDeviceControllerService](#)

Class AnaloguePlayer

Namespace: [HackRFDotnet.ManagedApi.Services](#)

Assembly: HackRFDotnet.dll

```
public class AnaloguePlayer : IDisposable
```

Inheritance

[object](#) ← AnaloguePlayer

Implements

[IDisposable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

AnaloguePlayer(WaveSignalStream)

```
public AnaloguePlayer(WaveSignalStream signalStream)
```

Parameters

signalStream [WaveSignalStream](#)

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

PlayStreamAsync(RadioBand, RadioBand, int)

```
public virtual void PlayStreamAsync(RadioBand centerOffset, RadioBand bandwidth,  
int audioRate)
```

Parameters

centerOffset [RadioBand](#)

bandwidth [RadioBand](#)

audioRate [int](#)

Class DigitalPlayer

Namespace: [HackRFDotnet.ManagedApi.Services](#)

Assembly: HackRFDotnet.dll

```
public class DigitalPlayer : IDisposable
```

Inheritance

[object](#) ← DigitalPlayer

Implements

[IDisposable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

DigitalPlayer(HdRadioSignalStream)

```
public DigitalPlayer(HdRadioSignalStream sampleDeModulator)
```

Parameters

sampleDeModulator [HdRadioSignalStream](#)

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

PlayStreamAsync(RadioBand, RadioBand, int)

```
public virtual void PlayStreamAsync(RadioBand centerOffset, RadioBand bandwidth,  
int audioRate)
```

Parameters

centerOffset [RadioBand](#)

bandwidth [RadioBand](#)

audioRate [int](#)

Class RfDeviceControllerService

Namespace: [HackRFDotnet.ManagedApi.Services](#)

Assembly: HackRFDotnet.dll

```
public class RfDeviceControllerService
```

Inheritance

[object](#) ← RfDeviceControllerService

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

RfDeviceControllerService()

```
public RfDeviceControllerService()
```

Fields

RfDevices

```
public readonly List<DigitalRadioDevice> RfDevices
```

Field Value

[List](#)<[DigitalRadioDevice](#)>

Methods

ConnectToFirstDevice()

```
public DigitalRadioDevice? ConnectToFirstDevice()
```

Returns

[DigitalRadioDevice](#)

FindDevices()

```
public HackRFDeviceList FindDevices()
```

Returns

[HackRFDeviceList](#)

Namespace HackRFDotnet.ManagedApi.Streams

Classes

[SweepingIQStream](#)

Structs

[IQ](#)

[InterleavedSample](#)

Struct IQ

Namespace: [HackRFDotnet.ManagedApi.Streams](#)

Assembly: HackRFDotnet.dll

```
public struct IQ : IEquatable<IQ>, IFormattable
```

Implements

[IEquatable](#)<[IQ](#)>, [IFormattable](#)

Inherited Members

[object.Equals\(object, object\)](#), [object.GetType\(\)](#), [object.ReferenceEquals\(object, object\)](#)

Constructors

[IQ\(InterleavedSample\)](#)

```
public IQ(InterleavedSample interleavedSample)
```

Parameters

interleavedSample [InterleavedSample](#)

[IQ\(float, float\)](#)

```
public IQ(float real, float imaginary)
```

Parameters

real [float](#)

imaginary [float](#)

Fields

ImaginaryOne

```
public static readonly IQ ImaginaryOne
```

Field Value

[IQ](#)

Infinity

```
public static readonly IQ Infinity
```

Field Value

[IQ](#)

NaN

```
public static readonly IQ NaN
```

Field Value

[IQ](#)

One

```
public static readonly IQ One
```

Field Value

[IQ](#)

Zero

```
public static readonly IQ Zero
```

Field Value

[IQ](#)

Properties

|

Real

```
public float I { get; set; }
```

Property Value

[float](#) ↗

Magnitude

```
public float Magnitude { get; }
```

Property Value

[float](#) ↗

Phase

```
public float Phase { get; }
```

Property Value

[float](#) ↗

Q

Imaginary

```
public float Q { get; set; }
```

Property Value

[float](#)

Methods

Abs(IQ)

```
public static float Abs(IQ value)
```

Parameters

[value](#) [IQ](#)

Returns

[float](#)

Acos(IQ)

```
public static IQ Acos(IQ value)
```

Parameters

[value](#) [IQ](#)

Returns

[IQ](#)

Add(IQ, IQ)

```
public static IQ Add(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

Add(IQ, float)

```
public static IQ Add(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#)

Returns

[IQ](#)

Add(float, IQ)

```
public static IQ Add(float left, IQ right)
```

Parameters

left [float](#)

right [IQ](#)

Returns

[IQ](#)

Asin(IQ)

```
public static IQ Asin(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Atan(IQ)

```
public static IQ Atan(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Conjugate(IQ)

```
public static IQ Conjugate(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Cos(IQ)

```
public static IQ Cos(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Cosh(IQ)

```
public static IQ Cosh(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Divide(IQ, IQ)

```
public static IQ Divide(IQ dividend, IQ divisor)
```

Parameters

dividend [IQ](#)

`divisor` [IQ](#)

Returns

[IQ](#)

Divide(IQ, float)

```
public static IQ Divide(IQ dividend, float divisor)
```

Parameters

`dividend` [IQ](#)

`divisor` [float](#)

Returns

[IQ](#)

Divide(float, IQ)

```
public static IQ Divide(float dividend, IQ divisor)
```

Parameters

`dividend` [float](#)

`divisor` [IQ](#)

Returns

[IQ](#)

Equals(IQ)

Indicates whether the current object is equal to another object of the same type.

```
public bool Equals(IQ value)
```

Parameters

value [IQ](#)

Returns

[bool](#)

[true](#) if the current object is equal to the **other** parameter; otherwise, [false](#).

Equals(object?)

Indicates whether this instance and a specified object are equal.

```
public override bool Equals(object? obj)
```

Parameters

obj [object](#)

The object to compare with the current instance.

Returns

[bool](#)

[true](#) if **obj** and this instance are the same type and represent the same value; otherwise, [false](#).

Exp(IQ)

```
public static IQ Exp(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

FromPolarCoordinates(float, float)

```
public static IQ FromPolarCoordinates(float magnitude, float phase)
```

Parameters

magnitude [float](#)

phase [float](#)

Returns

[IQ](#)

GetHashCode()

Returns the hash code for this instance.

```
public override int GetHashCode()
```

Returns

[int](#)

A 32-bit signed integer that is the hash code for this instance.

IsFinite(IQ)

```
public static bool IsFinite(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[bool](#) ↗

IsInfinity(IQ)

```
public static bool IsInfinity(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[bool](#) ↗

IsNaN(IQ)

```
public static bool IsNaN(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[bool](#) ↗

Log(IQ)

```
public static IQ Log(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[IQ](#)

Log(IQ, float)

```
public static IQ Log(IQ value, float baseValue)
```

Parameters

`value` [IQ](#)

`baseValue` [float](#)

Returns

[IQ](#)

Log10(IQ)

```
public static IQ Log10(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[IQ](#)

Multiply(IQ, IQ)

```
public static IQ Multiply(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

Multiply(IQ, float)

```
public static IQ Multiply(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#) ↗

Returns

[IQ](#)

Multiply(float, IQ)

```
public static IQ Multiply(float left, IQ right)
```

Parameters

left [float](#) ↗

right [IQ](#)

Returns

[IQ](#)

Negate(IQ)

```
public static IQ Negate(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Pow(IQ, IQ)

```
public static IQ Pow(IQ value, IQ power)
```

Parameters

value [IQ](#)

power [IQ](#)

Returns

[IQ](#)

Pow(IQ, float)

```
public static IQ Pow(IQ value, float power)
```

Parameters

value [IQ](#)

power [float](#)

Returns

[IQ](#)

Reciprocal(IQ)

```
public static IQ Reciprocal(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Sin(IQ)

```
public static IQ Sin(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Sinh(IQ)

```
public static IQ Sinh(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Sqrt(IQ)

```
public static IQ Sqrt(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Subtract(IQ, IQ)

```
public static IQ Subtract(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

Subtract(IQ, float)

```
public static IQ Subtract(IQ left, float right)
```

Parameters

left [IQ](#)

`right float` ↗

Returns

[IQ](#)

Subtract(float, IQ)

```
public static IQ Subtract(float left, IQ right)
```

Parameters

`left float` ↗

`right IQ`

Returns

[IQ](#)

Tan(IQ)

```
public static IQ Tan(IQ value)
```

Parameters

`value IQ`

Returns

[IQ](#)

Tanh(IQ)

```
public static IQ Tanh(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

ToString()

Returns the fully qualified type name of this instance.

```
public override string ToString()
```

Returns

[string](#)

The fully qualified type name.

ToString(IFormatProvider?)

```
public string ToString(IFormatProvider? provider)
```

Parameters

provider [IFormatProvider](#)

Returns

[string](#)

ToString(string?)

```
public string ToString(string? format)
```

Parameters

format [string](#)

Returns

[string](#)

ToString(string?, IFormatProvider?)

Formats the value of the current instance using the specified format.

```
public string ToString(string? format, IFormatProvider? provider)
```

Parameters

format [string](#)

The format to use.

-or-

A null reference ([Nothing](#) in Visual Basic) to use the default format defined for the type of the [IFormattable](#) implementation.

provider [IFormatProvider](#)

Returns

[string](#)

The value of the current instance in the specified format.

Operators

operator +(IQ, IQ)

```
public static IQ operator +(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

operator +(IQ, float)

```
public static IQ operator +(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#)↗

Returns

[IQ](#)

operator +(float, IQ)

```
public static IQ operator +(float left, IQ right)
```

Parameters

left [float](#)↗

right [IQ](#)

Returns

[IQ](#)

operator /(IQ, IQ)

```
public static IQ operator /(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

operator /(IQ, float)

```
public static IQ operator /(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#) ↗

Returns

[IQ](#)

operator /(float, IQ)

```
public static IQ operator /(float left, IQ right)
```

Parameters

left [float](#) ↗

right [IQ](#)

Returns

[IQ](#)

operator ==(IQ, IQ)

```
public static bool operator ==(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[bool](#)

explicit operator IQ(decimal)

```
public static explicit operator IQ(decimal value)
```

Parameters

value [decimal](#)

Returns

[IQ](#)

implicit operator Complex(IQ)

```
public static implicit operator Complex(IQ value)
```

Parameters

`value` [IQ](#)

Returns

[Complex](#)

implicit operator IQ(byte)

```
public static implicit operator IQ(byte value)
```

Parameters

`value` [byte](#)

Returns

[IQ](#)

implicit operator IQ(char)

```
public static implicit operator IQ(char value)
```

Parameters

`value` [char](#)

Returns

[IQ](#)

implicit operator IQ(Half)

```
public static implicit operator IQ(Half value)
```

Parameters

value [Half](#)

Returns

[IQ](#)

implicit operator IQ(short)

```
public static implicit operator IQ(short value)
```

Parameters

value [short](#)

Returns

[IQ](#)

implicit operator IQ(int)

```
public static implicit operator IQ(int value)
```

Parameters

value [int](#)

Returns

[IQ](#)

implicit operator IQ(long)

```
public static implicit operator IQ(long value)
```

Parameters

value [long](#)

Returns

[IQ](#)

implicit operator IQ(nint)

```
public static implicit operator IQ(nint value)
```

Parameters

value [nint](#)

Returns

[IQ](#)

implicit operator IQ(Complex)

```
public static implicit operator IQ(Complex value)
```

Parameters

value [Complex](#)

Returns

[IQ](#)

implicit operator IQ(sbyte)

```
public static implicit operator IQ(sbyte value)
```

Parameters

`value sbyte`

Returns

`IQ`

implicit operator IQ(float)

```
public static implicit operator IQ(float value)
```

Parameters

`value float`

Returns

`IQ`

implicit operator IQ(ushort)

```
public static implicit operator IQ(ushort value)
```

Parameters

`value ushort`

Returns

`IQ`

implicit operator IQ(uint)

```
public static implicit operator IQ(uint value)
```

Parameters

value [uint](#)

Returns

[IQ](#)

implicit operator IQ(ulong)

```
public static implicit operator IQ(ulong value)
```

Parameters

value [ulong](#)

Returns

[IQ](#)

implicit operator IQ(nuint)

```
public static implicit operator IQ(nuint value)
```

Parameters

value [nuint](#)

Returns

[IQ](#)

operator !=(IQ, IQ)

```
public static bool operator !=(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[bool](#) ↗

operator *(IQ, IQ)

```
public static IQ operator *(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

operator *(IQ, float)

```
public static IQ operator *(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#) ↗

Returns

[IQ](#)

operator *(float, IQ)

```
public static IQ operator *(float left, IQ right)
```

Parameters

left [float](#)

right [IQ](#)

Returns

[IQ](#)

operator -(IQ, IQ)

```
public static IQ operator -(IQ left, IQ right)
```

Parameters

left [IQ](#)

right [IQ](#)

Returns

[IQ](#)

operator -(IQ, float)

```
public static IQ operator -(IQ left, float right)
```

Parameters

left [IQ](#)

right [float](#)

Returns

operator -(float, IQ)

```
public static IQ operator -(float left, IQ right)
```

Parameters

left [float](#)

right [IQ](#)

Returns

[IQ](#)

operator -(IQ)

```
public static IQ operator -(IQ value)
```

Parameters

value [IQ](#)

Returns

[IQ](#)

Struct InterleavedSample

Namespace: [HackRFDotnet.ManagedApi.Streams](#)

Assembly: HackRFDotnet.dll

```
public struct InterleavedSample
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

|

```
public sbyte I
```

Field Value

[sbyte](#)

Q

```
public sbyte Q
```

Field Value

[sbyte](#)

Methods

Clone()

```
public InterleavedSample Clone()
```

Returns

[InterleavedSample](#)

Class SweepingIQStream

Namespace: [HackRFDotnet.ManagedApi.Streams](#)

Assembly: HackRFDotnet.dll

```
public class SweepingIQStream
```

Inheritance

[object](#) ← SweepingIQStream

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SweepingIQStream()

```
public SweepingIQStream()
```

Namespace HackRFDotnet.ManagedApi.Streams.Device

Classes

[IQDeviceStream](#)

[IQFileStream](#)

Class IQDeviceStream

Namespace: [HackRFDotnet.ManagedApi.Streams.Device](#)

Assembly: HackRFDotnet.dll

```
public class IQDeviceStream : IDisposable, IIQStream
```

Inheritance

[object](#) ← IQDeviceStream

Implements

[IDisposable](#), [IIQStream](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

IQDeviceStream(DigitalRadioDevice)

```
public IQDeviceStream(DigitalRadioDevice rfDevice)
```

Parameters

rfDevice [DigitalRadioDevice](#)

Properties

BufferLength

```
public int BufferLength { get; }
```

Property Value

[int](#)

Frequency

```
public RadioBand Frequency { get; }
```

Property Value

[RadioBand](#)

SampleRate

```
public SampleRate SampleRate { get; }
```

Property Value

[SampleRate](#)

Methods

Close()

```
public void Close()
```

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

OpenRx(SampleRate?)

```
public void OpenRx(SampleRate? sampleRate = null)
```

Parameters

`sampleRate` [SampleRate](#)

ReadBuffer(Span<IQ>)

```
public int ReadBuffer(Span<IQ> iqBuffer)
```

Parameters

`iqBuffer` [Span](#)<[IQ](#)>

Returns

[int](#)

SetSampleRate(SampleRate)

```
public void SetSampleRate(SampleRate sampleRate)
```

Parameters

`sampleRate` [SampleRate](#)

TxBuffer(Span<IQ>)

```
public int TxBuffer(Span<IQ> iqFrame)
```

Parameters

`iqFrame` [Span](#)<[IQ](#)>

Returns

[int](#)

Class IQFileStream

Namespace: [HackRFDotnet.ManagedApi.Streams.Device](#)

Assembly: HackRFDotnet.dll

```
public class IQFileStream : IIQStream, IDisposable
```

Inheritance

[object](#) ← IQFileStream

Implements

[IIQStream](#), [IDisposable](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

IQFileStream(string)

```
public IQFileStream(string fileName)
```

Parameters

fileName [string](#)

Properties

BufferLength

```
public int BufferLength { get; }
```

Property Value

[int](#)

Frequency

```
public RadioBand Frequency { get; set; }
```

Property Value

[RadioBand](#)

SampleRate

```
public SampleRate SampleRate { get; set; }
```

Property Value

[SampleRate](#)

Methods

Close()

```
public void Close()
```

Dispose()

```
public void Dispose()
```

OpenRx(SampleRate?)

```
public void OpenRx(SampleRate? sampleRate = null)
```

Parameters

`sampleRate` [SampleRate](#)

ReadBuffer(Span<IQ>)

```
public int ReadBuffer(Span<IQ> iqFrame)
```

Parameters

`iqFrame` [Span](#)<IQ>

Returns

[int](#)

SetSampleRate(SampleRate)

```
public void SetSampleRate(SampleRate sampleRate)
```

Parameters

`sampleRate` [SampleRate](#)

TxBuffer(Span<IQ>)

```
public int TxBuffer(Span<IQ> iqFrame)
```

Parameters

`iqFrame` [Span](#)<IQ>

Returns

[int](#)

WriteBuffer(Span<byte>)

```
public int WriteBuffer(Span<byte> iqFrame)
```

Parameters

`iqFrame` [Span<byte>](#)

Returns

[int](#)

Namespace HackRFDotnet.ManagedApi. Streams.Exceptions

Classes

[NullCallbackException](#)

Class NullCallbackException

Namespace: [HackRFDotnet.ManagedApi.Streams.Exceptions](#)

Assembly: HackRFDotnet.dll

```
public class NullCallbackException : Exception, ISerializable
```

Inheritance

[object](#) ← [Exception](#) ← NullCallbackException

Implements

[ISerializable](#)

Inherited Members

[Exception.GetBaseException\(\)](#) , [Exception.GetType\(\)](#) , [Exception.ToString\(\)](#) , [Exception.Data](#) ,
[Exception.HelpLink](#) , [Exception.HResult](#) , [Exception.InnerException](#) , [Exception.Message](#) ,
[Exception.Source](#) , [Exception.StackTrace](#) , [Exception.TargetSite](#) , [Exception.SerializeObjectState](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

NullCallbackException(string?)

```
public NullCallbackException(string? message)
```

Parameters

message [string](#)

Namespace HackRFDotnet.ManagedApi.

Streams.Interfaces

Interfaces

[IQStream](#)

Interface IIQStream

Namespace: [HackRFDotnet.ManagedApi.Streams.Interfaces](#)

Assembly: HackRFDotnet.dll

```
public interface IIQStream
```

Properties

BufferLength

```
int BufferLength { get; }
```

Property Value

[int](#)

Frequency

```
RadioBand Frequency { get; }
```

Property Value

[RadioBand](#)

SampleRate

```
SampleRate SampleRate { get; }
```

Property Value

[SampleRate](#)

Methods

Close()

```
void Close()
```

Dispose()

```
void Dispose()
```

OpenRx(SampleRate?)

```
void OpenRx(SampleRate? sampleRate = null)
```

Parameters

sampleRate [SampleRate](#)

ReadBuffer(Span<IQ>)

```
int ReadBuffer(Span<IQ> iqBuffer)
```

Parameters

iqBuffer [Span](#)<[IQ](#)>

Returns

[int](#)

SetSampleRate(SampleRate)

```
void SetSampleRate(SampleRate sampleRate)
```

Parameters

sampleRate [SampleRate](#)

TxBuffer(Span<IQ>)

```
int TxBuffer(Span<IQ> iqFrame)
```

Parameters

iqFrame [Span](#)<IQ>

Returns

[int](#)

Namespace HackRFDotnet.ManagedApi.Streams.SignalProcessing

Classes

[RadioBand](#)

[SampleRate](#)

[SignalProcessingBuilder](#)

[SignalProcessingPipeline](#)

Class RadioBand

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing](#)

Assembly: HackRFDotnet.dll

```
public class RadioBand
```

Inheritance

[object](#) ← RadioBand

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

RadioBand(int)

```
public RadioBand(int hz)
```

Parameters

hz [int](#)

Properties

Hz

```
public int Hz { get; }
```

Property Value

[int](#)

Khz

```
public float Khz { get; }
```

Property Value

[float ↗](#)

Mhz

```
public float Mhz { get; }
```

Property Value

[float ↗](#)

NyquistSampleRate

```
public SampleRate NyquistSampleRate { get; }
```

Property Value

[SampleRate](#)

Methods

FromHz(int)

```
public static RadioBand FromHz(int hz)
```

Parameters

hz [int ↗](#)

Returns

[RadioBand](#)

FromKHz(float)

```
public static RadioBand FromKHz(float khz)
```

Parameters

khz [float](#)

Returns

[RadioBand](#)

FromMHz(float)

```
public static RadioBand FromMHz(float mhz)
```

Parameters

mhz [float](#)

Returns

[RadioBand](#)

Operators

operator +(RadioBand, RadioBand)

```
public static RadioBand operator +(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[RadioBand](#)

operator /(RadioBand, int)

```
public static RadioBand operator /(RadioBand a, int b)
```

Parameters

a [RadioBand](#)

b [int](#)

Returns

[RadioBand](#)

operator ==(RadioBand, RadioBand)

```
public static bool operator ==(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#)

operator >(RadioBand, RadioBand)

```
public static bool operator >(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#) ↗

operator >=(RadioBand, RadioBand)

```
public static bool operator >=(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#) ↗

operator !=(RadioBand, RadioBand)

```
public static bool operator !=(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#)

operator <(RadioBand, RadioBand)

```
public static bool operator <(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#)

operator <=(RadioBand, RadioBand)

```
public static bool operator <=(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[bool](#)

operator %(RadioBand, RadioBand)

```
public static RadioBand operator %(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[RadioBand](#)

operator -(RadioBand, RadioBand)

```
public static RadioBand operator -(RadioBand a, RadioBand b)
```

Parameters

a [RadioBand](#)

b [RadioBand](#)

Returns

[RadioBand](#)

operator -(RadioBand)

```
public static RadioBand operator -(RadioBand a)
```

Parameters

a [RadioBand](#)

Returns

[RadioBand](#)

Class SampleRate

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing](#)

Assembly: HackRFDotnet.dll

```
public class SampleRate
```

Inheritance

[object](#) ← SampleRate

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SampleRate(int)

```
public SampleRate(int rate)
```

Parameters

rate [int](#)

Properties

Ksps

```
public float Ksps { get; }
```

Property Value

[float](#)

MspS

```
public float MspS { get; }
```

Property Value

[float](#)

NyquistFrequencyRange

```
public RadioBand NyquistFrequencyRange { get; }
```

Property Value

[RadioBand](#)

Sps

```
public int Sps { get; }
```

Property Value

[int](#)

Methods

FromKSpS(float)

```
public static SampleRate FromKSpS(float ksps)
```

Parameters

ksps [float](#)

Returns

[SampleRate](#)

FromMSps(float)

```
public static SampleRate FromMSps(float msp)
```

Parameters

msps [float](#)

Returns

[SampleRate](#)

FromSps(int)

```
public static SampleRate FromSps(int sps)
```

Parameters

sps [int](#)

Returns

[SampleRate](#)

Operators

operator +(SampleRate, SampleRate)

```
public static SampleRate operator +(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[SampleRate](#)

operator ==(SampleRate, SampleRate)

```
public static bool operator ==(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#) ↗

operator >(SampleRate, SampleRate)

```
public static bool operator >(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#) ↗

operator >=(SampleRate, SampleRate)

```
public static bool operator >=(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#) ↗

operator !=(SampleRate, SampleRate)

```
public static bool operator !=(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#) ↗

operator <(SampleRate, SampleRate)

```
public static bool operator <(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#)

operator <=(SampleRate, SampleRate)

```
public static bool operator <=(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[bool](#)

operator %(SampleRate, SampleRate)

```
public static SampleRate operator %(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[SampleRate](#)

operator -(SampleRate, SampleRate)

```
public static SampleRate operator -(SampleRate a, SampleRate b)
```

Parameters

a [SampleRate](#)

b [SampleRate](#)

Returns

[SampleRate](#)

operator -(SampleRate)

```
public static SampleRate operator -(SampleRate a)
```

Parameters

a [SampleRate](#)

Returns

[SampleRate](#)

Class SignalProcessingBuilder

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing](#)

Assembly: HackRFDotnet.dll

```
public class SignalProcessingBuilder
```

Inheritance

[object](#) ← SignalProcessingBuilder

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SignalProcessingBuilder()

```
public SignalProcessingBuilder()
```

Methods

AddSignalEffect(SignalEffect)

```
public SignalProcessingBuilder AddSignalEffect(SignalEffect signalEffect)
```

Parameters

signalEffect [SignalEffect](#)

Returns

[SignalProcessingBuilder](#)

BuildPipeline()

```
public SignalProcessingPipeline BuildPipeline()
```

Returns

[SignalProcessingPipeline](#)

Class SignalProcessingPipeline

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing](#)

Assembly: HackRFDotnet.dll

```
public class SignalProcessingPipeline
```

Inheritance

[object](#) ← SignalProcessingPipeline

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SignalProcessingPipeline(SignalEffect[])

```
public SignalProcessingPipeline(SignalEffect[] signalFxPipe)
```

Parameters

signalFxPipe [SignalEffect](#)[]

Methods

ApplyPipeline(Span<IQ>)

```
public int ApplyPipeline(Span<IQ> signalTheta)
```

Parameters

signalTheta [Span](#)<[IQ](#)>

Returns

int ↗

Namespace HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects

Classes

[BasicSignalScanningEffect](#)

[DownSampleEffect](#)

[DownSampleEffect](#) removes extraneous information from your signal using your desired bandwidth. Example: an FM radio's band is around 200 kHz; the minimum sample rate required to represent this is 400 kS/s (400,000 samples per second). It is recommended that you reduce the sample rate of your audio signal this way before further signal processing to save CPU.

[FftEffect](#)

[FrequencyCenteringEffect](#)

[LowPassFilterEffect](#)

[SignalEffect](#)

[SquelchEffect](#)

Class BasicSignalScanningEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public class BasicSignalScanningEffect : SignalEffect, ISignalEffect
```

Inheritance

[object](#) ← [SignalEffect](#) ← BasicSignalScanningEffect

Implements

[ISignalEffect](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

BasicSignalScanningEffect(DigitalRadioDevice, RadioBand,
RadioBand[])

```
public BasicSignalScanningEffect(DigitalRadioDevice digitalRadioDevice, RadioBand bandwidth,  
RadioBand[] scanChannels)
```

Parameters

digitalRadioDevice [DigitalRadioDevice](#)

bandwidth [RadioBand](#)

scanChannels [RadioBand\[\]](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

signalTheta [Span<IQ>](#)

length [int](#)

Returns

[int](#)

Class DownSampleEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

[DownSampleEffect](#) removes extraneous information from your signal using your desired bandwidth. Example: an FM radio's band is around 200 kHz; the minimum sample rate required to represent this is 400 kS/s (400,000 samples per second). It is recommended that you reduce the sample rate of your audio signal this way before further signal processing to save CPU.

```
public class DownSampleEffect : SignalEffect, ISignalEffect, IDisposable
```

Inheritance

[object](#) ← [SignalEffect](#) ← DownSampleEffect

Implements

[ISignalEffect](#), [IDisposable](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

DownSampleEffect(SampleRate, SampleRate, out SampleRate, out int)

```
public DownSampleEffect(SampleRate sampleRate, SampleRate reducedSampleRate, out SampleRate newSampleRate, out int producedChunkSize)
```

Parameters

sampleRate [SampleRate](#)

reducedSampleRate [SampleRate](#)

newSampleRate [SampleRate](#)

producedChunkSize [int](#)

DownSampleEffect(SampleRate, SampleRate, int, out
SampleRate, out int)

```
public DownSampleEffect(SampleRate sampleRate, SampleRate reducedSampleRate, int  
processingSize, out SampleRate newSampleRate, out int producedChunkSize)
```

Parameters

sampleRate [SampleRate](#)

reducedSampleRate [SampleRate](#)

processingSize [int](#)

newSampleRate [SampleRate](#)

producedChunkSize [int](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

signalTheta [Span](#)<IQ>

length [int](#)

Returns

[int](#)

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

Class FftEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public class FftEffect : SignalEffect, ISignalEffect, IDisposable
```

Inheritance

[object](#) ← [SignalEffect](#) ← FftEffect

Implements

[ISignalEffect](#), [IDisposable](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

FftEffect(bool, int)

```
public FftEffect(bool forward, int chunkSize)
```

Parameters

forward [bool](#)

chunkSize [int](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

`signalTheta` [Span](#)<IQ>

`length` [int](#)

Returns

[int](#)

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

Class FrequencyCenteringEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public class FrequencyCenteringEffect : SignalEffect, ISignalEffect
```

Inheritance

[object](#) ← [SignalEffect](#) ← FrequencyCenteringEffect

Implements

[ISignalEffect](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

FrequencyCenteringEffect(RadioBand, SampleRate)

```
public FrequencyCenteringEffect(RadioBand frequencyOffset, SampleRate sampleRate)
```

Parameters

frequencyOffset [RadioBand](#)

sampleRate [SampleRate](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

`signalTheta` [Span](#) <IQ>

`length` [int](#)

Returns

[int](#)

Class LowPassFilterEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public class LowPassFilterEffect : SignalEffect, ISignalEffect
```

Inheritance

[object](#) ← [SignalEffect](#) ← LowPassFilterEffect

Implements

[ISignalEffect](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

LowPassFilterEffect(SampleRate, RadioBand)

Apply a low pass filter on the signal. Expects Frequency Domain

```
public LowPassFilterEffect(SampleRate sampleRate, RadioBand bandwith)
```

Parameters

sampleRate [SampleRate](#)

bandwith [RadioBand](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

signalTheta [Span](#)<IQ>

length [int](#)

Returns

[int](#)

Class SignalEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public abstract class SignalEffect : ISignalEffect
```

Inheritance

[object](#) ← SignalEffect

Implements

[ISignalEffect](#)

Derived

[BasicSignalScanningEffect](#), [DownSampleEffect](#), [FftEffect](#), [FrequencyCenteringEffect](#), [LowPassFilterEffect](#),
[SquelchEffect](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Methods

AffectSignal(Span<IQ>, int)

```
public abstract int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

signalTheta [Span](#)<IQ>

length [int](#)

Returns

[int](#)

Class SquelchEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects](#)

Assembly: HackRFDotnet.dll

```
public class SquelchEffect : SignalEffect, ISignalEffect
```

Inheritance

[object](#) ← [SignalEffect](#) ← SquelchEffect

Implements

[ISignalEffect](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SquelchEffect(SampleRate)

```
public SquelchEffect(SampleRate sampleRate)
```

Parameters

sampleRate [SampleRate](#)

Methods

AffectSignal(Span<IQ>, int)

```
public override int AffectSignal(Span<IQ> signalTheta, int length)
```

Parameters

signalTheta [Span](#)<IQ>

length [int](#)

Returns

[int](#)

Namespace HackRFDotnet.ManagedApi. Streams.SignalProcessing.Effects.Interfaces Interfaces

[ISignalEffect](#)

Interface ISignalEffect

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalProcessing.Effects.Interfaces](#)

Assembly: HackRFDotnet.dll

```
public interface ISignalEffect
```

Methods

AffectSignal(Span<IQ>, int)

```
int AffectSignal(Span<IQ> signalTheta, int lendth)
```

Parameters

signalTheta [Span<IQ>](#)

lendth [int](#)

Returns

[int](#)

Namespace HackRFDotnet.ManagedApi. Streams.SignalStreams

Classes

[SignalStream](#)

Class SignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams](#)

Assembly: HackRFDotnet.dll

```
public class SignalStream : IDisposable
```

Inheritance

[object](#) ← SignalStream

Implements

[IDisposable](#)

Derived

[WaveSignalStream](#), [QpskSignalStream](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

SignalStream(IIQStream, SignalProcessingPipeline?, bool)

```
public SignalStream(IIQStream iqStream, SignalProcessingPipeline? processingPipeline = null,  
bool keepOpen = true)
```

Parameters

`iQStream` [IIQStream](#)

`processingPipeline` [SignalProcessingPipeline](#)

`keepOpen` [bool](#)

Fields

_iQStream

```
protected readonly IIQStream _iQStream
```

Field Value

[IIQStream](#)

_keepOpen

```
protected readonly bool _keepOpen
```

Field Value

[bool](#)

_processingPipeline

```
protected SignalProcessingPipeline? _processingPipeline
```

Field Value

[SignalProcessingPipeline](#)

Properties

BandWidth

```
public RadioBand BandWidth { get; protected set; }
```

Property Value

[RadioBand](#)

Center

```
public RadioBand Center { get; protected set; }
```

Property Value

[RadioBand](#)

SampleRate

```
public SampleRate SampleRate { get; }
```

Property Value

[SampleRate](#)

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

```
public void Dispose()
```

ReadSpan(Span<IQ>)

```
public void ReadSpan(Span<IQ> iqPairs)
```

Parameters

`iqPairs` [Span](#)<IQ>

SetBand(RadioBand, RadioBand)

Set the band and bandwidth the filtering engine will use.

```
public void SetBand(RadioBand center, RadioBand bandwidth)
```

Parameters

center [RadioBand](#)

bandwidth [RadioBand](#)

Namespace HackRFDotnet.ManagedApi.Streams.SignalStreams.Analogue

Classes

[AmSignalStream](#)

[FmSignalStream](#)

[WaveSignalStream](#)

Class AmSignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams.Analogue](#)

Assembly: HackRFDotnet.dll

```
public class AmSignalStream : WaveSignalStream, ISampleProvider, IDisposable
```

Inheritance

[object](#) ← [SignalStream](#) ← [WaveSignalStream](#) ← AmSignalStream

Implements

ISampleProvider, [IDisposable](#)

Inherited Members

[WaveSignalStream.WaveFormat](#), [WaveSignalStream.NormalizeRms\(Span<float>, float\)](#),
[SignalStream.Center](#), [SignalStream.BandWidth](#), [SignalStream.SampleRate](#),
[SignalStream.processingPipeline](#), [SignalStream.iQStream](#), [SignalStream.keepOpen](#),
[SignalStream.ReadSpan\(Span<IQ>\)](#), [SignalStream.SetBand\(RadioBand, RadioBand\)](#),
[SignalStream.Dispose\(\)](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

AmSignalStream(IIQStream, SampleRate,
SignalProcessingPipeline?, bool)

```
public AmSignalStream(IIQStream deviceStream, SampleRate sampleRate,  
SignalProcessingPipeline? processingPipeline = null, bool keepOpen = true)
```

Parameters

deviceStream [IIQStream](#)

sampleRate [SampleRate](#)

processingPipeline [SignalProcessingPipeline](#)

keepOpen [bool](#)

Methods

Read(float[], int, int)

Fill the specified buffer with 32 bit floating point samples

```
public override int Read(float[] buffer, int offset, int count)
```

Parameters

buffer [float](#)[]

The buffer to fill with samples.

offset [int](#)

Offset into buffer

count [int](#)

The number of samples to read

Returns

[int](#)

the number of samples written to the buffer.

Class FmSignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams.Analogue](#)

Assembly: HackRFDotnet.dll

```
public class FmSignalStream : WaveSignalStream, ISampleProvider, IDisposable
```

Inheritance

[object](#) ← [SignalStream](#) ← [WaveSignalStream](#) ← FmSignalStream

Implements

ISampleProvider, [IDisposable](#)

Inherited Members

[WaveSignalStream.WaveFormat](#), [WaveSignalStream.NormalizeRms\(Span<float>, float\)](#),
[SignalStream.Center](#), [SignalStream.BandWidth](#), [SignalStream.SampleRate](#),
[SignalStream.processingPipeline](#), [SignalStream.iQStream](#), [SignalStream.keepOpen](#),
[SignalStream.ReadSpan\(Span<IQ>\)](#), [SignalStream.SetBand\(RadioBand, RadioBand\)](#),
[SignalStream.Dispose\(\)](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

FmSignalStream(IIQStream, SampleRate, bool,
SignalProcessingPipeline?, bool)

```
public FmSignalStream(IIQStream deviceStream, SampleRate sampleRate, bool stereo = true,  
SignalProcessingPipeline? processingPipeline = null, bool keepOpen = true)
```

Parameters

deviceStream [IIQStream](#)

sampleRate [SampleRate](#)

stereo [bool](#)

`processingPipeline` [SignalProcessingPipeline](#)

`keepOpen` [bool](#)

Methods

Read(float[], int, int)

Fill the specified buffer with 32 bit floating point samples

```
public override int Read(float[] buffer, int offset, int count)
```

Parameters

`buffer` [float](#)[]

The buffer to fill with samples.

`offset` [int](#)

Offset into buffer

`count` [int](#)

The number of samples to read

Returns

[int](#)

the number of samples written to the buffer.

Class WaveSignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams.Analogue](#)

Assembly: HackRFDotnet.dll

```
public class WaveSignalStream : SignalStream, ISampleProvider, IDisposable
```

Inheritance

[object](#) ← [SignalStream](#) ← WaveSignalStream

Implements

ISampleProvider, [IDisposable](#)

Derived

[AmSignalStream](#), [FmSignalStream](#)

Inherited Members

[SignalStream.Center](#), [SignalStream.BandWidth](#), [SignalStream.SampleRate](#),
[SignalStream.ProcessingPipeline](#), [SignalStream.IQStream](#), [SignalStream.KeepOpen](#),
[SignalStream.ReadSpan\(Span<IQ>\)](#), [SignalStream.SetBand\(RadioBand, RadioBand\)](#),
[SignalStream.Dispose\(\)](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

WaveSignalStream(IQStream, SampleRate, bool,
SignalProcessingPipeline?, bool)

```
public WaveSignalStream(IQStream deviceStream, SampleRate sampleRate, bool stereo = true,  
SignalProcessingPipeline? processingPipeline = null, bool keepOpen = true)
```

Parameters

deviceStream [IQStream](#)

sampleRate [SampleRate](#)

stereo [bool](#)

processingPipeline [SignalProcessingPipeline](#)

keepOpen [bool](#)

Properties

WaveFormat

Gets the WaveFormat of this Sample Provider.

```
public WaveFormat? WaveFormat { get; protected set; }
```

Property Value

WaveFormat

The wave format.

Methods

NormalizeRms(Span<float>, float)

```
protected void NormalizeRms(Span<float> buffer, float targetRms = 0.04)
```

Parameters

buffer [Span](#)<[float](#)>

targetRms [float](#)

Read(float[], int, int)

Fill the specified buffer with 32 bit floating point samples

```
public virtual int Read(float[] buffer, int offset, int count)
```

Parameters

buffer [float\[\]](#)[]

The buffer to fill with samples.

offset [int](#)[]

Offset into buffer

count [int](#)[]

The number of samples to read

Returns

[int](#)[]

the number of samples written to the buffer.

Namespace HackRFDotnet.ManagedApi.Streams.SignalStreams.Digital

Classes

[HdRadioSignalStream](#)

[QpskSignalStream](#)

Class HdRadioSignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams.Digital](#)

Assembly: HackRFDotnet.dll

```
public class HdRadioSignalStream : QpskSignalStream, IDisposable, ISampleProvider
```

Inheritance

[object](#) ← [SignalStream](#) ← [QpskSignalStream](#) ← HdRadioSignalStream

Implements

[IDisposable](#), ISampleProvider

Inherited Members

[QpskSignalStream.Read\(Span<byte>, int\)](#), [SignalStream.Center](#), [SignalStream.BandWidth](#),
[SignalStream.SampleRate](#), [SignalStream.processingPipeline](#), [SignalStream.iQStream](#),
[SignalStream.keepOpen](#), [SignalStream.ReadSpan\(Span<IQ>\)](#),
[SignalStream.SetBand\(RadioBand, RadioBand\)](#), [SignalStream.Dispose\(\)](#), [object.Equals\(object\)](#),
[object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

HdRadioSignalStream(IIQStream, SampleRate, bool,
SignalProcessingPipeline?, bool)

```
public HdRadioSignalStream(IIQStream iQStream, SampleRate sampleRate, bool stereo = true,  
SignalProcessingPipeline? processingPipeline = null, bool keepOpen = true)
```

Parameters

iQStream [IIQStream](#)

sampleRate [SampleRate](#)

stereo [bool](#)

processingPipeline [SignalProcessingPipeline](#)

`keepOpen` [bool](#)

Properties

WaveFormat

Gets the WaveFormat of this Sample Provider.

```
public WaveFormat? WaveFormat { get; protected set; }
```

Property Value

WaveFormat

The wave format.

Methods

Read(float[], int, int)

Fill the specified buffer with 32 bit floating point samples

```
public int Read(float[] buffer, int offset, int count)
```

Parameters

buffer [float](#)[]

The buffer to fill with samples.

offset [int](#)

Offset into buffer

count [int](#)

The number of samples to read

Returns

int ↗

the number of samples written to the buffer.

Class QpskSignalStream

Namespace: [HackRFDotnet.ManagedApi.Streams.SignalStreams.Digital](#)

Assembly: HackRFDotnet.dll

```
public class QpskSignalStream : SignalStream, IDisposable
```

Inheritance

[object](#) ← [SignalStream](#) ← QpskSignalStream

Implements

[IDisposable](#)

Derived

[HdRadioSignalStream](#)

Inherited Members

[SignalStream.Center](#) , [SignalStream.BandWidth](#) , [SignalStream.SampleRate](#) ,
[SignalStream.ProcessingPipeline](#) , [SignalStream.IQStream](#) , [SignalStream.KeepOpen](#) ,
[SignalStream.ReadSpan\(Span<IQ>\)](#) , [SignalStream.SetBand\(RadioBand, RadioBand\)](#) ,
[SignalStream.Dispose\(\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

QpskSignalStream(IQStream, SignalProcessingPipeline?, bool)

```
public QpskSignalStream(IQStream iqStream, SignalProcessingPipeline? processingPipeline = null, bool keepOpen = true)
```

Parameters

iQStream [IQStream](#)

processingPipeline [SignalProcessingPipeline](#)

keepOpen [bool](#)

Methods

Read(Span<byte>, int)

```
public int Read(Span<byte> buffer, int count)
```

Parameters

buffer [Span<byte>](#)

count [int](#)

Returns

[int](#)

Namespace HackRFDotnet.ManagedApi. Utilities

Classes

[BinaryUtilities](#)

[SignalUtilities](#)

Class BinaryUtilities

Namespace: [HackRFDotnet.ManagedApi.Utilities](#)

Assembly: HackRFDotnet.dll

```
public static class BinaryUtilities
```

Inheritance

[object](#) ← BinaryUtilities

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

NextPowerOfTwo(int)

```
public static int NextPowerOfTwo(int n)
```

Parameters

n [int](#)

Returns

[int](#)

Class SignalUtilities

Namespace: [HackRFDotnet.ManagedApi.Utilities](#)

Assembly: HackRFDotnet.dll

```
public class SignalUtilities
```

Inheritance

[object](#) ← SignalUtilities

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

ApplyFrequencyOffset(Span<IQ>, RadioBand, SampleRate)

```
public static void ApplyFrequencyOffset(Span<IQ> iqFrame, RadioBand freqOffset,  
SampleRate sampleRate)
```

Parameters

iqFrame [Span](#)<[IQ](#)>

freqOffset [RadioBand](#)

sampleRate [SampleRate](#)

CalculateRmsDb(ReadOnlySpan<IQ>)

```
public static float CalculateRmsDb(ReadOnlySpan<IQ> iqFrame)
```

Parameters

iqFrame [ReadOnlySpan](#)<[IQ](#)>

Returns

[float](#)

CalculateSignalDb(ReadOnlySpan<IQ>)

```
public static float CalculateSignalDb(ReadOnlySpan<IQ> iqFrame)
```

Parameters

[iqFrame](#) [ReadOnlySpan](#)<[IQ](#)>

Returns

[float](#)

FrequencyResolution(int, SampleRate, bool)

```
public static int FrequencyResolution(int length, SampleRate sampleRate, bool positiveOnly  
= true)
```

Parameters

[length](#) [int](#)

[sampleRate](#) [SampleRate](#)

[positiveOnly](#) [bool](#)

Returns

[int](#)

IQCorrection(Span<IQ>)

```
public static void IQCorrection(Span<IQ> iqFrame)
```

Parameters

iqFrame [Span](#)<IQ>

Namespace HackRFDotnet.NativeApi.Enums

Enums

[RfPathFilter](#)

[SweepStyle](#)

Enum RfPathFilter

Namespace: [HackRFDotnet.NativeApi.Enums](#)

Assembly: HackRFDotnet.dll

```
public enum RfPathFilter
```

Fields

RF_PATH_FILTER_BYPASS = 0

RF_PATH_FILTER_HIGH_PASS = 2

RF_PATH_FILTER_LOW_PASS = 1

Enum SweepStyle

Namespace: [HackRFDotnet.NativeApi.Enums](#)

Assembly: HackRFDotnet.dll

```
public enum SweepStyle
```

Fields

INTERLEAVED = 1

LINEAR = 0

Namespace HackRFDotnet.NativeApi.Enums. Peripherals

Enums

[LedState](#)

[OperacakePorts](#)

[OperacakeSwitchingMode](#)

Enum LedState

Namespace: [HackRFDotnet.NativeApi.Enums.Peripherals](#)

Assembly: HackRFDotnet.dll

```
public enum LedState : byte
```

Fields

RxLight = 2

TxLight = 4

UsbLight = 0

Enum OperacakePorts

Namespace: [HackRFDotnet.NativeApi.Enums.Peripherals](#)

Assembly: HackRFDotnet.dll

```
public enum OperacakePorts
```

Fields

OPERACAKE_PA1 = 0

OPERACAKE_PA2 = 1

OPERACAKE_PA3 = 2

OPERACAKE_PA4 = 3

OPERACAKE_PB1 = 4

OPERACAKE_PB2 = 5

OPERACAKE_PB3 = 6

OPERACAKE_PB4 = 7

Enum OperacakeSwitchingMode

Namespace: [HackRFDotnet.NativeApi.Enums.Peripherals](#)

Assembly: HackRFDotnet.dll

```
public enum OperacakeSwitchingMode
```

Fields

OPERACAKE_MODE_FREQUENCY = 1

OPERACAKE_MODE_MANUAL = 0

OPERACAKE_MODE_TIME = 2

Namespace HackRFDotnet.NativeApi.Enums.System

Enums

[HackrfBoardId](#)

[HackrfBoardRev](#)

[HackrfError](#)

[HackrfUsbBoardId](#)

Enum HackrfBoardId

Namespace: [HackRFDotnet.NativeApi.Enums.System](#)

Assembly: HackRFDotnet.dll

```
public enum HackrfBoardId
```

Fields

BOARD_ID_HACKRF1_OG = 2

BOARD_ID_HACKRF1_R9 = 4

BOARD_ID_JAWBREAKER = 1

BOARD_ID_JELLYBEAN = 0

BOARD_ID_RAD10 = 3

BOARD_ID_UNDETECTED = 255

BOARD_ID_UNRECOGNIZED = 254

Enum HackrfBoardRev

Namespace: [HackRFDotnet.NativeApi.Enums.System](#)

Assembly: HackRFDotnet.dll

```
public enum HackrfBoardRev
```

Fields

BOARD_REV_GSG HACKRF1_R10 = 133

BOARD_REV_GSG HACKRF1_R6 = 129

BOARD_REV_GSG HACKRF1_R7 = 130

BOARD_REV_GSG HACKRF1_R8 = 131

BOARD_REV_GSG HACKRF1_R9 = 132

BOARD_REV_HACKRF1_OLD = 0

BOARD_REV_HACKRF1_R10 = 5

BOARD_REV_HACKRF1_R6 = 1

BOARD_REV_HACKRF1_R7 = 2

BOARD_REV_HACKRF1_R8 = 3

BOARD_REV_HACKRF1_R9 = 4

BOARD_REV_UNDETECTED = 255

BOARD_REV_UNRECOGNIZED = 254

Enum HackrfError

Namespace: [HackRFDotnet.NativeApi.Enums.System](#)

Assembly: HackRFDotnet.dll

```
public enum HackrfError
```

Fields

HACKRF_ERROR_BUSY = -6

HACKRF_ERROR_INVALID_PARAM = -2

HACKRF_ERROR_LIBUSB = -1000

HACKRF_ERROR_NOT_FOUND = -5

HACKRF_ERROR_NOT_LAST_DEVICE = -2000

HACKRF_ERROR_NO_MEM = -11

HACKRF_ERROR_OTHER = -9999

HACKRF_ERROR_STREAMING_EXIT_CALLED = -1004

HACKRF_ERROR_STREAMING_STOPPED = -1003

HACKRF_ERROR_STREAMING_THREAD_ERR = -1002

HACKRF_ERROR_THREAD = -1001

HACKRF_ERROR_USB_API_VERSION = -1005

HACKRF_SUCCESS = 0

HACKRF_TRUE = 1

Enum HackrfUsbBoardId

Namespace: [HackRFDotnet.NativeApi.Enums.System](#)

Assembly: HackRFDotnet.dll

```
public enum HackrfUsbBoardId
```

Fields

USB_BOARD_ID_HACKRF_ONE = 24713

USB_BOARD_ID_INVALID = 65535

USB_BOARD_ID_JAWBREAKER = 24651

USB_BOARD_ID_RAD10 = 52245

Namespace HackRFDotnet.NativeApi.Lib

Classes

[HackRfNativeLib](#)

[HackRfNativeLib.Debug](#)

[HackRfNativeLib.DeviceStreaming](#)

[HackRfNativeLib.Devices](#)

[HackRfNativeLib.Firmware](#)

[HackRfNativeLib.Operacake](#)

Class HackRfNativeLib

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib
```

Inheritance

[object](#) ← HackRfNativeLib

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Exit()

Exit libhackrf. Should be called before application exit.

```
public static extern int Exit()
```

Returns

[int](#)

Init()

Initialize libhackrf. Should be called before any other function.

```
public static extern int Init()
```

Returns

[int](#)

LibraryRelease()

Get library release string.

```
public static extern sbyte* LibraryRelease()
```

Returns

sbyte↗*

LibraryVersion()

Get library version string.

```
public static extern sbyte* LibraryVersion()
```

Returns

sbyte↗*

Class HackRfNativeLib.Debug

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib.Debug
```

Inheritance

[object](#) ← HackRfNativeLib.Debug

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

GetErrorMessage(HackrfError)

Convert @ref hackrf_error into human-readable string

```
public static extern sbyte* GetErrorMessage(HackrfError errcode)
```

Parameters

errcode [HackrfError](#)

Returns

[sbyte](#)*

Class HackRfNativeLib.DeviceStreaming

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib.DeviceStreaming
```

Inheritance

[object](#) ← HackRfNativeLib.DeviceStreaming

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

ComputeBasebandFilterBandWidth(uint)

Compute nearest valid baseband filter bandwidth to specified value The result can be used via @ref hackrf_set_baseband_filter_bandwidth @param bandwidth_hz desired filter bandwidth in Hz @return nearest valid filter bandwidth in Hz @ingroup configuration

```
public static extern uint ComputeBasebandFilterBandWidth(uint bandwidth_hz)
```

Parameters

bandwidth_hz [uint](#)

Returns

[uint](#)

ComputeBasebandFilterBandWidth_round_down_It(uint)

Compute nearest valid baseband filter bandwidth lower than a specified value

The result can be used via @ref hackrf_set_baseband_filter_bandwidth

@param bandwidth_hz desired filter bandwidth in Hz @return the highest valid filter bandwidth lower than @p bandwidth_hz in Hz @ingroup configuration

```
public static extern uint ComputeBasebandFilterBandWidth_round_down_lt(uint bandwidth_hz)
```

Parameters

bandwidth_hz [uint](#)

Returns

[uint](#)

EnableAmp(HackRFDevice*, byte)

Enable/disable 14dB RF amplifier

Enable / disable the ~11dB RF RX/TX amplifiers U13/U25 via controlling switches U9 and U14.

@param device device to configure @param value enable(1) or disable(0) amplifier @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup configuration

```
public static extern int EnableAmp(HackRFDevice* device, byte value)
```

Parameters

device [HackRFDevice](#)*

value [byte](#)

Returns

[int](#)

EnableAntenna(HackRFDevice*, byte)

Enable or disable the **3.3V (max 50mA)** bias-tee (antenna port power). Defaults to disabled. **NOTE:** the firmware auto-disables this after returning to IDLE mode, so a perma-set is not possible, which means all

software supporting HackRF devices must support enabling bias-tee, as setting it externally is not possible like it is with RTL-SDR for example.

```
public static extern int EnableAntenna(HackRFDevice* device, byte value)
```

Parameters

device [HackRFDevice](#)*

value [byte](#)

Returns

[int](#)

EnableTxFlush(HackRFDevice*, HackRFFlushCallback, void*)

Setup flush(end-of-transmission) callback

This callback will be called when all the data was transmitted and all data transfers were completed. First parameter is supplied context, second parameter is success flag.

@param device device to configure @param callback callback to call when all transfers were completed
@param flush_ctx context (1st parameter of callback) @return @ref HACKRF_SUCCESS on success or
@ref hackrf_error variant @ingroup streaming

```
public static extern int EnableTxFlush(HackRFDevice* device, HackRFFlushCallback callback,  
void* flush_ctx)
```

Parameters

device [HackRFDevice](#)*

callback [HackRFFlushCallback](#)

flush_ctx [void](#)*

Returns

[int](#)

FilterPathName(RfPathFilter)

RF filter path setting enum Used only when performing explicit tuning using @ref hackrf_set_freq_explicit, or can be converted into a human readable string using @ref hackrf_filter_path_name. This can select the image rejection filter(U3, U8 or none) to use - using switches U5, U6, U9 and U11. When no filter is selected, the mixer itself is bypassed. @ingroup configuration

```
public static extern sbyte* FilterPathName(RfPathFilter path)
```

Parameters

path [RfPathFilter](#)

Returns

[sbyte](#)*

GetTransferBufferSize(HackRFDevice*)

Get USB transfer buffer size.

```
public static extern nuint GetTransferBufferSize(HackRFDevice* device)
```

Parameters

device [HackRFDevice](#)*

Returns

[nuint](#)

GetTransferQueueDepth(HackRFDevice*)

Get the total number of USB transfer buffers

```
public static extern uint GetTransferQueueDepth(HackRFDevice* device)
```

Parameters

device [HackRFDevice](#)*

Returns

[uint](#)

InitSweep(HackRFDevice*, ushort*, int, uint, uint, uint, Sweep Style)

Initialize sweep mode

In this mode, in a single data transfer(single call to the RX transfer callback), multiple blocks of size @p num_bytes bytes are received with different center frequencies. At the beginning of each block, a 10-byte frequency header is present in `0x7F - 0x7F - uint64_t frequency(LSBFIRST, in Hz)` format, followed by the actual samples.

Requires USB API version 0x0102 or above! @param device device to configure @param frequency_list list of start-stop frequency pairs in MHz @param num_ranges length of array @p frequency_list(in pairs, so total array length / 2!). Must be less than @ref MAX_SWEEP_RANGES @param num_bytes number of bytes to capture per tuning, must be a multiple of @ref BYTES_PER_BLOCK @param step_width width of each tuning step in Hz @param offset frequency offset added to tuned frequencies.sample_rate / 2 is a good value @param style sweep style @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int InitSweep(HackRFDevice* device, ushort* frequency_list, int num_ranges, uint num_bytes, uint step_width, uint offset, SweepStyle style)
```

Parameters

device [HackRFDevice](#)*

frequency_list [ushort](#)*

num_ranges [int](#)

num_bytes [uint](#)

step_width [uint](#)

`offset` [uint](#)

`style` [SweepStyle](#)

Returns

[int](#)

IsStreaming(HackRFDevice*)

Query device streaming status @param device device to query @return @ref HACKRF_TRUE if the device is streaming, else one of @ref HACKRF_ERROR_STREAMING_THREAD_ERR, @ref HACKRF_ERROR_STREAMING_STOPPED or @ref HACKRF_ERROR_STREAMING_EXIT_CALLED @ingroup streaming

```
public static extern int IsStreaming(HackRFDevice* device)
```

Parameters

`device` [HackRFDevice](#)*

Returns

[int](#)

SetBasebandFilterBandwidth(HackRFDevice*, uint)

Set baseband filter bandwidth

Possible values: 1.75, 2.5, 3.5, 5, 5.5, 6, 7, 8, 9, 10, 12, 14, 15, 20, 24, 28MHz, default $0.75 \cdot F_s$. The functions @ref hackrf_compute_baseband_filter_bw and @ref hackrf_compute_baseband_filter_bw_round_down can be used to get a valid value nearest to a given value.

Setting the sample rate causes the filter bandwidth to be (re)set to its default $0.75 \cdot F_s$ value, so setting sample rate should be done before setting filter bandwidth.

@param device device to configure @param bandwidth_hz baseband filter bandwidth in Hz @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup configuration

```
public static extern int SetBasebandFilterBandwidth(HackRFDevice* device, uint bandwidth_hz)
```

Parameters

device [HackRFDevice*](#)

bandwidth_hz [uint](#)

Returns

[int](#)

SetBiasTOptions(HackRFDevice*, HackRFBiasTUserSettingReq*)

Configure bias tee behavior of the HackRF device when changing RF states This function allows the user to configure bias tee behavior so that it can be turned on or off automatically by the HackRF when entering the RX, TX, or OFF state. By default, the HackRF switches off the bias tee when the RF path switches to OFF mode.

The bias tee configuration is specified via a bitfield: 0000000TmmRmmOmm

Where setting T/R/O bits indicates that the TX/RX/Off behavior should be set to mode 'mm', 0=don't modify mm specifies the bias tee mode:

00 - do nothing 01 - reserved, do not use 10 - disable bias tee 11 - enable bias tee

```
public static extern int SetBiasTOptions(HackRFDevice* device, HackRFBiasTUserSettingReq* req)
```

Parameters

device [HackRFDevice*](#)

req [HackRFBiasTUserSettingReq*](#)

Returns

[int](#)

SetClockSampleRate(HackRFDevice*, uint, uint)

```
public static extern int SetClockSampleRate(HackRFDevice* device, uint freq_hz,  
uint divider)
```

Parameters

device [HackRFDevice*](#)

freq_hz [uint](#)

divider [uint](#)

Returns

[int](#)

SetFrequency(HackRFDevice*, ulong)

Set the center frequency

Simple(auto) tuning via specifying a center frequency in Hz

This setting is not exact and depends on the PLL settings. Exact resolution is not determined, but the actual tuned frequency will be queryable in the future.

@param device device to tune @param freq_hz center frequency in Hz. Defaults to 900MHz. Should be in range 1-6000MHz, but 0-7250MHz is possible. The resolution is ~50Hz, I could not find the exact number. @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup configuration

```
public static extern int SetFrequency(HackRFDevice* device, ulong freq_hz)
```

Parameters

device [HackRFDevice*](#)

freq_hz [ulong](#)

Returns

[int](#)

SetFrequency(HackRFDevice*, ulong, ulong, RfPathFilter)

Set the center frequency via explicit tuning

Center frequency is set to $f_{center} = f_{IF} k \cdot f_{LO}$ where $k \in \{-1; 0; 1\}$, depending on the value of @p path. See the documentation of @ref rf_path_filter for details

@param device device to tune @param if_freq_hz tuning frequency of the MAX2837 transceiver IC in Hz. Must be in the range of 2150-2750MHz @param lo_freq_hz tuning frequency of the RFFC5072 mixer/synthesizer IC in Hz. Must be in the range 84.375-5400MHz, defaults to 1000MHz. No effect if @p path is set to @ref RF_PATH_FILTER_BYPASS @param path filter path for mixer. See the documentation for @ref rf_path_filter for details @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup configuration

```
public static extern int SetFrequency(HackRFDevice* device, ulong if_freq_hz, ulong  
lo_freq_hz, RfPathFilter path)
```

Parameters

device [HackRFDevice](#)*

if_freq_hz [ulong](#)

lo_freq_hz [ulong](#)

path [RfPathFilter](#)

Returns

[int](#)

SetLnaGain(HackRFDevice*, uint)

Set the RF RX gain of the MAX2837 transceiver IC ("IF" gain setting) in decibels. Must be in range 0-40dB, with 8dB steps.

```
public static extern int SetLnaGain(HackRFDevice* device, uint value)
```

Parameters

device [HackRFDevice*](#)

value [uint](#)

Returns

[int](#)

SetRxOverrunLimit(HackRFDevice*, uint)

Set receive overrun limit

When this limit is set, after the specified number of samples (bytes, not whole IQ pairs) missing the device will automatically return to IDLE mode, thus stopping operation. Useful for handling cases like program/computer crashes or other problems. The default value 0 means no limit.

Requires USB API version 0x0106 or above! @param device device to configure @param value number of samples to wait before auto-stopping @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int SetRxOverrunLimit(HackRFDevice* device, uint value)
```

Parameters

device [HackRFDevice*](#)

value [uint](#)

Returns

[int](#)

SetSampleRate(HackRFDevice*, double)

```
public static extern int SetSampleRate(HackRFDevice* device, double freq_hz)
```

Parameters

`device HackRFDevice*`

`freq_hz double`

Returns

`int`

SetTxBlockCompleteCallback(HackRFDevice*, HackRFTxBlockCompleteCallback)

Setup callback to be called when an USB transfer is completed.

This callback will be called whenever an USB transfer to the device is completed, regardless if it was successful or not(indicated by the second parameter).

@param device device to configure @param callback callback to call when a transfer is completed
@return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int SetTxBlockCompleteCallback(HackRFDevice* device,  
HackRFTxBlockCompleteCallback callback)
```

Parameters

`device HackRFDevice*`

`callback HackRFTxBlockCompleteCallback`

Returns

`int`

SetTxUnderrunLimit(HackRFDevice*, uint)

Set transmit underrun limit

When this limit is set, after the specified number of samples (bytes, not whole IQ pairs) missing the device will automatically return to IDLE mode, thus stopping operation. Useful for handling cases like program/computer crashes or other problems. The default value 0 means no limit.

Requires USB API version 0x0106 or above! @param device device to configure @param value number of samples to wait before auto-stopping @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant
@ingroup streaming

```
public static extern int SetTxUnderrunLimit(HackRFDevice* device, uint value)
```

Parameters

device [HackRFDevice](#)*

value [uint](#)

Returns

[int](#)

SetTxVgaGain(HackRFDevice*, uint)

Set RF TX gain of the MAX2837 transceiver IC ("IF" or "VGA" gain setting) in decibels. Must be in range 0-47dB in 1dB steps.

```
public static extern int SetTxVgaGain(HackRFDevice* device, uint value)
```

Parameters

device [HackRFDevice](#)*

value [uint](#)

Returns

[int](#)

SetVgaGain(HackRFDevice*, uint)

Set baseband RX gain of the MAX2837 transceiver IC ("BB" or "VGA" gain setting) in decibels. Must be in range 0-62dB with 2dB steps.

```
public static extern int SetVgaGain(HackRFDevice* device, uint value)
```

Parameters

device [HackRFDevice](#)*

value [uint](#)*

Returns

[int](#)

StartRx(HackRFDevice*, HackRFSampleBlockCallback, void*)

Start receiving

Should be called after setting gains, frequency and sampling rate, as these values won't get reset but instead keep their last value, thus their state is unknown.

The callback is called with a @ref hackrf_transfer object whenever the buffer is full. The callback is called in an async context so no libhackrf functions should be called from it. The callback should treat its argument as read-only. @param device device to configure @param callback rx_callback @param rx_ctx User provided RX context. Not used by the library, but available to @p callback as @ref hackrf_transfer.rx_ctx. @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int StartRx(HackRFDevice* device, HackRFSampleBlockCallback callback,  
void* rx_ctx)
```

Parameters

device [HackRFDevice](#)*

callback [HackRFSampleBlockCallback](#)

rx_ctx [void](#)*

Returns

[int](#)

StartRxSweep(HackRFDevice*, HackRFSampleBlockCallback, void*)

Start RX sweep

See @ref hackrf_init_sweep for more info

Requires USB API version 0x0104 or above! @param device device to start sweeping @param callback rx callback processing the received data @param rx_ctx User provided RX context. Not used by the library, but available to @p callback as @ref hackrf_transfer.rx_ctx. @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int StartRxSweep(HackRFDevice* device, HackRFSampleBlockCallback  
callback, void* rx_ctx)
```

Parameters

device [HackRFDevice*](#)

callback [HackRFSampleBlockCallback](#)

rx_ctx [void](#)*

Returns

[int](#)

StartTx(HackRFDevice*, HackRFSampleBlockCallback, void*)

 Warning: Transmitting radio signals may be subject to national and international regulations. Use of this function without the appropriate license or authorization may violate FCC regulations (or equivalent regulatory authorities in your region) and could result in legal penalties.

```
public static extern int StartTx(HackRFDevice* device, HackRFSampleBlockCallback callback,  
void* tx_ctx)
```

Parameters

`device HackRFDevice*`

`callback HackRFSampleBlockCallback`

`tx_ctx void*`

Returns

`int`

StopRx(HackRFDevice*)

Stop receiving

@param device device to stop RX on @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int StopRx(HackRFDevice* device)
```

Parameters

`device HackRFDevice*`

Returns

`int`

StopTx(HackRFDevice*)

Stop transmission

@param device device to stop TX on @return @ref HACKRF_SUCCESS on success or @ref hackrf_error variant @ingroup streaming

```
public static extern int StopTx(HackRFDevice* device)
```

Parameters

`device HackRFDevice*`

Returns

[int ↗](#)

Class HackRfNativeLib.Devices

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib.Devices
```

Inheritance

[object](#) ← HackRfNativeLib.Devices

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

CloseDevice(HackRFDevice*)

Close a previously opened device

```
public static extern int CloseDevice(HackRFDevice* device)
```

Parameters

device [HackRFDevice](#)*

Returns

[int](#)

DeviceListFree(HackRFDeviceList*)

Free a previously allocated @ref hackrf_device_list list.

```
public static extern void DeviceListFree(HackRFDeviceList* list)
```

Parameters

`list HackRFDeviceList*`

DeviceListOpen(HackRFDeviceList*, int, HackRFDevice**)

Open a @ref hackrf_device from a device list

```
public static extern int DeviceListOpen(HackRFDeviceList* list, int idx,  
HackRFDevice** device)
```

Parameters

`list HackRFDeviceList*`

`idx int`

`device HackRFDevice**`

Returns

`int`

OpenDevice(HackRFDevice**)

Open first available HackRF device

```
public static extern int OpenDevice(HackRFDevice** device)
```

Parameters

`device HackRFDevice**`

Returns

`int`

OpenDeviceBySerial(string, HackRFDevice**)

Open HackRF device by serial number

```
public static extern int OpenDeviceBySerial(string desired_serial_number,  
HackRFDevice** device)
```

Parameters

`desired_serial_number` [string](#)

`device` [HackRFDevice](#)**

Returns

[int](#)

QueryDeviceList()

List connected HackRF devices

```
public static extern HackRFDeviceList* QueryDeviceList()
```

Returns

[HackRFDeviceList](#)*

ResetDevice(HackRFDevice*)

Reset HackRF device

```
public static extern int ResetDevice(HackRFDevice* device)
```

Parameters

`device` [HackRFDevice](#)*

Returns

[int](#)

SetDeviceLeds(HackRFDevice*, byte)

Turn on or off (override) the LEDs of the HackRF device This function can turn on or off the LEDs of the device. There are 3 controllable LEDs on the HackRF one: USB, RX and TX. On the Rad1o, there are 4 LEDs. Each LED can be set individually, but the setting might get overridden by other functions.

The LEDs can be set via specifying them as bits of a 8 bit number @p state, bit 0 representing the first (USB on the HackRF One) and bit 3 or 4 representing the last LED. The upper 4 or 5 bits are unused. For example, binary value 0bxxxxx101 turns on the USB and TX LEDs on the HackRF One.

```
public static extern int SetDeviceLeds(HackRFDevice* device, byte state)
```

Parameters

device [HackRFDevice](#)*

state [byte](#)

Returns

[int](#)

SetDeviceUiEnabled(HackRFDevice*, byte)

Enable / disable UI display (RAD1O, PortaPack, etc.) Enable or disable the display on display-enabled devices (Rad1o, PortaPack)

```
public static extern int SetDeviceUiEnabled(HackRFDevice* device, byte value)
```

Parameters

device [HackRFDevice](#)*

value [byte](#)

Returns

[int ↗](#)

Class HackRfNativeLib.Firmware

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib.Firmware
```

Inheritance

[object](#) ← HackRfNativeLib.Firmware

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

BoardIdName(HackrfBoardId)

Convert @ref hackrf_board_id into human-readable string

```
public static extern sbyte* BoardIdName(HackrfBoardId board_id)
```

Parameters

board_id [HackrfBoardId](#)

Returns

[sbyte](#)*

BoardRevName(HackrfBoardRev)

Convert board revision name

```
public static extern nint BoardRevName(HackrfBoardRev board_rev)
```

Parameters

`board_rev` [HackrfBoardRev](#)

Returns

[int](#)

ClearSpiflashStatus(HackRFDevice*)

Clear the status registers of the W25Q80BV SPI flash chip See the datasheet for details of the status registers.

```
public static extern int ClearSpiflashStatus(HackRFDevice* device)
```

Parameters

`device` [HackRFDevice](#)*

Returns

[int](#)

EraseSpiflash(HackRFDevice*)

Erase firmware image on the SPI flash Should be followed by writing a new image, or the HackRF will be soft-bricked (still rescuable in DFU mode)

```
public static extern int EraseSpiflash(HackRFDevice* device)
```

Parameters

`device` [HackRFDevice](#)*

Returns

[int](#)

GetClkinStatus(HackRFDevice*, byte*)

Get CLKIN status Check if an external clock signal is detected on the CLKIN port.

```
public static extern int GetClkinStatus(HackRFDevice* device, byte* status)
```

Parameters

device [HackRFDevice](#)*

status [byte](#)*

Returns

[int](#)

GetMcuState(HackRFDevice*, HackRFM0State*)

Get the state of the M0 code on the LPC43xx MCU

```
public static extern int GetMcuState(HackRFDevice* device, HackRFM0State* value)
```

Parameters

device [HackRFDevice](#)*

value [HackRFM0State](#)*

Returns

[int](#)

LookupBoardIdPlatform(HackrfBoardId)

Lookup platform ID (HACKRF_PLATFORM_xxx) from board id (@ref hackrf_board_id)

```
public static extern uint LookupBoardIdPlatform(HackrfBoardId board_id)
```

Parameters

`board_id` [HackrfBoardId](#)

Returns

[uint](#)

ReadBoardId(HackRFDevice*, byte*)

Read @ref hackrf_board_id from a device The result can be converted into a human-readable string via @ref hackrf_board_id_name

```
public static extern int ReadBoardId(HackRFDevice* device, byte* value)
```

Parameters

`device` [HackRFDevice](#)*

`value` [byte](#)*

Returns

[int](#)

ReadBoardPartIdSerialNo(HackRFDevice*, ReadPartidSerialNo*)

Read board part ID and serial number Read MCU part id and serial number. See the documentation of the MCU for details!

```
public static extern int ReadBoardPartIdSerialNo(HackRFDevice* device,
ReadPartidSerialNo* read_partid_serialno)
```

Parameters

`device` [HackRFDevice](#)*

`read_partid_serialno` [ReadPartidSerialNo](#)*

Returns

[int↗](#)

ReadBoardRev(HackRFDevice*, byte*)

Read board revision of device

```
public static extern int ReadBoardRev(HackRFDevice* device, byte* value)
```

Parameters

device [HackRFDevice*](#)

value [byte↗*](#)

Returns

[int↗](#)

ReadMax2837(HackRFDevice*, byte, ushort*)

Directly read the registers of the MAX2837 transceiver IC, Intended for debugging purposes only!

```
public static extern int ReadMax2837(HackRFDevice* device, byte register_number,  
ushort* value)
```

Parameters

device [HackRFDevice*](#)

register_number [byte↗](#)

value [ushort↗*](#)

Returns

[int↗](#)

ReadRffc5071(HackRFDevice*, byte, ushort*)

Directly read the registers of the RFFC5071/5072 mixer-synthesizer IC Intended for debugging purposes only!

```
public static extern int ReadRffc5071(HackRFDevice* device, byte register_number,  
ushort* value)
```

Parameters

device [HackRFDevice*](#)

register_number [byte](#)

value [ushort](#)*

Returns

[int](#)

ReadSi5351c(HackRFDevice*, ushort, ushort*)

Directly read the registers of the Si5351C clock generator IC Intended for debugging purposes only!

```
public static extern int ReadSi5351c(HackRFDevice* device, ushort register_number,  
ushort* value)
```

Parameters

device [HackRFDevice*](#)

register_number [ushort](#)

value [ushort](#)*

Returns

[int](#)

ReadSpiflash(HackRFDevice*, uint, ushort, byte*)

Read firmware image on the SPI flash Should only be used for firmware verification.

```
public static extern int ReadSpiflash(HackRFDevice* device, uint address, ushort length,  
byte* data)
```

Parameters

device [HackRFDevice](#)*

address uint ↗

length ushort ↗

data byte ↗*

Returns

int ↗

ReadSupportedPlatform(HackRFDevice*, uint*)

Read supported platform of device Returns a combination of @ref HACKRF_PLATFORM_JAWBREAKER | @ref HACKRF_PLATFORM_HACKRF1_OG | @ref HACKRF_PLATFORM_RAD1O | @ref HACKRF_PLATFORM_HACKRF1_R9

```
public static extern int ReadSupportedPlatform(HackRFDevice* device, uint* value)
```

Parameters

device HackRFDevice*

value `uint`^{↗*}

Returns

int

ReadUsbApiVersion(HackRFDevice*, ushort*)

Read version as MM.mm 16-bit value, where MM is the major and mm is the minor version, encoded as the hex digits of the 16-bit number.

```
public static extern int ReadUsbApiVersion(HackRFDevice* device, ushort* version)
```

Parameters

`device HackRFDevice*`

`version ushort*`

Returns

`int`

ReadVersion(HackRFDevice*, byte*, byte)

Read HackRF firmware version as a string

```
public static extern int ReadVersion(HackRFDevice* device, byte* version, byte length)
```

Parameters

`device HackRFDevice*`

`version byte*`

`length byte`

Returns

`int`

SetClkoutEnable(HackRFDevice*, byte)

Enable / disable CLKOUT

```
public static extern int SetClkoutEnable(HackRFDevice* device, byte value)
```

Parameters

device [HackRFDevice*](#)

value [byte](#)

Returns

[int](#)

SetHardwareSyncMode(HackRFDevice*, byte)

Set hardware sync mode (hardware triggering) See the documentation on hardware triggering for details

```
public static extern int SetHardwareSyncMode(HackRFDevice* device, byte value)
```

Parameters

device [HackRFDevice*](#)

value [byte](#)

Returns

[int](#)

SpiflashStatus(HackRFDevice*, byte*)

Read the status registers of the W25Q80BV SPI flash chip See the datasheet for details of the status registers. The two registers are read in order.

```
public static extern int SpiflashStatus(HackRFDevice* device, byte* data)
```

Parameters

`device HackRFDevice*`

`data byte[]*`

Returns

`int[]`

UsbBoardIdName(HackrfUsbBoardId)

Convert @ref hackrf_usb_board_id into human-readable string.

```
public static extern sbyte* UsbBoardIdName(HackrfUsbBoardId usb_board_id)
```

Parameters

`usb_board_id HackrfUsbBoardId`

Returns

`sbyte[]*`

WriteCpld(HackRFDevice*, byte*, uint)

Write configuration bitstream into the XC2C64A-7VQ100C CPLD device will need to be reset after
`hackrf_cpld_write`

```
public static extern int WriteCpld(HackRFDevice* device, byte* data, uint total_length)
```

Parameters

`device HackRFDevice*`

`data byte[]*`

`total_length uint[]`

Returns

[int](#)

WriteRffc5071(HackRFDevice*, byte, ushort)

Directly write the registers of the RFFC5071/5072 mixer-synthesizer IC Intended for debugging purposes only!

```
public static extern int WriteRffc5071(HackRFDevice* device, byte register_number,  
ushort value)
```

Parameters

device [HackRFDevice](#)*

register_number [byte](#)

value [ushort](#)

Returns

[int](#)

WriteSi5351c(HackRFDevice*, ushort, ushort)

Directly write the registers of the Si5351 clock generator IC Intended for debugging purposes only!

```
public static extern int WriteSi5351c(HackRFDevice* device, ushort register_number,  
ushort value)
```

Parameters

device [HackRFDevice](#)*

register_number [ushort](#)

value [ushort](#)

Returns

[int](#)

WriteSpiflash(HackRFDevice*, uint, ushort, byte*)

Write firmware image on the SPI flash Should only be used for firmware updating. Can brick the device, but it's still rescuable in DFU mode.

```
public static extern int WriteSpiflash(HackRFDevice* device, uint address, ushort length,  
byte* data)
```

Parameters

device [HackRFDevice](#)*

address [uint](#)

length [ushort](#)

data [byte](#)*

Returns

[int](#)

hackrf_max2837_write(HackRFDevice*, byte, ushort)

Directly write the registers of the MAX2837 transceiver IC Intended for debugging purposes only!

```
public static extern int hackrf_max2837_write(HackRFDevice* device, byte register_number,  
ushort value)
```

Parameters

device [HackRFDevice](#)*

register_number [byte](#)

value [ushort](#)

Returns

[int ↗](#)

Class HackRfNativeLib.Operacake

Namespace: [HackRFDotnet.NativeApi.Lib](#)

Assembly: HackRFDotnet.dll

```
public static class HackRfNativeLib.Operacake
```

Inheritance

[object](#) ← HackRfNativeLib.Operacake

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

GetOperacakeBoards(HackRFDevice*, byte*)

Query connected Opera Cake boards Returns a @ref HACKRF_OPERACAKE_MAX_BOARDS size array of addresses, with @ref HACKRF_OPERACAKE_ADDRESS_INVALID as a placeholder

```
public static extern int GetOperacakeBoards(HackRFDevice* device, byte* boards)
```

Parameters

device [HackRFDevice](#)*

boards [byte](#)*

Returns

[int](#)

GetOperacakeMode(HackRFDevice*, byte, OperacakeSwitching Mode*)

Query Opera Cake mode

```
public static extern int GetOperacakeMode(HackRFDevice* device, byte address,  
OperacakeSwitchingMode* mode)
```

Parameters

device [HackRFDevice](#)*

address [byte](#)

mode [OperacakeSwitchingMode](#)*

Returns

[int](#)

OperacakeGpioTest(HackRFDevice*, byte, ushort*)

Perform GPIO test on an Opera Cake addon board Value 0xFFFF means "GPIO mode disabled", and hackrf_operacake advises to remove additional add-on boards and retry. Value 0 means all tests passed. In any other values, a 1 bit signals an error. Bits are grouped in groups of 3. Encoding: 0 - u1ctrl - u3ctrl0 - u3ctrl1 - u2ctrl0 - u2ctrl1

```
public static extern int OperacakeGpioTest(HackRFDevice* device, byte address,  
ushort* test_result)
```

Parameters

device [HackRFDevice](#)*

address [byte](#)

test_result [ushort](#)*

Returns

[int](#)

SetOperacakeDwellTimes(HackRFDevice*, HackRFOperacakeDwellTime*, byte)

Setup Opera Cake dwell times in @ref OPERACAKE_MODE_TIME mode operation Should be called after @ref hackrf_set_operacake_mode **Note:** this configuration applies to all Opera Cake boards in @ref OPERACAKE_MODE_TIME mode

```
public static extern int SetOperacakeDwellTimes(HackRFDevice* device,  
HackRFOperacakeDwellTime* dwell_times, byte count)
```

Parameters

device [HackRFDevice](#)*

dwell_times [HackRFOperacakeDwellTime](#)*

count [byte](#)

Returns

[int](#)

SetOperacakeFrequencyRanges(HackRFDevice*, HackRFOperacakeFreqRange*, byte)

Setup Opera Cake frequency ranges in @ref OPERACAKE_MODE_FREQUENCY mode operation Should be called after @ref hackrf_set_operacake_mode **Note:** this configuration applies to all Opera Cake boards in @ref OPERACAKE_MODE_FREQUENCY mode

```
public static extern int SetOperacakeFrequencyRanges(HackRFDevice* device,  
HackRFOperacakeFreqRange* freq_ranges, byte count)
```

Parameters

device [HackRFDevice](#)*

freq_ranges [HackRFOperacakeFreqRange](#)*

count [byte](#)

Returns

[int](#)

SetOperacakeMode(HackRFDevice*, byte, OperacakeSwitching Mode)

Setup Opera Cake operation mode

```
public static extern int SetOperacakeMode(HackRFDevice* device, byte address,  
OperacakeSwitchingMode mode)
```

Parameters

device [HackRFDevice](#)*

address [byte](#)

mode [OperacakeSwitchingMode](#)

Returns

[int](#)

SetOperacakePorts(HackRFDevice*, byte, byte, byte)

Setup Opera Cake ports in @ref OPERACAKE_MODE_MANUAL mode operation Should be called after @ref hackrf_set_operacake_mode. A0 and B0 must be connected to opposite sides (A->A and B->B or A->B and B->A but not A->A and B->A or A->B and B->B)

```
public static extern int SetOperacakePorts(HackRFDevice* device, byte address, byte port_a,  
byte port_b)
```

Parameters

device [HackRFDevice](#)*

address [byte](#)

`port_a` `byte`

`port_b` `byte`

Returns

`int`

SetOperacakeRanges(HackRFDevice*, byte*, byte)

Setup Opera Cake frequency ranges in @ref OPERACAKE_MODE_FREQUENCY mode operation Old function to set ranges with. Use @ref hackrf_set_operacake_freq_ranges instead! **Note:** this configuration applies to all Opera Cake boards in @ref OPERACAKE_MODE_FREQUENCY mode

```
[Obsolete("Use hackrf_set_operacake_freq_ranges instead.")]
public static extern int SetOperacakeRanges(HackRFDevice* device, byte* ranges,
byte num_ranges)
```

Parameters

`device` `HackRFDevice*`

`ranges` `byte`*

`num_ranges` `byte`

Returns

`int`

Namespace HackRFDotnet.NativeApi.Structs

Structs

[HackRBiasTUserSettingReq](#)

[HackRFBoolUserSetting](#)

[HackrfTransfer](#)

Delegates

[HackRFFlushCallback](#)

[HackRFSampleBlockCallback](#)

[HackRFTxBlockCompleteCallback](#)

Struct HackRFBiasTUserSettingReq

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFBiasTUserSettingReq
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

off

```
public HackRFBoolUserSetting off
```

Field Value

[HackRFBoolUserSetting](#)

rx

```
public HackRFBoolUserSetting rx
```

Field Value

[HackRFBoolUserSetting](#)

tx

```
public HackRFBoolUserSetting tx
```

Field Value

[HackRFBoolUserSetting](#)

Struct HackRFBoolUserSetting

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFBoolUserSetting
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

change_on_mode_entry

Change value on mode entry

```
public bool change_on_mode_entry
```

Field Value

[bool](#)

do_update

If true, update default values

```
public bool do_update
```

Field Value

[bool](#)

enabled

Enabled

```
public bool enabled
```

Field Value

[bool](#) ↗

Delegate HackRFFlushCallback

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public delegate void HackRFFlushCallback(nint flush_ctx, int status)
```

Parameters

flush_ctx [nint](#)

status [int](#)

Delegate HackRFSampleBlockCallback

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public delegate int HackRFSampleBlockCallback(HackrfTransfer* transfer)
```

Parameters

transfer [HackrfTransfer*](#)

Returns

[int](#)

Delegate HackRFTxBlockCompleteCallback

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public delegate void HackRFTxBlockCompleteCallback(HackrfTransfer* transfer, int status)
```

Parameters

transfer [HackrfTransfer](#)*

status [int](#)

Struct HackrfTransfer

Namespace: [HackRFDotnet.NativeApi.Structs](#)

Assembly: HackRFDotnet.dll

```
public struct HackrfTransfer
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

buffer

```
public byte* buffer
```

Field Value

[byte](#)*

buffer_length

```
public int buffer_length
```

Field Value

[int](#)

device

```
public HackRFDevice* device
```

Field Value

[HackRFDevice](#)*

rx_ctx

`public void* rx_ctx`

Field Value

[void](#)*

tx_ctx

`public void* tx_ctx`

Field Value

[void](#)*

valid_length

`public int valid_length`

Field Value

[int](#)

Namespace HackRFDotnet.NativeApi.Structs.Devices

Structs

[HackRFDevice](#)

[HackRFDeviceList](#)

[HackRFOperacakeDwellTime](#)

[HackRFOperacakeFreqRange](#)

Struct HackRFDevice

Namespace: [HackRFDotnet.NativeApi.Structs.Devices](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFDevice
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Struct HackRFDeviceList

Namespace: [HackRFDotnet.NativeApi.Structs.Devices](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFDeviceList
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

devicecount

Number of connected HackRF devices

```
public int devicecount
```

Field Value

[int](#)

serial_numbers

Array of human-readable serial numbers. Each entry can be NULL.

```
public char** serial_numbers
```

Field Value

[char](#)**

usb_board_ids

ID of each board, based on USB product ID

```
public HackrfUsbBoardId* usb_board_ids
```

Field Value

[HackrfUsbBoardId*](#)

usb_device_index

USB device index for each HW entry

```
public int* usb_device_index
```

Field Value

[int↗*](#)

usb_devicecount

Number of all queried USB devices

```
public int usb_devicecount
```

Field Value

[int↗](#)

usb_devices

All USB devices (as libusb_device** array)

```
public void** usb_devices
```

Field Value

void ↵ **

Struct HackRFOperacakeDwellTime

Namespace: [HackRFDotnet.NativeApi.Structs.Devices](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFOperacakeDwellTime
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

dwell

Dwell time for port (in number of samples)

```
public uint dwell
```

Field Value

[uint](#)

port

Port to connect A0 to (B0 mirrors this choice) Must be one of operacake_ports

```
public byte port
```

Field Value

[byte](#)

Struct HackRFOperacakeFreqRange

Namespace: [HackRFDotnet.NativeApi.Structs.Devices](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFOperacakeFreqRange
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

freq_max

Stop frequency (in MHz)

```
public ushort freq_max
```

Field Value

[ushort](#)

freq_min

Start frequency (in MHz)

```
public ushort freq_min
```

Field Value

[ushort](#)

port

Port (A0) to use for that frequency range. Port B0 mirrors this. Must be one of operacake_ports

```
public byte port
```

Field Value

[byte](#) ↗

Namespace HackRFDotnet.NativeApi.Structs. System

Structs

[HackRFM0State](#)

[ReadPartidSerialNo](#)

Struct HackRFM0State

Namespace: [HackRFDotnet.NativeApi.Structs.System](#)

Assembly: HackRFDotnet.dll

```
public struct HackRFM0State
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

active_mode

Active mode. Same values as requested_mode

```
public uint active_mode
```

Field Value

[uint](#)

error

Error that caused M0 to revert to IDLE. 0(NONE), 1(RX_TIMEOUT), 2(TX_TIMEOUT), 3(MISSED_DEADLINE)

```
public uint error
```

Field Value

[uint](#)

longest_shortfall

Longest shortfall in bytes

```
public uint longest_shortfall
```

Field Value

[uint](#)

m0_count

Number of bytes transferred by the M0

```
public uint m0_count
```

Field Value

[uint](#)

m4_count

Number of bytes transferred by the M4

```
public uint m4_count
```

Field Value

[uint](#)

next_mode

Mode which will be switched to when threshold is reached

```
public uint next_mode
```

Field Value

[uint](#)

num_shortfalls

Number of shortfalls

```
public uint num_shortfalls
```

Field Value

[uint](#)

request_flag

Request flag. 0 = completed, others = pending

```
public ushort request_flag
```

Field Value

[ushort](#)

requested_mode

Requested mode. Possible values: 0(IDLE), 1(WAIT), 2(RX), 3(TX_START), 4(TX_RUN)

```
public ushort requested_mode
```

Field Value

[ushort](#)

shortfall_limit

Shortfall limit in bytes

```
public uint shortfall_limit
```

Field Value

[uint](#) ↗

threshold

Threshold m0_count value (in bytes) for next mode change

```
public uint threshold
```

Field Value

[uint](#) ↗

Struct ReadPartidSerialNo

Namespace: [HackRFDotnet.NativeApi.Structs.System](#)

Assembly: HackRFDotnet.dll

```
public struct ReadPartidSerialNo
```

Inherited Members

[ValueType.Equals\(object\)](#) , [ValueType.GetHashCode\(\)](#) , [ValueType.ToString\(\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Fields

part_id

```
public uint* part_id
```

Field Value

[uint](#)*

serial_no

```
public uint* serial_no
```

Field Value

[uint](#)*