

# DS2580C Digital TV QAM Analyzer

#### Key Benefits

- Fast Spectrum Analysis (4 ~ 1220 MHz)
- Integrated DOCSIS 3.0 Cable Modem
- Integrated Upstream Signal Generator (no FEC)
- Supports ITU-T J.83 Annex A/B/C
- Error Vector Spectrum: identifies interference signals under QAM carriers, with no break in service
- Auto Test

#### Overview

Integrating multiple functions in a single handheld instrument, the DS2580C is a powerful Digital TV QAM Analyzer with a comprehensive measurement suite specifically designed for HFC network testing, troubleshooting, and maintenance.

The DS2580C's main functions include Enhanced Spectrum Analysis, Analog & Digital TV analysis, DOCSIS 3.0 analysis, Upstream Signal Generation, Ethernet testing, and Auto Test. The revolutionary EVS function enables users to detect coherent distortions hiding under QAM carriers - without interrupting service. The DS2580C supports Deviser's PC software toolkit, included with each unit, to make data transfer a snap.





l RF Input USG Output







#### Fast Spectrum Analysis Function

The DS2580C offers enhanced spectrum analysis performance, with a frequency range from 4MHz  $\sim$  1220MHz and sensitivity down to -55dBmV (@300KHz).



Figure 1: Spectrum Analysis



Figure 2: Spectrograph

The spectrogram provides a scrolling three-dimensional display, allowing users to track frequency and level over time - excellent for analyzing intemittent signals.

## DVB-C Signal Analysis

The DS2580C supports the ITU-T J.83 Annex A/B/C standard, providing Channel Power, MER, BER, and Constellation tests.

Measurement	usrpln00 TP=0.0dB	16:37:17
CH (DVB-C)	119	60
FREQ	315.00MHz	50-
BW	6.00MHz	40-
SR	5.361MS/s	30-
MODE	256QAM/J.83B	20-
POWER:	29.6dBmV	0-
MER/EVM:	34.5dB/1.15%	-10-
Pre-BER:	<1.0E-09	- 20-
Post-BER:	<1.0E-09	- 30-
LONG EQUALIZER	I128-J4 🖶	- 40
GOTO	VIEW	

Figure 3: DVB-C Channel Measurement

The DS2580C also offers Digital HUM distortion measurements, from the fundamental frequency to 4th harmonic components.

HUN	deviser	01 TP=	0.0dB	-	00:31:22
.60mV					
.52irV	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\sim \sim$		~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
5mV					
CH:	201	F	REQ:	115.00IIHz	1
POWER:	15.4dBmV	60Hz:	0.35%	120Hz:	0.25%
HUII:	1.4%	180Hz:	0.44%	240Hz:	0.39%
[60Hz]		HOLD	1		RETURN

Figure 4: Digital HUM

Measurement u	srpln00 TP=0.0dE									i.		Ì		16	:3	6:	58
CH (DVB-C)	119	1		-				12	-	6.		4	4		2.		
FREO	315.00MHz	*			-4	*	÷	4	2	*	8	2	ų.	÷.	3	a.	5
DI.J	6 001117	4	\$	*	*	3	<u>د.</u>	4	4.	*	1	Ł	5	8	•	•	4
DW	6.00WHZ	8			-2	*	-	2		-	*	•		N			2
SR	5.361MS/s	*	*	*			1				14	4	*	в			82
NODE	2EC0111/1 02D	1	٠	ž	ÿ	4	۰.	÷.	à	*	я.	4	۶÷	\$	٠,	.4	4
MUDE	220UAM/ J.83D	15	18	- 46	٠	ė	•	4	+	3	~	1	•	*	2	74	4
POWER:	29.7dBmV	4	10	4	2	*	•	7		7	*	4	2	8	*		2
MED /E\M·	21 5dB/1 15%	*	*	4	۲	-4.	4	×	re	-1	3	3	Ъř	a.	¥		
	54.50D/1.15%	->	٠	٣	4	٨	¥	٩,	÷	ie.	5	۲	7	98	•	۲	٠.
Pre-BER:	<1.0E-09	.9	3	*	٠	4	-16	4	*	8	9	٧	•	•	•	9	2
Post-BER:	<1.0E-09	A		2 3	*	2	*	*	-	-	*	*.	3	1 2	*	*	8
LONG FOUNT TYER	T128-14 -	-1		4	P	*	*	*	-	¥.	-	ż	A:	16	×.	-	\$
LUNG EQUALIZER	1128-34 📖		1000		100							10.00			1000		_
GOTO	VIEW		S	ELI	EC	Т						Z	00	1	IN		

Figure 5: Constellation Display

BER	deviser0	TP=(	0.0dB			00:34:23
CH: 8/323.00	MHz/J.83B/64	QAU/5.05	7MS/s	Ī	IME:	1 Mins
'F5						50
*E2						
'E1						
0						interes.
14.						
ES SES	nn -	1				
SES POAER/HER:	17.6dBmV/	38.5dB	ES(S):	7	COR:	2.270E+04
ES SES POWER/HER: BER:	17.6dBmV/ <1.0E-09/ <1	38.5dB .0E-09	ES(S): SES(S):	7	COR: UNCOR:	2.270E+04 1.519E+07
POWER/NER: BER: BER(Sun):	17.6dBmV/ <1.0E-09/ < 8.3E-03/ 8	38.5dB 1.0E-09 1.3E-03	ES(S): SES(S): TIME:	7 6 00:01:00	COR: UNCOR: SUM:	2.270E+04 1.519E+07 1.823E+09

Figure 6: MER & BER Statistical Analysis

### EVS In-Service Interference Detection

The Error Vector Spectrum feature can find interference signals under a QAM carrier without service interruptions.





#### Cable Modem Measurement

The DS2580C incorporates a standard DOCSIS 3.0 cable modem, compatible with DOCSIS 1.X, 2.0 & 3.0. The built-in modem supports 8x DS and 4x US bonded carriers. Figure 8 (below) shows the CM statistical info screen - including downstream signal level, modulation type, bandwidth, symbol rate, MER, BER, upstream signal level, symbol rate, & UCD (Upstream Channel Descriptor).

Users can select the desired DOCSIS mode, downstream channel, and UCD. Basic network test tools include Ping, Traceroute, PPPoE, FTP, and a web browser.



Figure 8: DOCSIS 3.0 Statistical Information Display

#### Upstream Signal Generator

The DS2580C can generate a CW carrier or QAM signal. Sweep mode is also available.



Figure 9: Upstream Signal Generator

#### Auto Test

The DS2580C comes equipped with a wide range of regionstandard channel plans spanning (in part) North America, Asia, and Europe, as well as several sets of limit profiles - allowing users to design automatic tests. Tasks that can be automated include Analog TV, Digital TV and Cable Modem testing. Once the analyzer completes an auto test, all items in the test results will indicate Pass or Fail according to the limit profile. Results are automatically saved for later analysis.

AUTOTEST	deviser01	TP=0.0	ld8		00:28:51
PROJECT					
PLAN NAME	usrpln03	✓ LIMI	T	Amplifier	-
LOCATION					
SELECT	ITEM		NAME	VALUE	
	SPECTRUM		START	966.75	OMHz
	SCAN		STOP	967.75	OMHz
	TILT		CENT	967.25	OMHz
	CH MEAS		SPAN	1.000M	Hz 🦊
	CNR		DETECTOR	SAM	
	HUM	-	RBW	30kHz	*
SAVE	II	EM	LIM	IT	SEL-ALL

Figure 10: Auto Test Project

# Specifications

Downstream Spectrum	n Analysis
Frequency Range	4 ~ 1220 MHz
Frequency Stability	± 1 PPM (0°C ~ 50°C)
Frequency Span	0 MHz ~ full span
Frequency Step	1kHz
Resolution BW filters (-3dB)	30kHz, 100kHz, 300kHz, 1 MHz, 3 MHz
Video BW filters	30 Hz, 100 Hz, 300 Hz, 1kHz, 3kHz, 10kHz, 30kHz, 100kHz, 300kHz, 1 MHz, 3 MHz
Display Scale & Range	1, 2, 5, 10, 20dB/division; 8 vertical divisions
Sweep Time	20ms ~ 25s
Input Level Range	-60 ~ +60dBmV
Dynamic Range	65dB (300kHz RBW)
Sensitivity	-50dBmV (300kHz RBW, pre-amplifier on)
Attenuation	0 ~ 40dB in 1dB steps
Pre-amplifier	Manual; 18dB gain
Accuracy	< ±1dB @ 25 ± 5°C (typical)
Measurement Detector	Positive/negative peak; sample; average; RMS
Reference Level	-80 ~ +70dBmV
Markers	2 vertical markers
Upstream Spectrum A	nalysis
Frequency Range	4 ~ 210 MHz
Frequency Span	42 MHz, 64 MHz, 84 MHz, 116 MHz, 206 MHz, 0, full
Resolution Bandwidth	100kHz, 300kHz
Video Bandwidth	30 Hz, 100Hz, 300Hz, 1kHz, 3kHz, 10kHz, 30kHz, 100kHz, 300kHz, 1 MHz, 3 MHz
Display Scale & Range	1, 2, 5, 10, 20dB/division
Sweep Time	20ms ~ 25s
Input Level Range	-60 ~ +60dBmV
Attenuation	Automatic, 0 ~ 40dB
Pre-amplifier	Manual, 18dB gain
Accuracy	< ±1dB @ 25 ± 5°C (typical)
Measurement Detector	Positive/negative peak; sample; average
Markers	2 vertical markers
Upstream Signal Gene	rator
Signal Modulation	8 / 16 / 32 / 64 / 256 QAM; CW; QPSK
Symbol Rate	160 kS/s; 320 kS/s; 640 kS/s; 1.28 MS/s; 2.56 MS/s; 5.12 MS/s
MER	>38dB; accurate to within ± 2dB
Frequency Range	5 ~ 85 MHz
Frequency Step	1 MHz
Power Level Range	8 ~ 60dBm
Power Step	1dB

Analog TV	Measureme	ent					
Supported Sto	andards	B/G; I; D/K; L/L'; M/N					
Color Standa	rds	NTSC, PAL, SECAM					
Frequency Ste	ер	10kHz					
Power Level Range		-40 ~ +60dBmV					
Accuracy		< ±1dB @ 25 ± 5°C (typical); S/N >30dB					
Level Resoluti	on	0.1dB					
Resolution Bandwidth		300kHz					
CCN		>51dB (@ +10dBmV carrier level)					
CTB/CSO		≥ 61dB; accurate to within ±2dB					
HUM Measure	ement	1 ~ 15%: ±5% (1 ~ 5%); ±1.0% (5 ~ 20%)					
Tilt		Up to 16 channels					
Attenuation		Automatic, 40dB					
Pre-amplifier		Automatic, 18dB gain					
Cable Mor	dem Measu	rement					
Downstrog	m						
Supported St	andards						
Demodulatio	n	64 / 256 QAM					
Frequency Ro	nge	>91 MHz (US): >100 MHz (EU)					
пециенсу ке	6 MHz BW	Up to 304 Mbps					
Max Speed	8 MHz BW	Up to 400 Mbps					
Channel Bon	ding	Up to 8 channels					
Bandwidth		6 MHz / 8 MHz					
Input Level Range		-15 ~ +15dBmV					
Upstream							
Frequency Range		5 ~ 85 MHz					
Signal Bandw	ridth (TDMA)	200 / 400 / 800 / 1600 / 3200 / 6400kHz					
Signal Bandw	idth (CDMA)	1600 / 3200 / 6400kHz					
Channel Bon	ding	Up to 4 channels					
Output	QPSK	8 ~ 58dBmV					
Level (TDMA)	8 / 16 QAM	8 ~ 55dBmV					
Output Loval	32 / 64 QAM	$8 \sim 54$ dBmV					
	Accurama	120 mbps (4 channel bonding)					
		16~ 1000 MHz					
PowerLevel	Ranae	-30 ~ +50dBmV					
Level Resoluti	on	0.1dB					
		$< \pm 1.5$ dR @ $25 \pm 5^{\circ}$ C (typical): C/N > 20 dR					
Accordey	183 AX A/C	16 / 32 / 64 / 128 / 256 QAM					
Modulation Type	1.83 Ax B	64 / 256 QAM					
late de la	1.83 Ax A/C	(12.17)					
interieave Depth	J.83 Ax. B	(128, 1) ~ (128, 4)					
Symbol Rate		4.0 ~ 7.0 MS/s					
MER		>41dB; accurate to within ± 2dB					
BER		1E-3 ~ 1E-9					
Constellation		16 / 32 / 64 / 128 / 256 QAM					

# Specifications (cont'd)

General					
RF Input		75Ω F-type connector			
USB		USB 1.1			
LAN		RJ45, 10/100T Ethernet			
Display		4.3" 480x272 TFT LCD			
Power AC		100~240V/ 50~60 Hz			
Adapter DC		12V / 3A			
Battery		Li-ion, 7.4V / 7.8Ah			
Charging Tim	e	~4 hours			
Operation Tin	ne	>6 hours			
Storage Temperature		-20 ~ +60°C			
Operation Te	mperature	-10 ~ +50°C			
Dimensions (L	.xWxH)	9.6" x 5.1" x 2.4" (245mm x 130mm x 60mm)			
Weight		3.3 lbs (~1.5kg)			

## Ordering Information

DS2580C Base Model
DS2580C Digital Cable TV QAM Analyzer, 4 $\sim$ 1220 MHz, 75 $\Omega$ or BNC
Options
DOCSIS 3.0 8x4 Cable Modem and Upstream Signal Generator (no FEC)
SYNCOR Asset Management
SYNCOR Certificate
ATSC (8VSB) Measurement
2-Prong Power Cord plus Ground (Europe except UK)
3-Prong Power Cord plus Ground (US)
3-Prong Power Cord plus Ground (UK)
3-Prong Power Cord plus Ground (Australia)
English Instruction Manual (hard copy)
Toko Type F(f) to F(f) Connector

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