

ZX[®] Transmitter Series

Tri-Mode FM — HD Radio[™] — FM and HD Radio[™]
125 Watts — 5500 Watts



Unleashing the full power of FM radio with the most cost-effective and reliable digital and solid-state technologies



ZX[®] Transmitter

Proven Z Technology—Compact Package

Since its introduction in 2006, Harris has shipped hundreds of ZX[®] transmitters. The ZX line of FM transmitters is based on the world-class Platinum Z™ series. The ZX[®] is at home in a small market as a main analog transmitter. It is also perfect for HD Radio™ applications at the largest station or as an emergency “Flyaway” FM transmitter. The ZX transmitter combines field-proven reliability from the Platinum Z™ with a straightforward, simple design, ensuring that your investment pays off today and in the future.

The ZX series incorporates a complete, yet simple control system designed for long, trouble-free service. The optional Web interface permits a user to monitor and control the transmitter (and external accessories) via a standard TCP/IP connection with features such as logging or fault notification via e-mail notification.

The flexibility of the ZX design allows a wide range of exciter options including the Harris[®] MicroMax™ for quality analog performance with front-panel frequency selection and optional AES input; DigitCD™, the world’s most popular FM exciter, known for outstanding performance; FlexStar®, unrivaled performance and features for FM and HD Radio™; or you can use any standard 50-watt FM exciter. The broadband design of the ZX[®]

is ideally suited to N+1 for instant multiple-channel operation for a compact and reliable backup for analog or HD Radio™. The ZX[®] supports tri-mode operation with on-the-fly switching among analog, FM & HD Radio™ common amplification or HD Radio™ digital-only operation, making an HD Radio™ upgrade a snap.

The hinged front panel offers excellent access to interior components for ease of maintenance. Built-in RF directional couplers provide accurate power measurement and include an RF sample port with a rear-mount BNC connector



is ideally suited to drive test equipment such as a modulation monitor or spectrum analyzer. The ZX[®] meets or exceeds all applicable FCC, Industry Canada, CCIR and IEC-215 specifications. It is RoHS and CE compliant.

ZX[®] Features

- Power levels from 125 watts to 5500 watts
- Tri-mode operation; FM, FM + HD Radio™, HD Radio™ only
- “Hot-pluggable” field-proven Z FM linear RF amplifier modules rebiased on-the-fly
- “Hot-pluggable” auto-ranging power supplies
- Built-in MOV transient voltage suppression on incoming AC mains lines
- Internal harmonic filter with high-energy DC return for lightning protection
- Built-in parallel interface for remote control, status and metering; RFI and transient protected
- Proportional VSWR foldback for safe operation at reduced power into marginal loads (icy antenna, etc.)

Legendary Reliability



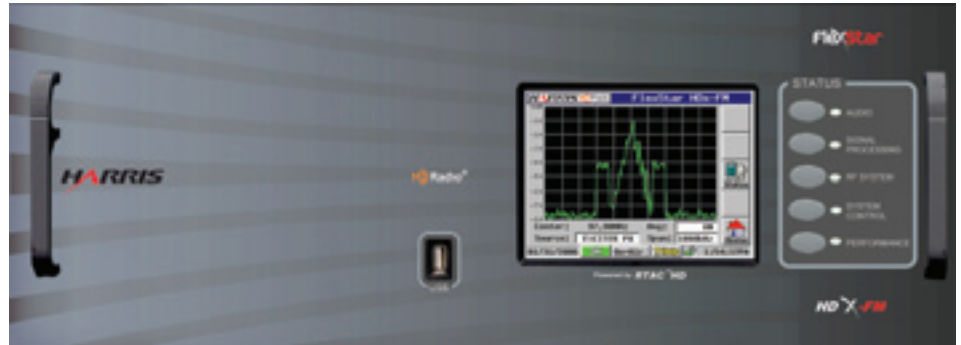
The entire ZX line leverages the Harris Platinum Z™ series — the world’s most popular solid-state FM transmitters — with more than 3,000 on the air. All ZX transmitters use the same proven RF modules as the ultra-reliable Platinum Z line. Combining unmatched expertise in analog and digital systems with a compact, straightforward architecture, ZX transmitters offer unsurpassed reliability, performance and key digital technology that cut acquisition and operating costs significantly.

FlexStar® HDx World-Class Performance

The Heart of Every Harris ZX® HD Radio™ Transmitter

The Harris FlexStar® HDx FM/HD exciter creates both the analog and HD Radio™ signals. Featuring RTAC™ (Real Time Adaptive Correction), you can be assured of superior mask compliance, maximum possible power output and the best efficiency.

The HDx is the most advanced exciter on the market today. Dual AES, analog left and right, dual composite and mono audio inputs provide the user with maximum flexibility in implementation. Integrated digital stereo generator with adjustable composite limiter provides top performance needed for competitive markets. Additionally, two SCA generators and RBDS encoding are built-in features. The unique Harris front-panel spectral display offers the user instant verification of mask compliance.



Simply add the Harris HDE-200 Program Exporter for basic HD and the HDI-100 Data Importer for Advanced Applications Services (AAS), such as supplemental audio channels (multicast) or additional data services.

With the combination of the FlexStar® and the ZX line of transmitters, you can feel confident that you are prepared for the future in the event that elevated side band

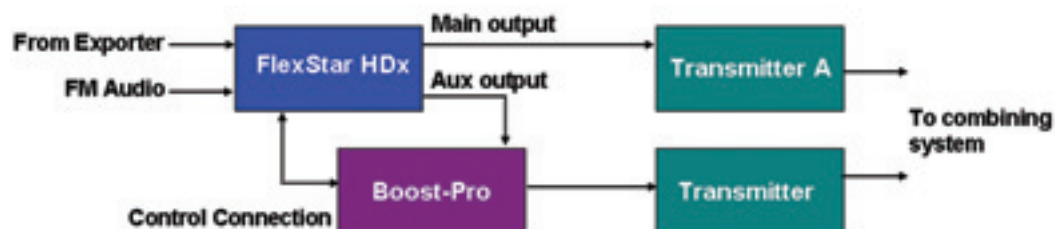
operation becomes a reality, since FlexStar® was used in the major tests conducted around the United States. With a simple software upgrade, the FlexStar® can increase from -20 dBc sideband to -10 dBc with full adaptive correction for ensured compliance.

Dual Transmitter Installations Just Got Easier

To complement the FlexStar exciter, the FlexStar® Boost-Pro is designed to provide a seamless interface of the HDx exciter's second RF output to a second FM transmitter. The Boost-Pro allows a single FlexStar® to drive dual transmitter configurations for a high-level,



separate antenna, Harris' exclusive efficiency-improving Split Level™ combining or for the addition of a second transmitter to provide -10dBc HD Radio performance to your existing system. Operating dual transmitters has never been easier thanks to the integrated electronic RF phasing control that eliminates costly and complicated mechanical RF phasing equipment, which requires regular adjustment. The Boost-Pro features the same bullet-proof tri-mode RF amplifier as the FlexStar® HDx, so you can be sure it will stand the test of time. The Boost-Pro also has the same logic connections as the award-winning Harris FM exciters such as the FlexStar® HDx and the Digit-CD™. The Boost-Pro plugs directly into Harris transmitters, so installation is a snap.



ZX[®] Transmitter

Web Remote
Optional Web Remote card provides full system monitoring and control via standard Web browser software.

Power Supplies
Auto-ranging, hot-pluggable power supplies provide automatic voltage regulation to compensate for power line fluctuation. Redundant supplies keep transmitter on-air in case of a supply failure.

Platinum Z Module
Tri-Mode FM module is the heart of the ZX transmitter, providing the same quality service as the Platinum Z™.

Hinged Front Panel
Hinged front panel provides easy access to all RF and power supply modules. Integrated, removable air filter uses washable material for simple service.

LED Multimeter

Switch between readings at the push of a button located under the front-panel meter. Monitor main readings such as forward and reflected power, PA voltage and PA current.

Mode Indicator

Analog (FM), HD Radio™ common amplification (HYB) or full digital mode (HD) — know transmitter mode operation at a glance.



Front-Panel Control

Transmitter On and Off commands are issued from the front-panel. Pressing the On button also resets any fault indicators that have been cleared. Power trim can also be controlled via the front panel Raise and Lower buttons.

Module Status

Front-panel status lights indicate operational status of all RF and power supply modules. Multi-colored LEDs help pinpoint any change in status from green to red in the event of a failure.

System Status

An array of indicators provide straightforward status and feedback on normal system operation, and all major faults.

Designed For Quick Installation

The compact ZX rackmount design makes integration into your system a snap. AC power mains connect via an included twist-lock (or optional PowerCon®) connector to the rear of the unit. Industry standard Type N, 7/8" or 1-5/8" EIA flange make for a quick connection to the RF antenna. Complete parallel remote control connections are made via a DB-25 connector, while interlock and exciter control are made via standard modular connections. An RJ-45 for the Web Remote rounds out the logic connections. Two standard BNCs provide connection for the exciter drive, and an RF sample drives monitoring equipment.



ZX1000 Rear Panel

Global Monitor and Control

Harris offers a compact monitor and control system for use with the ZX family of transmitters and other supporting equipment. The WEB Remote provides reliability and a small form factor due to a contemporary design that uses no moving parts. Simply mount the WEB Remote card into the pre-wired slot in the ZX chassis and connect your equipment to the Internet or LAN, and you have complete monitor and control capability in any location. Setup may be customized to allow for alarms once any set parameter violates a user-selectable threshold. In addition, WEB Remote can monitor and control external devices, including another transmitter!



WEB Remote Includes:

- RJ45 Internet connection with built-in Web server
- RS232 connection for log dump (and initial clock setup)
- On-board, real-time clock with backup capacitor
- 15 status inputs for external device monitoring
- E-mail and SNMP notification of faults
- Event log captures control and faults events

ZX500
ZX1000



ZX2000
ZX3500



ZX5000



	ZX500 MX, CD, FLX	ZX1000 MX, CD, FLX	ZX2000 MX, CD, FLX	ZX3500 MX, CD, FLX	ZX5000 MX, CD, FLX
Analog FM	125 to 550	250 to 1,100	500 to 2,200	875 to 3,850	1,250 to 5,500
FM & HD (common amp) -20 dBc	100 to 400	200 to 825	375 to 1,650	650 to 2,800	1,000 to 4,000
FM & HD (common amp) -10 dBc	60 to 240	120 to 480	220 to 960	380 to 1,680	600 to 2,400
HD Only (separate) -20 dBc	50 to 200	100 to 385	175 to 775	300 to 1,350	500 to 2,000
HD Only (separate) -10 dBc	45 to 170	90 to 340	155 to 680	270 to 1,200	425 to 1,700
Output Connector	"N" female	"N" female	7/8 EIA Flange	7/8 EIA Flange	1-5/8 EIA Flange
Rack Space	5 RU	5 RU	20 RU	20 RU	16 RU
PA Modules (includes IPA)	1	2	5	7	9
PS Modules	1	2	4	6	8

Exciter Guide

ZX-MX includes MicroMax — ZX-CD includes DigitCD
ZX-FLX includes Analog FlexStar — ZX-none, exciter purchase separately

ZX[®] Transmitter

ZX[®] Configuration

Each ZX[®] transmitter combines an exciter and amplifier bays with various configurations of PA modules to achieve the rated power.

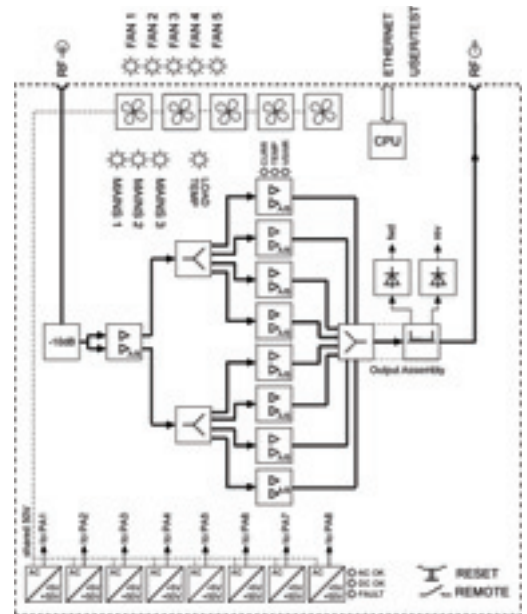
The amplifier bays contain several major systems:

Power Amplifier (PA) The hot-pluggable module features a pair of broadband (87.5-108 MHz) RF power amplifiers that require no user adjustments. Each amplifier can be easily replaced with a pre-tuned pallet, eliminating the need for optimization in the field. The PA modules are identical and fully interchangeable among all power classes in the ZX transmitter family, regardless of configuration. Each amplifier can be re-biased on the fly for operation in FM, FM + HD Radio™ and HD Radio™-only mode.

Power Supply (PS) The hot-pluggable module is a 1200 W 48 V power supply with a .98 power factor and mains input range of 90-264 V. The PS interface provides on/off functionality to the power supplies, a fan tachometer alarm, and redundant feed to the cooling system. Each module also has +5 V output to redundantly drive the low-voltage control circuits.

Cooling System The air cooling system includes internal redundant blowers, which pull cool air from the front through a removable filter, and exhausts in the rear.

Control System The main system control has extensive protection and control capabilities. It is located in the ZX amplifier bay and communicates with the exciter for mode switching. Each PA module has dedicated control and monitoring to support on/off functionality and alarms for reflected power, temperature and current overloads. The control system can be supplemented with a Web Remote card for Ethernet-based monitor and remote control.



**Typical system block diagram
ZX5000 shown**

ZX Specifications (For FM HD with FlexStar[®] HDx)

General

FM Power Output Range:¹

ZX500:	125 – 550 W
ZX1000:	250 – 1100 W
ZX2000:	500 – 2200 W
ZX3500:	875W – 3850 W
ZX5000:	1250W – 5500 W

FM+HD Power Output Range:²

HD signal injection ratio -20dBc	Injection ratio -10dBc
ZX500: 100 – 400 W	60 – 240 W
ZX1000: 200 – 825 W	120 – 480 W
ZX2000: 375 – 1650 W	220 – 960 W
ZX3500: 650 W – 2800 W	380 – 1680 W
ZX5000: 1000 W – 4000 W	600 – 2400 W

HD-Only Power Output Range:³

HD signal injection ratio -20dBc	Injection ratio -10dBc
ZX500: 50 – 200 W	45 – 170 W
ZX1000: 100 – 385 W	90 – 340 W
ZX2000: 175 – 775 W	155 – 680 W
ZX3500: 300 W – 1350 W	270 – 1200 W
ZX5000: 500 W – 2000 W	435W – 1700 W

RF Output Connector:

ZX500, ZX1000:	Type N female, 50 ohms
ZX2000, ZX3500:	EIA 7/8" male flanged, 50 ohms
ZX5000:	EIA 1-5/8" male flanged, 50 ohms

Excitation: Harris FlexStar[®] HDx digital FM/HD exciter

Frequency Range: 87.5 MHz to 108 MHz programmable in 10 kHz steps

Frequency Stability: ± 150 Hz, 0° to 50° C using high-accuracy internal (59.535MHz) TCXO. 10 MHz input for synchronization to external (GPS) reference. Automatic switching to internal oscillator if external reference fails.

VSWR: Protected against open or short circuit, all phase angles. Capable of operation into infinite VSWR with user-adjustable feedback threshold. Factory pre-set to 2.5% of nominal nameplate power.

Harmonic/Spurious Suppression: Internal harmonic filter meets or exceeds all FCC, IC, CE, CCIR and IEC215 requirements. Meets or exceeds standard NRSC-5A emission limits in all modes.

Modulation Types: FM digitally synthesized direct-to-channel, HD digital direct-to-channel, FM+HD digital direct-to-channel.

Operating Modes: "On the fly" switching between FM only, HD only, FM+HD.

FM Modulation Capability: Greater than ± 300 kHz.

Asynchronous AM S/N Ratio: 55 dB minimum below equivalent 100% amplitude modulation by 400 Hz using 75 µs de-emphasis (no FM modulation present).

Synchronous AM S/N Ratio: 50 dB minimum below equivalent 100% amplitude modulation with 75 µs de-emphasis and 400 Hz high-pass filter (FM deviation +/-75 kHz by a 1kHz sine wave). Measured at wideband input.

¹VSWR 1.2:1 or less. De-rate to nameplate rating for VSWR up to 1.5:1.

²VSWR 1.2:1 or less. De-rate to 70% of nameplate rating for VSWR up to 1.5:1.

³VSWR 1.2:1 or less. De-rate to 35% of nameplate rating for VSWR up to 1.5:1.

AC Mains Requirement:

ZX500:	90-264 VAC single phase, 47-63 Hz
ZX1000:	90-264 VAC single phase, 47-63 Hz
ZX2000:	190-264 VAC single phase, 47-63 Hz
ZX3500:	190-264 VAC, single phase, 47-63 Hz. Three-phase available as option on ZX2000 & 3500
ZX5000:	190-264 VAC, 47-63 Hz single phase or 3 phase, field configurable. Will continue to operate at reduced power on loss of 1 or 2 phases

ZX-HD (For FM HD with FlexStar HDx)

Power Consumption: (FM mode at nameplate power level)

ZX500: 1000 W max; 950 W typical
ZX1000: 2000 W max; 1900 W typical
ZX2000: 4000 W max; 3800 W typical
ZX3500: 6600 W max; 6350 W typical
ZX5000: 8500 W max; 7850 W typical

Power Factor (displacement): 0.98 typical

Altitude: To 10,000 feet (3050 m) elevation above mean sea level

Ambient Temperature Range:

FM mode: 0° to 50° C, derated 2° C per 1000 ft (304.9 m) AMSL

FM+HD mode: 0° to 45° C, derated 2° C per 1000 ft (304.9 m) AMSL

HD mode: 0° to 50° C, derated 2° C per 1000 ft (304.9m) AMSL

Humidity: To 95%, non-condensing

Dimensions: Standard 19" (48.3 cm) EIA rack; 1 RU = 1.75 inches (4.45 cm)

ZX500: 5RU amp + 4RU exciter, 23.6" (60 cm) D
ZX1000: 5RU amp + 4RU exciter, 23.6" (60 cm) D
ZX2000: 20RU amp + 4RU exciter, 24.5" (62 cm) D
ZX3500: 20RU amp + 4RU exciter, 24.5" (62 cm) D
ZX5000: 16RU amp + 4RU exciter, 26.4" (67 cm) D

Weight, Less Exciter (all modules installed):

ZX500: 50 lbs (23 kg)
ZX1000: 65 lbs (28 kg)
ZX2000: 150 lbs (70 kg)
ZX3500: 175 lbs (80 kg)
ZX5000: 198 lbs (90kg)

Input/Output Specifications:

External Frequency Control: Parallel I/O control of up to 8 frequencies. Unlimited frequency selection via optional N+1 controller.

AES3 Audio Inputs: (2) auto-switching AES3 inputs, female XLR, 110 Ohms balanced; -2.8 dBfs nominal; Adjustable level from 0 dBfs to -15 dBfs in 0.1 dB steps for +/- 75 kHz deviation; input sample rate 32 to 96 kHz.

Analog L/R Inputs: Female XLR, >10K Ohms, balanced, resistive; default level is +10 dBu for +/-75 kHz deviation. Level adjustable from -10 dBV to +10 dBV.

Analog Composite Input: (2) BNC inputs (1 balanced, 1 unbalanced); Balanced impedance is 10 K Ohms or 50 Ohms (selectable); Unbalanced is 10 K Ohms; Input level: 3.5 V P-P for +/-75 kHz deviation; Adjustable 2 V P-P to 5 V P-P.

SCA Audio Inputs: (2) inputs combined on one 5-pin XLRfemale connector (mating male connector supplied); >10K Ohms balanced, resistive; +10 dBV nominal for +/- 6 kHz of FM sub-carrier.

External SCA inputs: (2) BNC female, unbalanced; >10K Ohm; 1.5V p-p nominal for +/-7.5 kHz (10%) deviation of main carrier; adjustable from 1 V P-P to 4 V P-P.

RBDS Data Input: Sub-D 9-pin female RS-232.

External 10 MHz Clock Input: BNC female, unbalanced, 50 Ohm, -10 dBm to +10 dBm.

External 1 PPS Clock Input: BNC female, unbalanced, 50 Ohm, TTL level.

User Remote Interface: D 25-pin female

N+1 Interface: Sub-D 25-pin female

RF Sample Out: BNC jack, -66 dBc, post harmonic filter

19 kHz Pilot Sync Output: BNC female, unbalanced, 50 Ohms resistive, sinewave, AC coupled, 4.5 V P-P nominal, unterminated.

Exciter Communication Ports: (2) Sub-D 9-pin female; RS232 protocol, for RBDS or VT-100 data.

Exciter Ethernet Ports: (2) RJ-45 on main processor board; (2) RJ-45 on Exgine board (HD version only); all Ethernet ports 10/100; supports static or dynamic IP address.

Stereo Generator Performance (AES-3 or analog inputs)

Modes: Stereo, Mono L+R, Mono L, and Mono R; remote controllable.

Pre-emphasis: Selectable 0, 25, 50, or 75 microseconds.

Stereo Pilot Tone: 19 kHz ± 0.03 Hz; injection adjustable 0% to 12% in 0.05% steps; Nominal: 9%. 38 kHz, 57 kHz, 76 kHz, 95 kHz Suppression: 80 dB below +/-75 kHz deviation.

Stereo Separation: 80 dB*/60 dB, 10 Hz to 15 kHz.

Dynamic Stereo Separation: 80 dB*/60 dB, 10 Hz to 15 kHz*.

Stereo Amplitude Response: ± 0.1 dB, 10 Hz to 15 kHz referenced to selected pre-emphasis curve.

Stereo Signal to Noise Ratio (L or R): 85 dB below 100% modulation at 400 Hz; measured in a

10 Hz to 22 kHz bandwidth with 75 µs de-emphasis and DIN "A" weighting.

Stereo Total Harmonic Distortion: 0.005%*/0.02%, any modulating frequency 10 Hz to 15 kHz, in bandwidth 10 Hz to 22 kHz; with 75 µs de-emphasis.

Stereo Intermodulation Distortion (L or R): CCIF: 0.005%*/0.02% Note 1; (14/15 kHz 1:1), SMPTE: 0.02% (60 and 7000 Hz 1:1).

Transient Intermodulation Distortion (DIM): 0.008%*/0.02%; (2.96 kHz square wave/14 kHz sinewave modulation).

Linear Crosstalk: 90 dB below 100% modulation reference (AES3 Input); L+R to L-R or L-R to L+R due to amplitude and phase matching of L&R channels (10 Hz-15 kHz).

Non-Linear Crosstalk: 80 dB below 100% modulation reference; L+R to L-R or L-R to L+R due to distortion products.

Audio Overshoot: Less than 0.16 dB.

Mono Performance (AES-3 or analog input)

Pre-emphasis: Selectable 0, 25, 50 or 75 microseconds.

FM Mono Signal-to-Noise Ratio: 94 dB below 100% modulation at 400 Hz; measured in a 10 Hz to 22 kHz bandwidth with 75 µs de-emphasis and DIN "A" weighting.

Amplitude Response: ±0.05 dB, referenced to selected pre-emphasis curve (no low-pass filter).

Mono Total Harmonic Distortion: 0.002%*/0.01% THD, 10 Hz to 22 kHz bandwidth.

Mono Intermodulation Distortion: CCIF: 0.005% (14/15 kHz 1:1); SMPTE: 0.005% (60/7000 Hz 1:1).

Mono Transient Intermodulation Distortion (DIM): 0.005% (2.96 kHz square wave/14 kHz sine wave).

Wideband Analog Input Performance

FM Signal-to-Noise Ratio: 94 dB below ±75 kHz deviation at 400 Hz; measured in a 10 Hz to 100 kHz bandwidth with 75 µs de-emphasis; DIN "A" weighting.

Amplitude Response: +/- 0.005 dB 20 Hz to 53 kHz; +/-0.03 dB, 53 kHz to 100 kHz.

Total Harmonic Distortion: 0.002%*/0.01% THD over stereo sub band (10 Hz to 53 kHz) with 75 microsecond de-emphasis.

Intermodulation Distortion: CCIF: 0.005% (14/15 kHz, ratio 1:1); SMPTE: 0.005% (60/7000 Hz, Ratio 1:1).

Transient Intermodulation Distortion (DIM): 0.005% (2.96 kHz square wave/14 kHz sine wave modulation).

Slew Rate: 11.8 V/µs - symmetrical.

Phase Response Variation: ± 0.05° from linear phase, 10 Hz to 100 kHz.

Group Delay Variation: ± 5ns, 10 Hz to 53 kHz, ± 30 ns, 53 kHz to 100 kHz.

External SCA, RBDS Performance

SCA Format: Externally generated, analog FM subcarriers in the range 53-99 kHz.

SCA Sub-band Amplitude Response: +/-0.5 dB, 40 kHz to 100 kHz; high-pass filtered.

SCA Channel FM Signal-to-Noise Ratio: 80 dB below +6 kHz subcarrier deviation at 400 Hz with 150 µs de-emphasis.

Harmonic Distortion: less than 0.2% in audio pass-band of SCA generator.

Intermodulation Distortion: SMPTE (60 and 7000 Hz, 1:1): 0.2% or less, no pre/de-emphasis, SCA generator low-pass filter bypassed.

Crosstalk, SCA to Stereo: 80 dB below 100% modulation, L or R channel with 75 µs de-emphasis.

Crosstalk, Stereo to SCA: 80 dB below 100% modulation referenced to +/-6 kHz deviation and 150 µs de-emphasis.

Crosstalk, SCA to SCA: 80 dB below 100% modulation (referenced to +6 kHz deviation and 150 µs de-emphasis per channel).

Dual Internal SCA Performance

Pre-emphasis: Selectable: 150 µs, 75 µs, none.

Amplitude Response: ± 0.5 dB, 10 Hz to 7.5 kHz; selectable 4.3 kHz or 7.5 kHz low-pass filter.

Subcarrier Frequency: 57 kHz to 99 kHz in 1kHz steps.

Signal-to-Noise Ratio: 80 dB with de-emphasis (150 µs), 65 dB without de-emphasis at +/-6 kHz deviation.

Total Harmonic Distortion: 0.1% 10 Hz to 5 kHz.

SCA Deviation Capability: +/-1 kHz to +/-12 kHz; +/-6 kHz default.

Injection Level: 2 to 20%, adjustable in 0.1% increments.

ONE Company for Workflow Solutions Throughout the Broadcast Chain

Harris is the ONE company delivering interoperable workflow solutions across the entire broadcast delivery chain — providing today's broadcaster with a single, integrated approach to capitalize on the benefits of IT and mobile applications. By providing unparalleled interoperability across our product portfolio, Harris is able to offer customers integrated solutions that improve workflows, save money, enable new revenue streams and provide a migration path to emerging media business models. To meet the evolving needs of broadcast, distribution, government agencies and entertainment businesses, Harris is the ONE answer for change.

Service And Support

At Harris, we are committed to customer service excellence. It is our goal to provide the highest level of support by applying a simple rule: We take ownership of helping our customers succeed. Our support teams consist of innovative technical experts who support all situations regarding product performance, integration and operational processing. We are adept at providing proven solutions, making workflows better and ensuring reliability of the product and system. At Harris, our experienced and dedicated teams stand ready to help you meet your goals for premium product performance, 100% up-time and reduced maintenance investment.

Warranty

Because we want to assure you that Harris stands beside its products and system solutions, our products carry a standard set of warranty services, which are competitive with — and in some cases outperform — others in the industry.

Service Packages

We offer value-add services that allow you to customize the level of services you need in meeting mission-critical performance levels. Our service package options offer many ways to upgrade your standard warranty by choosing the All-Inclusive OnePak, or by selecting individual services from our extensive portfolio. Our service and support advisors can assist in the selection of the individual services that best suit your requirements.

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