Flex 6700 Review by MSA

SDRZone

Flex Radio Signature Series Model 6700

Review

Part One – Introduction and User Experiences

February 15, 2014

Reviewed by Michael Alexander - N8MSA

Signature Series Model 6700 HF/VHF Transceiver

FlexRadio Systems, Inc.

Retail Cost =$7499.00 (without options – see discussion in review)

Review Type = User experiences (Part One), with some measurements and comparisons (Part Two)

Radio Architecture = DDC SDR HF/VHF Transceiver

Overview

The FlexRadio Signature Series Model 6700 is Flex's "flagship" software-defined radio (SDR) amateur radio transceiver, and the top offering of a series of three radios. The Signature Series marketing materials boast that the Signature Series being the most advanced, capable and easy-to-use transceiver in a rather narrow field of such radios. The design brief of this radio is, in the fewest words possible, to do as much of the digital signal processing (DSP) inside of the radio, thus allowing the use of low-bandwidth network connections for human interaction with the radio. This distinguishes itself from virtually all other "commercial" amateur and most "open" SDR designs that rely on PC to host the DSP routines.

Part One of this review will attempt to discuss this transceiver as it relates to the things that typical amateur radio operators demand from a radio in this price class: the ability to "hear", how it "sounds" on the air, how it integrates with a modern "shack" and similar topics. This review will also discuss how Flex's latest amateur offering relates to other transceivers, and how accessible it the Signature Series is for radio hobbyist experimentation.

Part Two (to follow later) will expand on Part One with some real-world comparisons with several contemporary transceivers, including the Apache Labs ANAN-100D and the Elecraft KX3.

Note that SmartSDR/Signature Series firmware version 1.1 was released as this review was underway, and was used for this review.

Who Would Be Interested

There are several potential user constituencies for the Flex Signature Series radios, including:

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  - Performance aficionados – DXing and weak-signal performance
  - Contesters – claimed adjacent signal rejection performance and station integration potential
  - People with multi-band monitoring needs – up to eight “slices” (virtual receivers)
  - People that want a seamless, high-quality remote operation experience (planned remote operation features)
  - “Spotters” – people that monitor amateur bands for transmitted calls, typically CW and “digital” modes (e.g. JT65-HF), and pass this information on the Internet for display and analysis

Reviewer

N8MSA, Mike Alexander. You can read more about the reviewer’s background using the link at the bottom of the review.

Ordering, Shipping & Receiving

The Signature Series family is currently made up of three products: the 6500 (transceiver with one “receiver”), the 6700R (two “receivers”, no transmitter) and the 6700 – the subject of this review. This particular 6700 was purchased by the reviewer for routine use in radio station N8MSA. The transaction was made after several discussions with Greg Jurrens of Flex’s Sales Department. The reviewer did not disclose to Flex an intent to write this review and received no special consideration, other than courteous service, from FlexRadio Systems. The 6700 was ordered January 9, 2014 and was delivered to radio station N8MSA (near Detroit, MI) on the 15th.

Signature Series radios ship with:

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  - The radio
  - A CD containing the SmartSDR installer and documentation
  - A one-meter CAT6 Ethernet cable
  - A “Quick Start” pamphlet
  - DC power cable with Anderson Power Pole connectors
  - FHM-1 Hand Mic (6500 and 6700)

Options available include rack-mount brackets, handles, microphones and, most notably, a GPS-disciplined oscillator (GPSDO). The benefit of a GPSDO is laboratory-quality frequency accuracy and stability. This option, which is quite possibly a first for radios in this segment, extends the already-excellent oscillator stability (0.02 PPM) to $5X10^{-12}$. The GPSDO features an auxiliary output, which allows you to use your GPSDO-equipped Signature Series radio as a time-base for other Signatures and even non-Flex Radio equipment, such as the Elecraft K3 transceiver.

The transceiver came in a typical shipping box, with molded Styrofoam insert around the radio and a cardboard box holding the accessories. The radio does not ship with printed manuals; a transceiver manual, SmartSDR and companion software manuals are installed as PDF files when installing the software.

Shipping Container

Accessory Contents

Notable Specifications

Below are listed the typical “first-glance” specifications that are often perused first in a transceiver purchasing decision. Specifications related to internal components, and how the radio works, will be covered under the “Architecture” section.

30 kHz – 77 MHz; 135 – 165 MHz receive frequency coverage - wideband
160M-6M amateur radio band transmitter coverage
0.02 ppm frequency stability (standard, GPSDO optional)
2"Spectral Capture Units” (ADC receiver front-ends)
8"Slice Receivers”(virtual receivers)
Amateur Band Preselector Coverage – 160 to 6M (except 60M)

Preamplifiers/Attenuators - PRE1: -11.5 to +20 dB DVGA; PRE2: 20 dB
RF output power 1-100W SSB, CW, FM, RTTY, DIGITAL; 1-30W AM
Built-in antenna tuner standard
Modes: USB, LSB, CW, RTTY, AM
1Gbps Ethernet network interface, 2 USB 2.0 interfaces
Power supply requirements: +13.8V DC ±15% 23A maximum current drain
SmartSDR graphic user interface PC application

Architecture and Related Design Concepts

The Signature Series represents a significant departure from traditional HF amateur radio transceiver designs. The vast majority of amateur HF radios use some manner of superheterodyne design, whereby incoming signals are “mixed” with reference signals so as to lower the frequency of the signal of interest to a point where the information (typically audio) may be more easily recovered (“demodulated”). These radios often employ commercial of-the-shelf (COTS) digital signal processing (DSP) integrated circuits that provide filtration, equalization and noise management capabilities that are difficult to realize in a purely analog design, at the cost of increased complexity and cost. Despite the advances made in component technology and design principles, “superhet” radios still suffer all of the inherent design limitations that have plagued this architecture since the 1930s.

Borrowing from defense, commercial and academic research, radio hobbyists have increasing turned to software-defined radios, or SDRs, to address some of superhet’s inherent limitations. SDRs retrieve information (baseband audio) from a signal by the use of mathematical algorithms, allowing the demodulation and the processing to be combined into one logical processing device. This allows for reduced overall complexity, giving designers (and experimenters) greater flexibility and improving performance in certain key areas, such as filtration. Most SDR designs are realized as an analog “black box” performing the RF filtering, mixing and analog-to-digital conversion, with the baseband processing and modulation/demodulation performed in PC software. There are many exceptions to this, such as the Elecraft K3 and KX3, but this has been the format of many dozens of hobbyist SDR systems.

Radio hobbyists, leveraging recent radio designs and research, have begun experimenting with direct down-conversion (DDC) SDR designs, whereby the analog to digital converter (ADC) / digital-to-analog converter

(DAC) is connected (almost) directly to the antenna. These designs offer the potential for better RF front-end (those components attached most closely to the antenna connector) performance through the elimination of most, if not all, RF filters and mixers. Several recent hobbyist SDR radios have largely been designed around two key components: an ADC/DAC, and a device known a field-programmable gate array (FPGA).

FPGAs are, simply stated, a large collection of basic logic units in one package that may be configured in almost any manner a designer needs. These differ from microprocessors in that microprocessors are general-purpose devices that execute a list of instructions, where an FPGA can be likened to reprogrammable board full of logic chips that are configured to perform very specific tasks. This streamlining makes them very good at doing certain things *very, very* fast, such as addition, division, bit shifting and other things that come in very handy when trying to work with the huge amount of data that a high-resolution, broad-band ACD/DAC can generate.

Current FPGA-based SDRs can be grouped into two design strategies: FlexRadio's Signature Series and the OpenHPSDR project, which differ primarily in how much (and what kind) of processing is done in hardware. The Signature Series concept brief is "do as much in the radio as possible", and the OpenHPSDR brief is "use the radio as an RF front-end and data source, with the PC software doing most of the heavy lifting". The Flex design concept has the potential to pay dividends in performance, ease-of-use and remote operation, but at the highest price-point for a widely-distributed hobbyist SDR available today.

Design and Build Quality

The build and finish of the SDR is commensurate with other premium hobbyist radios. The connectors are solidly mounted, the layout appealing and the overall finish is very professional.

The front panel takes a minimalistic approach, sporting the typical “microphone/headphone/CW key” connectors. Unique within the current “knob-less” SDR market is the “Multifunction Display”, used to convey status information to the user, and a set of “Navigation Keys”, which function as “button mouse”. A power button, and a “Multifunction Status LED”, round out the front panel.

Radio Front

The rear panel contains a wealth of connectivity, including the usual power, audio and RF connections. Flex's "Flex I/O" connector is makes an appearance on this radio, but is now simply referred to as the "Accessory Connector". The Signature Series' rear panel also features several connections not often seen on hobbyist radios of any architecture, including:

RX antenna input/output "loops"

Transverter connector

GPS Disciplined Oscillator (GPSDO) input connector (active with optional GPSDO)

10 MHz reference output (active with optional GPSDO)

XLR balanced microphone input

1Gb/s Ethernet

USB 2.0 host connectors

Radio Back

Computer Requirements

An important consideration for any SDR purchase is the PC, and here we find one of the largest deviations from current SDR trends. The FlexRadio Signature Series is designed to allow human interface devices to communicate via Ethernet with the transceiver using a fraction of the network bandwidth needed by almost all other SDRs, and thus needs a fraction of the processing “power” of those designs. This means that the human interface device could be a PC, or a mobile device such a cellphone-based tablet.

SmartSDR, the current PC client software, is primarily a graphic user interface (GUI) and requires little in the way of processing power. Flex Radio does not list a PC hardware requirement, only mentioning that SmartSDR is intended for use with Microsoft Windows XP Service Pack 3 or later, and that it requires Microsoft .Net Framework 4.0 be installed on the client system. A number of PC hardware platforms were used in the course of this review, ranging from custom Intel i7-based systems down to

single-core Atom-based miniature industrial PCs; SmartSDR performed almost identically on all platforms tested.

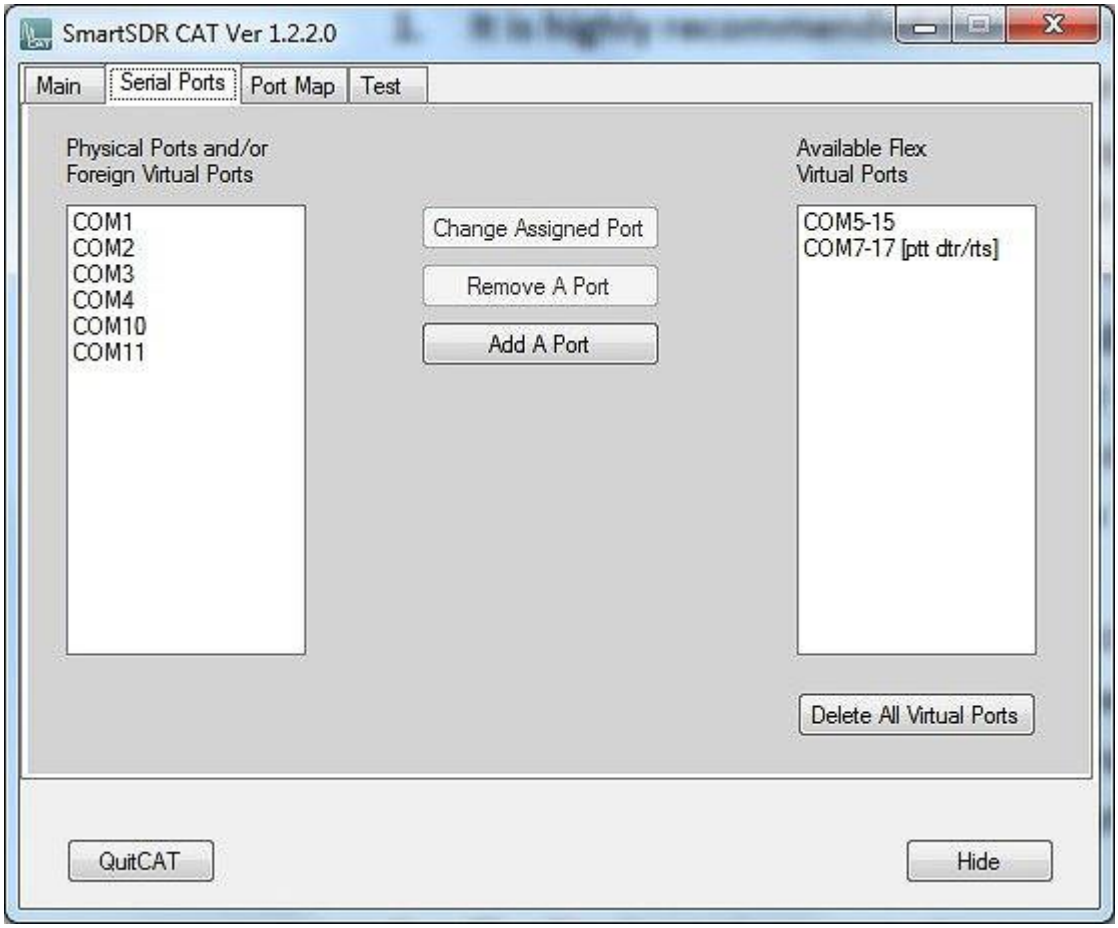
Setup

Setup was straightforward: the SmartSDR Microsoft Windows installer (version 1.1) was downloaded from the FlexRadio Systems homepage, and launched. The installer will create two applications: SmartSDR (the user interface) and DAX Control Panel (the Digital Audio eXchange console). There is a third, optional program that can be installed from the Windows Start Menu after SmartSDR installation, and that is SmartCAT – the rig control companion application to SmartSDR. We will discuss each of these in the subsequent sections.

Initial Configuration

SmartCAT

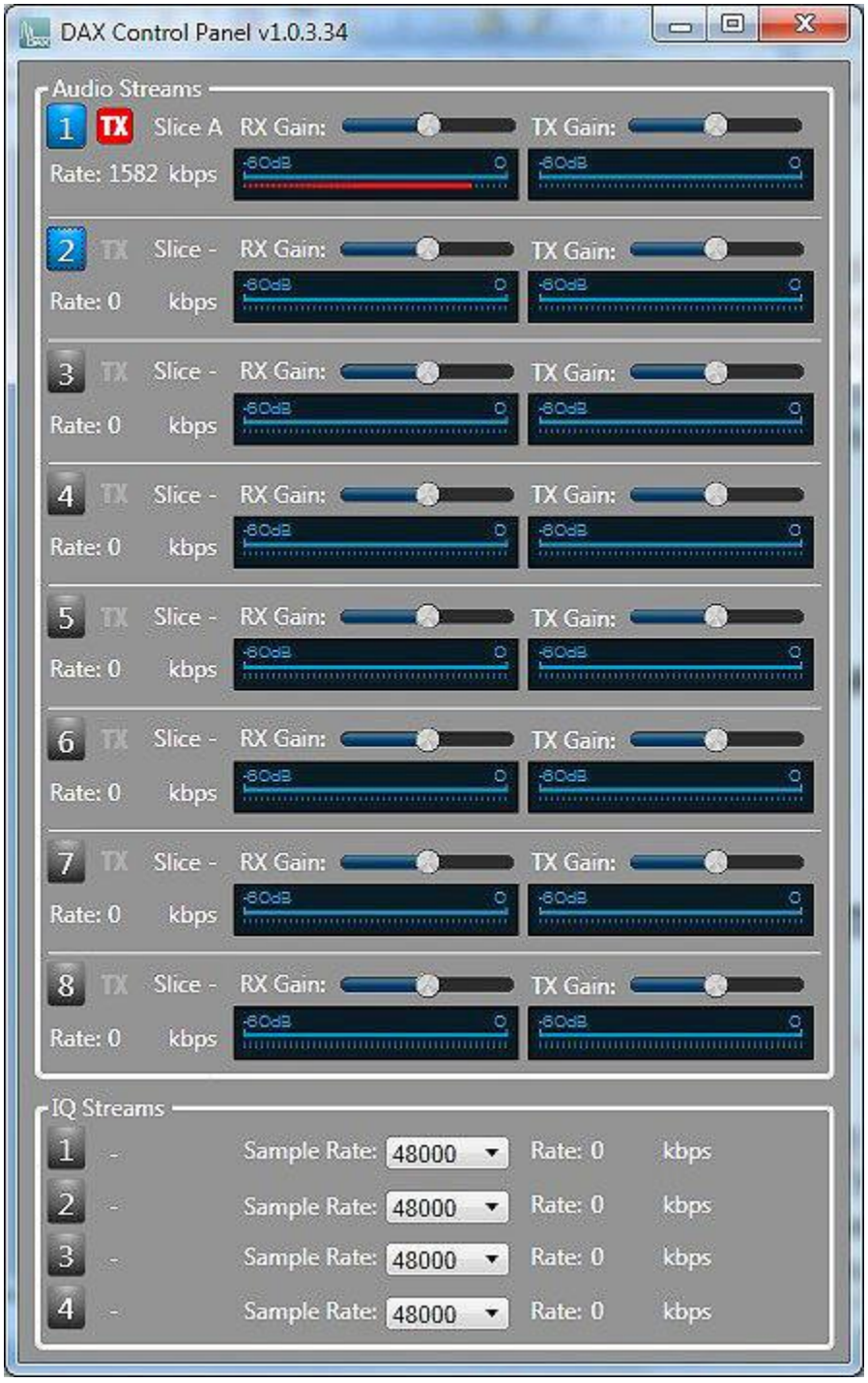
SmartCAT is a SmartSDR companion program that provides traditional “COM port”-style transceiver control from third-party programs (such as Ham Radio Deluxe and fldigi) to Signature Series radios. Configuration is straightforward; the instructions in the SmartSDR Software User’s Guide were followed to create a primary rig control port and a keying port. These worked as expected.



SmartCAT Configuration

DAX

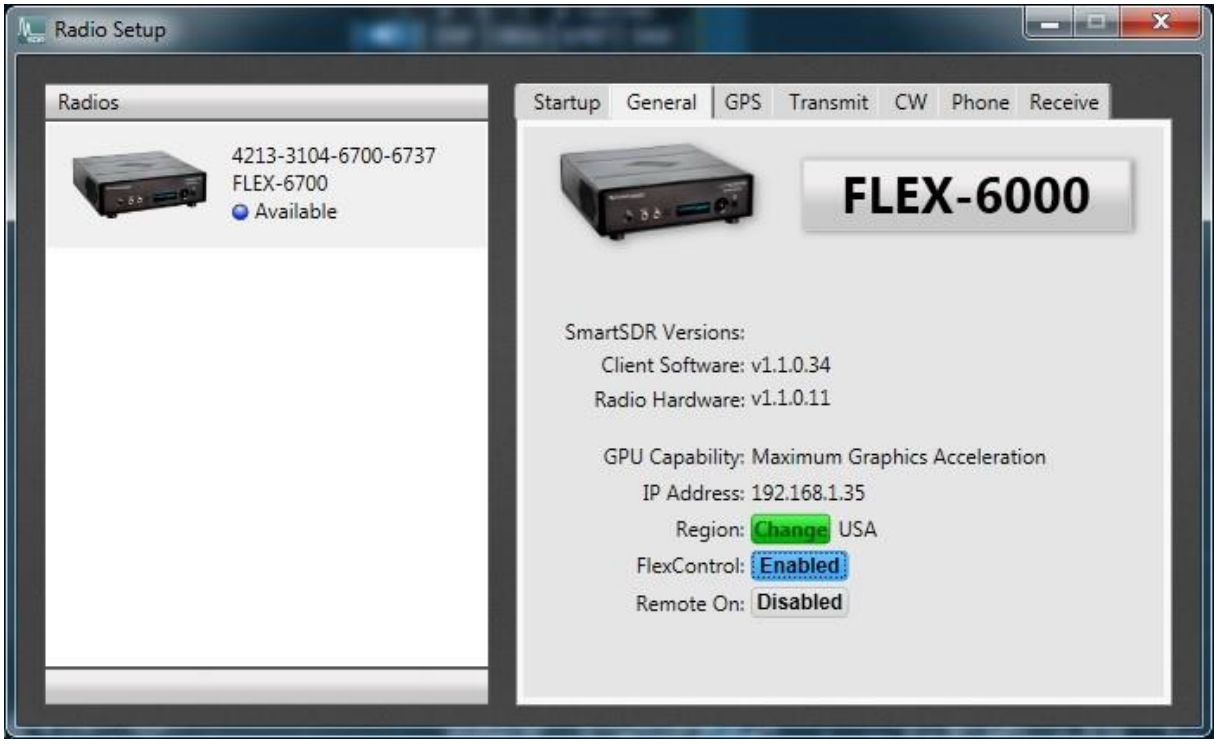
Digital Audio eXchange, or DAX, is a SmartSDR companion program that provides control of digital audio connections to and from Signature Series radios. This capability is unique in the hobbyist SDR market, in that DAX creates Windows sound devices and doesn't rely on "virtual audio cables" that have been the mainstay of SDR audio connectivity for several years.



DAX Control Panel

Smart SDR

SmartSDR initial configuration is performed through the Radio Setup console. The operator can select from a list of available radios, (as one of the features of the new system is that you can interact with multiple radios), and configure a number of basic options on a per-radio basis. Options include receiver and transmitter behavior, as well as the configurations of the optional GPS disciplined oscillator accessory.



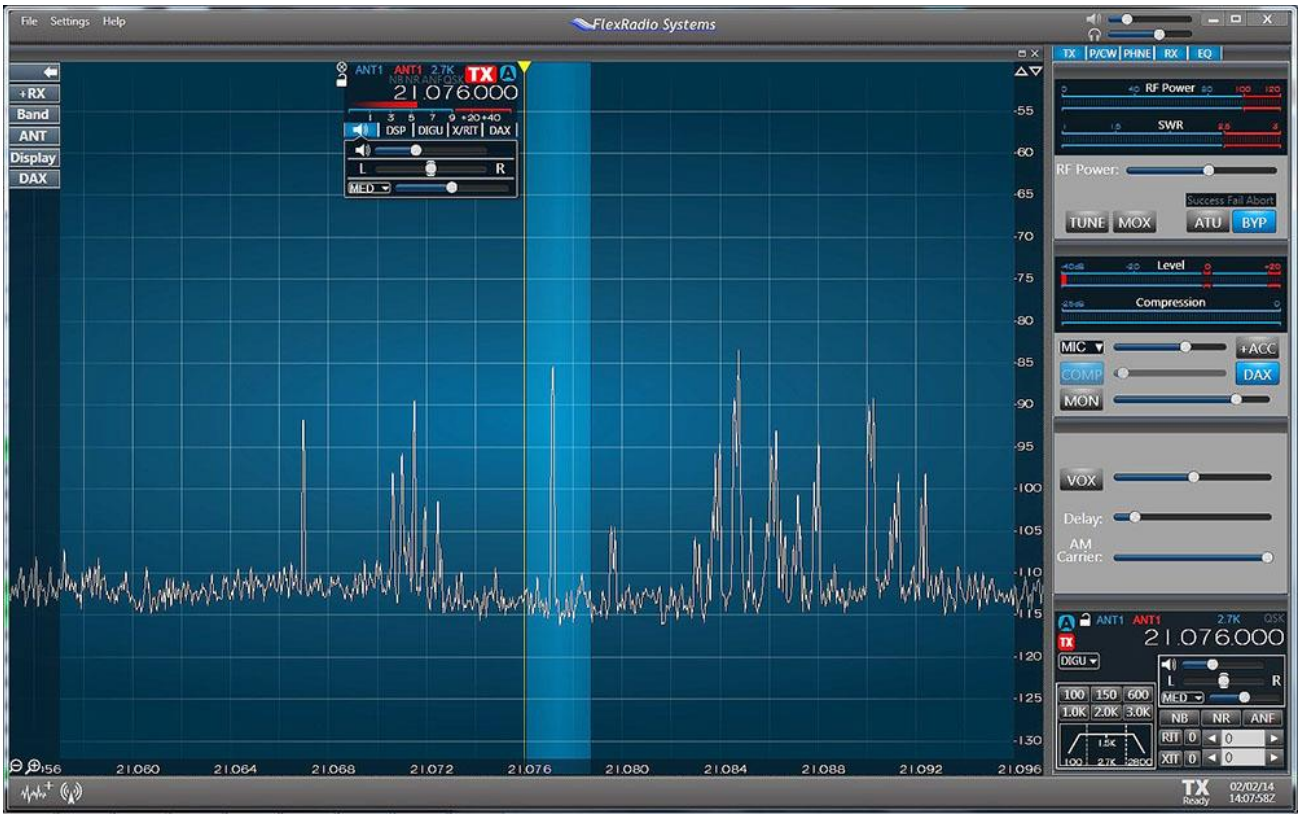
Radio Setup Console

Operation

Operation of the Signature Series is accomplished through the SmartSDR user interface. SmartSDR provides a simple and intuitive interface, providing a user-friendly operating experience to experienced and new SDR users alike. New SDR users will appreciate the clean and responsive interface, while experienced users will find most of the controls they need available with two mouse-clicks.

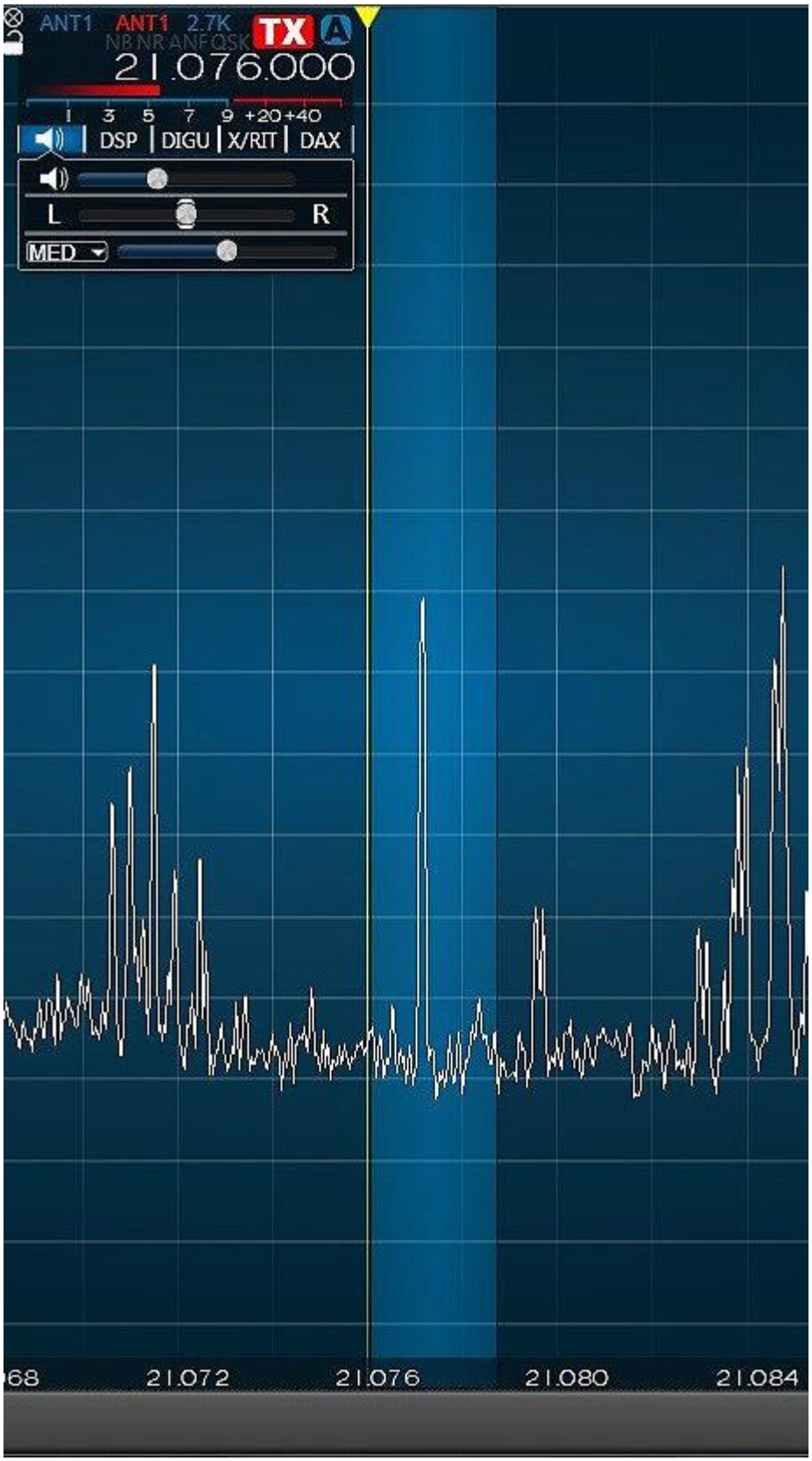
Operation begins with launching SmartSDR, selecting the desired radio from the Radio Setup console, and clicking Connect. SmartSDR will open one “panadapter”, which is a horizontally-oriented view of a frequency range, and a “slice”, which selection of RF bandwidth represented by a shaded vertical bar. Controls can be found to the left, right and bottom of

the SmartSDR interface, and are even located in a “flag” at the top of the slice’s frequency indicator bar. Several controls, such as antenna selection, are available from multiple locations in the interface. This affords users a flexibility and convenience, especially helpful in competitive environments.



Smart SDR Interface

Tuning is accomplished in several ways, perhaps most conveniently through selecting a panadapter “slice flag” and “dragging” it to the desired frequency. Operators may also double mouse-click on the panadapter to “click-tune”, a mouse wheel can be use to tune and a USB-connected external tuning knob can be used to tune Signature Series radio.


ANT1
ANT1
2.7K
TX
NB NR ANF QSK
21.076.000
1 3 5 7 9 +20 +40
DSP
DIGU
X/RIT
DAX
L
R
MED
21.072
21.076
21.080
21.084

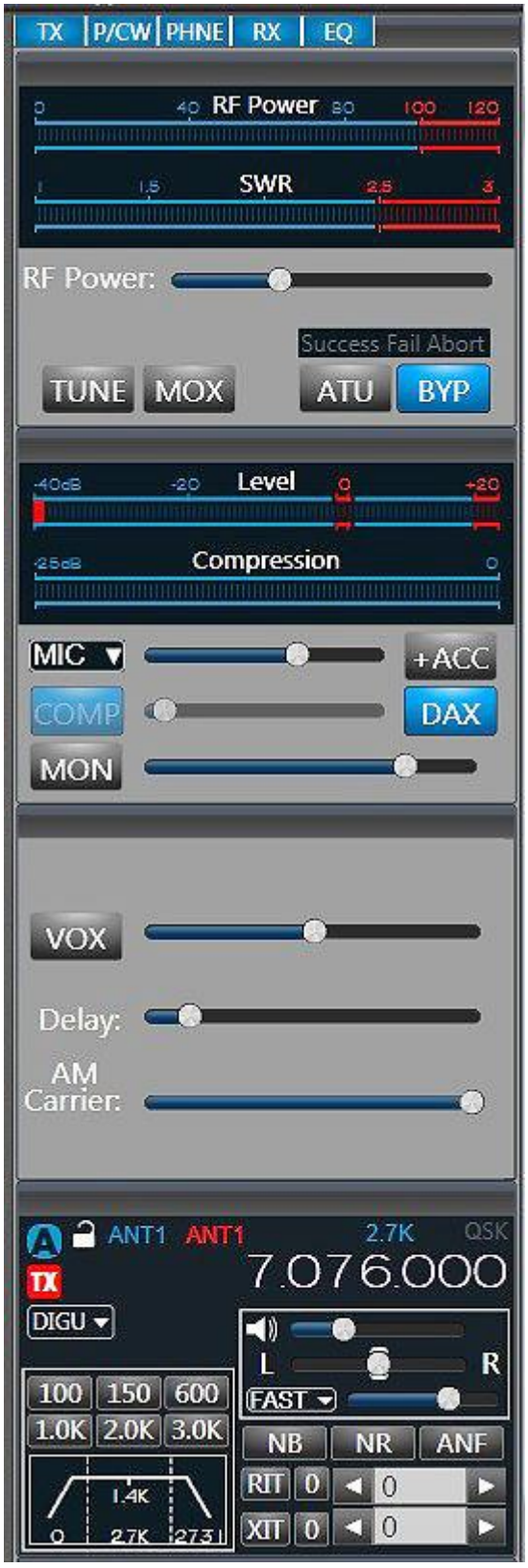
Receiver "Slice" (control "flag" shown at top)

Drag-tuning is best used for quickly tuning to the desired signal, but must be “fine tuned” by another method as dragging doesn’t allow for stopping on particular frequencies, and won’t “snap to grid” as some other SDR applications will.

Transmitter Operation

The transmitter is controlled primarily, though not exclusively, through the aptly-named Transmit Control Panel, found on the right-hand side of the SmartSDR GUI. The available options are dependant on upon the operating mode selected; selection of DIGU and DIGL, for example, disables the TX (and RX) equalizer. Common controls include sliders for power and “tune” settings, MOX (TX), antenna tuner actuation and bypass.

Antenna selection and TX frequency is controlled through a combination of the left-side control panels and the “slice flags”. This control strategy allow for rapid selection of TX antenna and TX frequency, allowing easy control during “split” operation



Trasmission Control Panel

Receiver Performance

Receiver performance is, overall, superb. Side-by-side listening test with premium DSP amateur transceivers and other SDR receivers gives the reviewer the opinion that the receiver in the 6700 has great dynamic range, is easy to use and easy to listen to. The receiver's interface, and certain features (such as noise blanking and filter configuration), however, are still in not quite "finished".

Attenuation and pre-amplification controls are found in the ANT menu on the left side of the screen. These controls are useful for keeping desired signals in the linear range of the ADC. The for attenuation differs somewhat in intent, and effect, from receiver architectures with mixers, as the dynamic range of the Signature Series receiver is determine by the ADCs and is very broad. We found, during this test, that it was best to manipulate these controls so that the receiver was just under an overload condition, as this brought weak signals into a more linear range of the ADC and allows, in some cases, weak signals to "piggy-back" on strong signals.

SmartSDR places customary DSP controls on the "slice flag". These controls include:

Operating ("demodulation") mode
Filter width
AGC response and threshold
Noise reduction
Noise blanker
Auto-notch filter

A few words about filter control: filter width can be controlled by selecting presets in the slice flag, grabbing the filter boundaries with the mouse pointer, the Filter control panel or by a filter control tool that appears when the mouse pointer is "hovered" of the bottom of the tuning line. Filter offset, and filter boundaries, can be controlled directly by dragging the entire filter with the mouse pointer or by grabbing filter edges, and dragging the edge to the desired frequency. This is especially effective when placing the edges by visual inspection.

The noise blanker, and the noise reduction are, at this time, only modestly effective at best. The noise reduction, especially, doesn't seem to do anything of any real merit and I am hoping that this feature matures as

quickly as the rest of the system has to this point. The noise blanker is a little better, but is far from best-in-class. Noise blankers are notorious in their difficulty to design and, again, I hope this quickly improves.

One of the most important observations made in the course of this review is that many signal processing parameters that are exposed on other SDR radios, such as “filter depth” (the amount of data buffered for filter processing), are not accessible through the SmartSDR GUI. The main practical result of this is that the user is compelled to live with Flex’s predetermined processing behaviors, which is a vast departure from prior Flex offerings and most SDR systems as a whole. How this impacts users varies greatly between modes, as we will discuss below.

SSB

The SSB sound for both upper and lower sideband is “good”. AGC response is very linear, but doesn’t seem to be able to make the best use of the available signal-to-noise ratio that the very best AGCs offer. The noise blanker is largely ineffective, and the noise reduction is, in its current state, useless. The RX Equalizer provides eight bands of coverage and is very useful t in compensating for the lack of maturity of the other receiver features.

AM

Receiver performance in AM mode, similar to SSB, can be rated as “good”. There is a dearth of controls for AM so, for now, what you see is what you get.

CW

CW performance is good…in non-contest conditions. CW sound is good, but in the absence of “brick-wall” filtration, an audio peaking filter and other such CW enhancements, the Signature Series is not quite ready for CW contesting…yet. No-where does the current lack of adjustability have more of an impact than in CW, as operators can’t fine-tune the system in the ways that many have become accustomed to.

AUTHOR EDIT (2Feb2014 20:56 UTC) It has already been pointed out to me that the comment above regarding the lack of a CW audio-peaking filter (APF) is not accurate circa SmartSDR version 1.1. Please note that I

started this review with version 1.0 of SmartSDR, and migrated to 1.1 having almost finished this article. I thought I had reviewed and corrected all of the version-dependant content, but obviously this was missed. My apologies for this, or any similar oversight.

Digital Modes (DIGU and DIGL)

The great strength of the Signature Series receiver is, at the time of this writing, in the use of digital mode operation. Selection of DIGU (sideband above VFO frequency) and DIGL (sideband below the VFO frequency) automatically disables audio equalization and enables DAX for the selected slice. DAX, the digital audio exchange utility installed with SmartSDR, allows operators to conveniently feed digital audio to third-party applications, such as JT65-HF, without the use of analog sound card interfaces or “virtual audio cables” (VAC), a third-party Windows operating system accessory used by many SDR operators to exchange digital audio with programs such as the aforementioned JT65-HF. DAX is, in the opinion of this author, a much better solution than either of the legacy systems in that adds little-to-no discernable distortion and is much less sensitive to the huge variations in real-time audio and networking performance between Windows PCs.

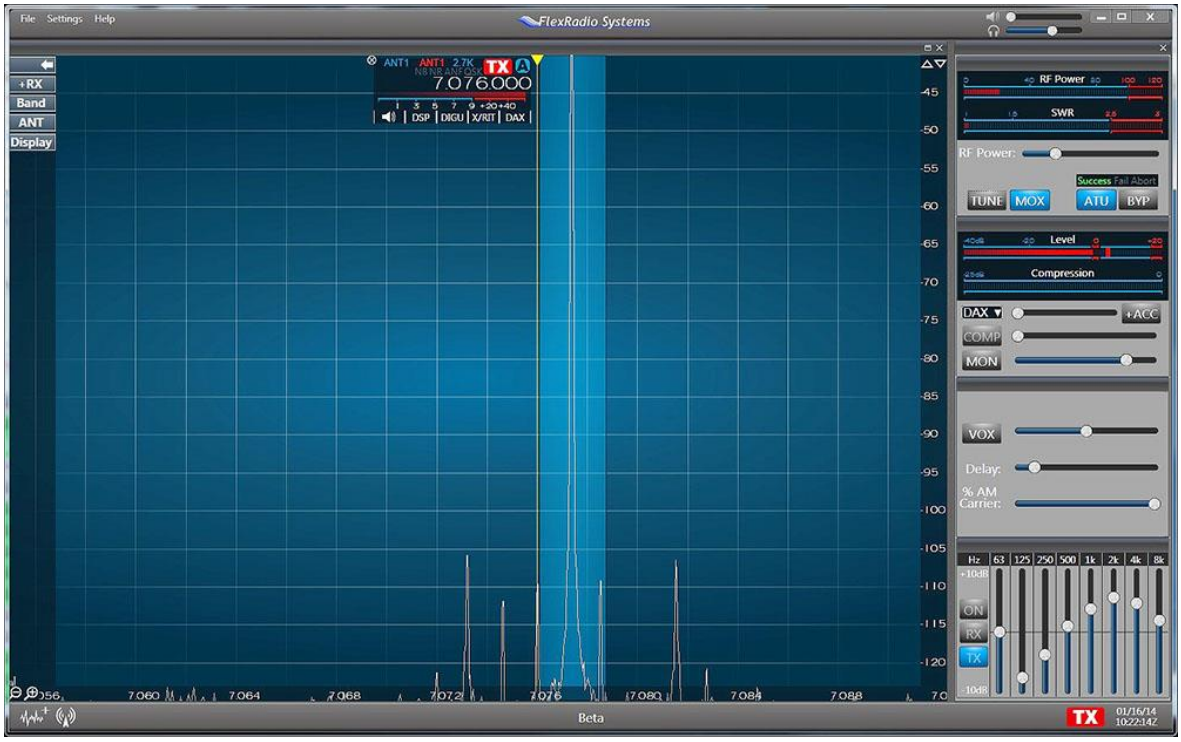
Transmitter Performance

Transmitter performance appears, at the time of writing, “good”. SSB and AM audio quality, after proper adjustment, sounds like most other SDR transmitters. I found that, as one should expect from a modern amateur transceiver, the 6700 could be adjusted to work well with a variety of microphones. I often use a Heil PR40 dynamic microphone, and the 6700 had no problem accommodating the microphone directly. Due to the number of radio in current use at the reviewer’s station, an audio mixer and switch is used to distribute the microphone’s signal and the line-level input from the mixer/switch combination worked well.

There was an oddity noted during the test, and that is the tendency of transmitter output power to drop, during normal speech, while operating SSB. This condition has been noted with Flex Radio’s prior generation of products, but was easily adjusted in those products to deliver a consistent

output. This is more problematic with the 6700, as these setting are not (at the time of this writing) exposed in the same manner as they were in the earlier Flex products.

CW performance (wave-shape, delay, etc.) is, up to approximately 30 WPM, adequate. There are some interesting subtleties of using the internal key, but these are relativity minor and easily overcome by using an external keyer. The transmitter shines, in similar fashion to the receiver, when operating digital modes. The transmitted signal benefits from the same DAX digital audio connection quality as the receiver, so there are a minimum of spurs, pops and other artifacts than can occur with other SDR architectures. An example of a JT65-HF transmission is shown below:



Single-tone Transmitted Signal

The standard antenna tuner functions quickly and with a minimum of bother. The impedance range, while not quite as broad as the current best-in-class built-in tuner (Elecraft K3), is wider than many transceivers and will help tame that antenna that you're occasionally using outside of its ideal range to "bag that rare one".

The transmitter has much the same protection features as its contemporaries, including open-and-short protection, SWR de-rating and variable speed fans. The fans were barely audible throughout this test.

Station Integration

“Station integration” is a phrase that I use to express how well a given piece of equipment works with other devices in hobbyist radio station. I give this special consideration, as this often-overlooked aspect can make, or break, equipment in a user’s station. Today’s amateur transceivers very widely in the amount and quality of the integration options they offer, with the Signature Series landing somewhere in the 85th-percentile area.

Apart from RF connections, the Signature Series’ main connection to the outside world is through Ethernet. Consistent with Flex’s design goals, the 6700 used much less bandwidth than other Ethernet-attached SDRs. A peak of 500 kB/s “down” (from the radio to the PC) and 150kB/s “up” (from the PC to the radio) was noted in “worst-case” operation: two panadatpers and eight slice receivers active. The system also seems to work well with a Wi-Fi connection, meaning that SmartSDR can be used on a variety of different Microsoft Windows-compatible hardware platforms and with Wi-Fi access points that are now almost *de rigueur* in the modern radio hobbyist household.

SmartCAT is SmartSDR’s “rig control” connection, and worked well enough in most tests. SmartCAT’s “keying” port worked very quickly and without incident, but the CAT emulation port seemed to have timing issues against certain applications such as Ham Radio Deluxe. The reviewer discussed this with Flex; they are aware of these issues and are pursuing a fix. They are also investigating the creation of an API (application programming interface)-based solution to communicating with third-party programs.

Besides microphone and amplifier keying I/O, the 6700 also contains two USB 2.0 ports and a proprietary Flex Control I/O port. The USB ports are not used at the time of this writing, and the Flex Control, while featuring several important inputs and outputs (such as line-level audio inputs), does not offer anything in the way of station integration connectivity. This leads us to observation that this system’s most glaring omission is the lack of BCD band data and perhaps the lack of an RS-232 (COM) port. Using the 6700 with the vast majority of amplifiers, antenna rotators, bandpass filters and similar devices is made much easier by the inclusion of this kind of

connectivity. There are work-arounds for this, including “station controllers” (such as the microHAM Station Master) and PC software, but these do not allow the Signature Series to operate in the “headless”, no-PC environment that Flex has frequently mentioned when discussing this radio.

Experimentation

Experimentation is an important aspect of amateur radio, and SDRs have typically offered many exciting possibilities in this area. The Signature Series differs in this regard, as it was designed to be a “communications server”, potentially used in a remote configuration. It is, therefore, a closed architecture and is not as easy to use in an experimental manner. FlexRadio has mentioned, though has not made an official announcement, a two-tier strategy that could be described as an “API” (application programming interface) and an “SDK” (software development kit) approach. It is my understanding at the time of writing this review is that there will be, at some point, some manner of API released to the public. This will allow people to author software that will interact with SmartSDR by exchanging data and control signals with, for example, a digital-mode application such as some future release of JT65-HF. The “SDK” approach would perhaps allow parties willing to execute a non-disclosure agreement (NDA) with FlexRadio to gain access to a tool-kit that would expose some of the internal architecture of the radio to development of, for example, a resident PSK modem.

This as-of-yet confirmed strategy would allow more “experimental” access to the Signature ecosystem than a typical Kenwood, Icom, Yaesu or Elecraft product, though not as much as the many open-source projects that have made up the heart of hobbyist SDR to this point. It’s worth noting that previous FlexRadio offerings were leaders in access to the PC application code, and that this access was eventually withdrawn as FlexRadio sought to maintain its commercial positioning in the face of dozens of low-cost projects, many using Flex’s own software as the basis of the projects GUI. Only time will tell if FlexRadio has made a viable decision in this area.

Scoring

8-10 = best in class, 5-7 Above Average, 3-4 Below Average, 2 Poor, 0-1 Unacceptable

Criteria	*Score 1-10 10 is high	Weighting	Weighted Score	
Order/Ship	10	0.07	0.7	Good Communicatio
Build Quality	9	0.12	1.1	Build quality is high, offerings
Design Quality	9	0.12	1.1	It's a black brick - fo
Ease of Setup	10	0.06	0.6	Setup couldn't be ea
Documentation	8	0.05	0.4	The SmartSDR User organized better.
Expandability	10	0.10	1.0	Three updateable pr allows for easy expa
Operating Experience	8	0.10	0.8	Easy to use, but limit
Performance	9	0.15	1.4	Very clean receive a decent transmit audi
Support	9	0.08	0.7	Professional Support
Value	10	0.15	1.5	The best cost/receiv
	92			
Overall Score (Average)	**9.2**	**1.0**	**9.2**	**Excellent**

Deriving a numeric “rating” for this, or any other radio hobbyist product, will inevitably be colored by the taste and prejudices of the reviewer. Having said that, it is safe to assume that this reviewer tends to regard such products as tools, attempts to be as dispassionate as possible regarding tools and considers such scoring against the expectations created by Flex Radio themselves. It is also safe to assume that these scores are relative to the state of the radio as it exists today, which will change at the very least according to the Flex Radio Signature Series development “roadmap”.

Pros

- Exceptional receiver performance
- Did I mention eight receivers?!

- Appealing, easy-to-use software
- The reigning king of “sound card” digital modes
- Low-bandwidth Ethernet connectivity
- Fast support
- Plenty of growth potential

Cons

- Is still a “work in progress”
- Some fundamental capabilities (e.g. FM) not implemented at the timing of writing this review.
- CAT control somewhat troublesome
- CW transmitting needs further refinement

Additional Thoughts

At roughly $7500 (without the GPSDO), the 6700 lives in the same rarified “prestige” amateur radio transceiver stratosphere as the Icom IC-7800, the Kenwood TS-990 and the Yaesu FT-DX9000. Is the 6700 worth the same money as those radios? That depends on your operating style, as the 6700 offers a completely different feature set and operating experience from these “embassy” radios – radios designed to be a “complete” HF radio station for commercial and government users, and adapted to amateur use. These “embassy” radios offer higher-output, 50V transmit power amplifiers, but that’s where the (potential) advantages end. The 6700’s receiver performance, connectivity and remote-control capabilities leaves one to wonder how much longer these platforms can remain viable commercial offerings.

Speaking of remote control…one of the primary unique selling points of Signature Series is the ability to remotely-control the radio, which needs to be considered in two different domains: local-area (“in the house”) and wide-area (“Internet”). The Signature Series currently supports local-area networking, and works rather well with relatively modest bandwidth. I connected to the radio all through my house, via Ethernet and Wi-Fi (with the 6700 connected to a switch), without issues. The radio currently does not support wide-area networking, as it will refuse to connect to client software that is being used through the Internet. Flex is currently working on a security strategy for Internet connectivity, as most people would agree that some steps should be taken to prevent unauthorized use.

Summary

The Flex Radio Signature Series radios, in many respects, offer best-in-class performance and a unique feature set. The 6700 is, in many ways, the current “king” of commercial amateur radio SDR transceivers. Its cost places it in the “prestige” class of amateur transceivers, but it’s current and future capabilities make it a good value compared to other radios in the same price class.

About the Reviewer

You can learn more about Mike [N8MSA] on the site at the link below:

http://n8msa.blogspot.com/