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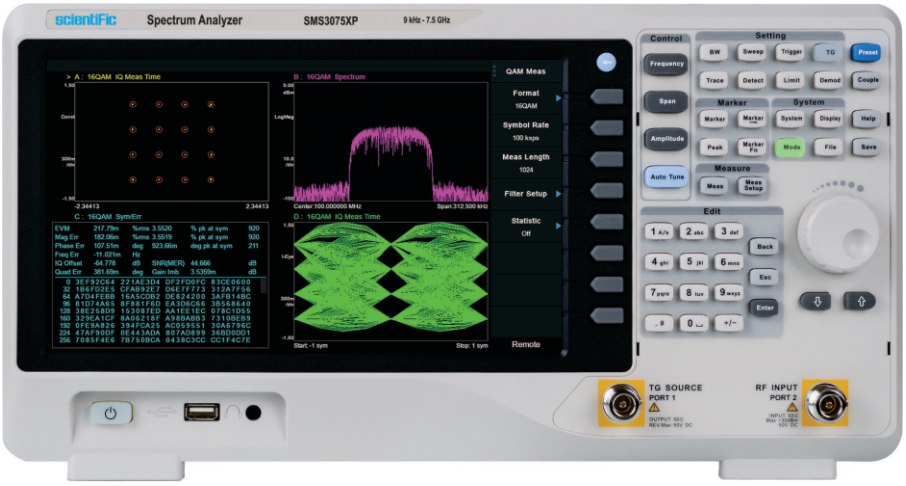
Since 1963

Spectrum Analyzer
SMS3000XP Series



Advance Features

- Spectrum Analyzer Frequency Range from 9 kHz up to 1.5 GHz / 2.1 GHz / 3.2 GHz / 7.5 GHz
- -165 dBm / Hz Displayed Average Noise Level (Typ.)
- - 98 dBc / Hz @10 kHz Offset Phase Noise (1 GHz, Typ.)
- Level Measurement Uncertainty < 0.7 dB (Typ.)
- 1 Hz Minimum Resolution Bandwidth (RBW)
- Preamplifier Standard
- Tracking Generator Standard
- Analog and Digital Signal Modulation Analysis Mode (Opt.)
- Advanced Measurement Kit (Opt.)
- Reflection Measurement Kit (Opt.)
- EMI Measurement Mode (Opt.)
- 10.1 inch Multi-Touch Screen , Mouse and Keyboard supported
- Web Browser Remote Control on PC and Mobile Terminals and File Operation

Technical Specifications	SMS3015XP	SMS3021XP	SMS3032XP	SMS3075XP
Frequency Range	9 kHz to 1.5 GHz	9 kHz to 2.1 GHz	9 kHz to 3.2 GHz	9 kHz to 7.5 GHz
Resolution Bandwidth	1 Hz to 1 MHZ	1 Hz to 1 MHz	1 Hz to 1 MHz	1 Hz to 3 MHz
Displayed Average Noise Level	- 156 dBm/Hz	- 161 dBm/Hz	- 161 dBm/Hz	- 165 dBm/Hz
SSB Phase Noise	< - 99 dBc/Hz	< - 98 dBc/Hz	< - 98 dBc/Hz	< - 98 dBc/Hz
Total Amplitude Accuracy	< 1.2 dB	< 0.7 dB	< 0.7 dB	< 0.7 dB
Tracking Generator	5 MHz to 1.5 GHz	100 kHz to 2.1 GHz	100 kHz to 3.2 GHz	100 kHz to 7.5 GHz
Touch Screen	Multi Touch, Mouse and Keyboard supported			
Advanced Measurement	CHP, ACPR, OBW, CNR, Harmonic, TOI, Monitor			
Reflection Measurement	VSWR measurement using Reflection Bridge			
EMI Test	EMI Filter and Quasi-Peak Detector, Log Scale and Limit Line			
Modulation Analysis	AM, FM, ASK, FSK, MSK, PSK, QAM			
Communication Interface	LAN, USB Device, USB Host (USB-GPIB)			
Remote Control Capability	SCPI/Labview/IVI based on USB-TMC/VXI-11/Socket/Telnet			
Remote Controller	NI-MAX, Web Browser, Easy Spectrum Software, File Explorer			
Spectrum Analyzer Mode				
Frequency and Time Characteristic				
Frequency				
Frequency Range	9 kHz to 1.5 GHz	9 kHz to 2.1 GHz	9 kHz to 3.2 GHz	9 kHz to 7.5 GHz
Frequency Resolution	1 Hz			
Frequency Span				
Range	0 Hz, 100 Hz to Max Frequency			
Accuracy	± Span /(Number of display points -1)			

Technical Specifications		SMS3015XP	SMS3021XP	SMS3032XP	SMS3075XP
Internal Reference Source					
Reference Frequency		10.000000 MHz			
Reference Frequency Accuracy		± [(time since last adjustment x frequency aging rate) + temperature stability + initial calibration accuracy]			
Initial calibration Accuracy		< 1 ppm			
Temperature Stability		< 1 ppm/year, 0˚C to 50˚C			
Frequency Aging Rate		< 0.5 ppm/first year, 3.0 ppm/20 years			
Marker					
Marker Resolution		Span / (Number of display points - 1)			
Marker Uncertainity		± [Frequency indication x reference frequency uncertainty + 1% x span + 10% x resolution bandwidth + marker resolution]			
Frequency Counter Resoution		0.01 Hz			0.1 Hz
Bandwidths					
Resolution Bandwidth (-3dB)		1 Hz to 1 MHz, in 1-3-10 sequence			1 Hz to 3 MHz
Resolution Filter Shape Factor		< 4.8 : 1 (60dB : 3 dB), Gaussian-like			
RBW Uncertainity		< 5%			
Video Bandwidth (-3dB)		1 Hz to 3 MHz, in 1-3-10 sequence			1 Hz to 10 MHz
VBW Uncertainty		< 5%			
Sweep and Trigger					
Sweep Time		1 ms to 1500 s	1 ms to 2100 s	1 ms to 3200 s	1 ms to 7500 s
RBW	Sweep	30 Hz to 1 MHz	30 Hz to 1 MHz	30 Hz to 1 MHz	3 kHz to 3 MHz
	FFT	1 Hz to 10 kHz	1 Hz to 10 kHz	1 Hz to 10 kHz	1 Hz to 10 kHz
Sweep Type		Single, Continuous			
Trigger Source		Free, Video, External			
External Trigger		5 V TTL level, Rising edge/Falling edge			
Amplitude Accuracy and Range Specifications					
Amplitude and Level					
Measurement Range		DANL to +10 dBm, 100 kHz to 1 MHz, Preamp off DANL to +20 dBm, 1 MHz to 7.5 GHz, Preamp off			
Reference Level		- 200 dBm to + 30 dBm, 1 dB steps			
Preamplifier		20 dB (nom.)			
Input Attenuation		0 to 30 dB, 1 dB step 0 to 50 dB, 1 dB step			
Maximum Input DC Voltage		± 50 VDC			
Maximum Average Power		30 dBm, 3 minute, fc ≥ 10 MHz, att > 20 dBm, preamp off			
Maximum Damage Level		33 dBm, fc ≥10 MHz, att > 20 dBm, preamp off			
Level Display					
Logarithmic Level Axis		1 dB to 200 dB			
Linear Level Axis		0 to reference level			
Units of Level Axis		dBm, dBmV, dBµV, dBµA, Volt, Watt			
Number of Display Points		751			
Number of Traces		4			
Trace Detectors		Positive-peak, Negative-peak, Sample, Normal, Average (Voltage/RMS/Video), Quasi-peak			
Trace Functions		Clear write, Max Hold, Min Hold, View, Blank, Average, Math			
SSB Phase Noise					
Offset		20˚C to 30˚C fc = 1 GHz, Normalized to 1 Hz			
10 kHz		-95 dBc/Hz, -99 dBc/Hz (typ.)	-95 dBc/Hz, -98 dBc/Hz (typ.)	-95 dBc/Hz, -98 dBc/Hz (typ.)	-96 dBc/Hz, -98 dBc/Hz (typ.)
100 kHz		-96 dBc/Hz, -98 dBc/Hz (typ.)	-96 dBc/Hz, -97 dBc/Hz (typ.)	-96 dBc/Hz, -97 dBc/Hz (typ.)	-95 dBc/Hz, -97 dBc/Hz (typ.)
1 MHz		-115 dBc/Hz, -120 dBc/Hz (typ.)	-115 dBc/Hz, -117 dBc/Hz (typ.)	-115 dBc/Hz, -117 dBc/Hz (typ.)	-112 dBc/Hz, -114 dBc/Hz (typ.)
Displayed Average Noise Level (DANL)					
Preamp off	100 kHz to 1 MHz	-101 dBm, -107 dBm (typ.)	-107 dBm, -111 dBm (typ.)	-107 dBm, -111 dBm (typ.)	-105 dBm, -109 dBm (typ.)
	1 MHz to 10 MHz	-124 dBm, -130 dBm (typ.)	-132 dBm, -136 dBm (typ.)	-132 dBm, -136 dBm (typ.)	-122 dBm, -126 dBm (typ.)
	10 MHz to 200 MHz	-128 dBm, -134 dBm (typ.)	-137 dBm, -141 dBm (typ.)	-137 dBm, -141 dBm (typ.)	-142 dBm, -146 dBm (typ.)
	200 MHz to 1.5 GHz	-121 dBm, -127 dBm (typ.)	-135 dBm, -139 dBm (typ.)	-135 dBm, -139 dBm (typ.)	-142 dBm, -147 dBm (typ.)
	1.5 GHz to 3.2 GHz	-	-126 dBm, -132 dBm (typ.)	-126 dBm, -132 dBm (typ.)	-140 dBm, -145 dBm (typ.)
	3.2 GHz to 5.0 GHz	-	-	-	-137 dBm, -143 dBm (typ.)
	5.0 GHz to 6.5 GHz	-	-	-	-136 dBm, -141 dBm (typ.)
	6.5 GHz to 7.5 GHz	-	-	-	-134 dBm, -139 dBm (typ.)
Preamp on	100 kHz to 1 MHz	-120 dBm, -128 dBm (typ.)	-132 dBm, -137 dBm (typ.)	-132 dBm, -137 dBm (typ.)	-133 dBm, -136 dBm (typ.)
	1 MHz to 10 MHz	-147 dBm, -152 dBm (typ.)	-148 dBm, -154 dBm (typ.)	-148 dBm, -154 dBm (typ.)	-151 dBm, -154 dBm (typ.)
	10 MHz to 200 MHz	-150 dBm, -156 dBm (typ.)	-156 dBm, -161 dBm (typ.)	-156 dBm, -161 dBm (typ.)	-161 dBm, -165 dBm (typ.)
	200 MHz to 1.5 GHz	-142 dBm, -148 dBm (typ.)	-155 dBm, -158 dBm (typ.)	-155 dBm, -158 dBm (typ.)	-159 dBm, -163 dBm (typ.)
	1.5 GHz to 3.2 GHz	-	-145 dBm, -149 dBm (typ.)	-145 dBm, -149 dBm (typ.)	-159 dBm, -162 dBm (typ.)
	3.2 GHz to 5.0 GHz	-	-	-	-157 dBm, -161 dBm (typ.)
	5.0 GHz to 6.5 GHz	-	-	-	-157 dBm, -160 dBm (typ.)
	6.5 GHz to 7.5 GHz	-	-	-	-155 dBm, -159 dBm (typ.)

Technical Specifications	SMS3015XP	SMS3021XP	SMS3032XP	SMS3075XP
Frequency Response				
Preamp off	± 0.8 dB, ± 0.4 dB(typ.) (20˚C to 30˚C, 30% to 70% relative humidity, att = 20 dB, relative to 50 MHz)			
Preamp on	± 1.2 dB, ± 0.6 dB (typ.) (20˚C to 30˚C, 30% to 70% relative humidity, att = 20 dB, relative to 50 MHz)			
Error and Accuracy				
Resolution Bandwidth Switching Uncertainity	± 0.2 dB nom. (Logarithmic resolution, relative to RBW =10 kHz)			
Input Attenuation	20˚C to 30˚C, fc = 50 MHz, off, preamp off, relative to att = 20 dB			
Switching Uncertainity	± 0.5 dB			
Absolute Amplitude Accuracy	(20˚C to 30˚C, fc = 50 MHz, RBW = VBW = 1 kHz, att = 20 dB, peak detector , 95% reliability)			
	Preamp off : ± 0.4 dB, input signal - 20 dBm			
	Preamp on : ± 0.6 dB, input signal - 40 dBm			
Total Amplitude Accuracy	(20˚C to 30˚C, fc > 100 kHz, input signal - 50 dBm - 0 dBm, att = 20 dB, RBW = VBW = 1kHz , peak detector)			
	± 1.2 dB	± 0.7 dB		
RF input VSWR	< 1.5 (nom.) (Att = 10 dB, fc ≥ 1 MHz)			< 1.5 (nom.) (Att = 20 dB, fc ≥ 1 MHz)
Distrotion and Spurious Responses				
Second Harmonic Distortion (SHI)	- 65 dBc / + 45 dBm (nom.) (20˚C to 30˚C, fc ≥ 50 MHz, mixer level -20 dBm, att = 0 dB, preamp off)			
Third Order Intercept (TOI)	(20˚C to 30˚C, ≥ 50 MHz, two -20 dBm tones spaced by 100 kHz, att = 0 dB, preamp off)			
	+ 10 dBm (typ.)			+ 14 dBm (typ.)
1dB Gain Compression	(20˚C to 30˚C, fc ≥ 50 MHz, att = 0 dB, preamp off)			
	> - 5 dBm (nom.)			> 0 dBm (nom.)
Residual Response	> - 90 dBm (20˚C to 30˚C, input terminated = 50 Ω, att = 0 dB)			
Input Related Spurious	< - 65 dBc (20˚C to 30˚C, mixer level = -30 dBm)			
Tracking Generator (Standard)				
Frequency Parameter				
Frequency Range	5 M to 1.5 GHz	100 kHz to 2.1 GHz	100 kHz to 3.2 GHz	100 kHz to 7.5 GHz
Frequency Resolution	1 Hz, Zero Span			
RBW, Sweep Mode	100 Hz to 1 MHz			3 kHz to 3 MHz
Power Paramenter				
Output Level	- 20 dBm to 0 dBm			- 40 dBm to 0 dBm
Output Level Resolution	1 dB			
Output Flatness	± 3 dB (nom.)			
Normalization Trace	Ref A/B/C/D - > Ref trace			
VSWR	< 2 (Nom.)			
Connector and Impedance	N -type female, 50 Ω			
Average Safe Revere Power	Total : 30 dBm (1 W)			
Maximum Safe Reverse Level	Voltage : ± 50 VDC			
Advanced Measurement Kit				
Power Measurement				
CHP, Channel Power	Channel Power, Power Spectral Density			
ACPR, Adjacent Channel Power Ratio	Main CH Power, Left channel power, Right Channel Power			
OBW, Occupied Bandwidth	Occupied Bandwidth, Transmit Frequency Error			
T-Power, Time Domain Power	Zero Span Integrated Power			
CNR, Carrier Noise Ratio	C/N, Noise Power			
Non- Linear Measurement				
Harmonic Measurement	Max Harmonic Number 10			
TOI, Third Order Intercept	Measure the third-order products from two tones			
Spectrum Monitor Measurement				
Spectrogram				
Reflection Measurement Kit				
Stimulus and Measurement				
Frequency Range	5 MHz to 1.5 GHz	100 kHz to 2.1 GHz	100 kHz to 3.2 GHz	100 kHz to 7.5 GHz
RBW	100 Hz to 1 MHz			3 kHz to 3 MHz
Stimulus Power	- 20 to 0 dBm			
Format	VSWR, Return Loss, Reflection Coefficient			
Calibration	Open Cal, Open + Short, Open + Load			
Modulation Analyzer Mode				
Common Parameter				
Frequency Range	2 MHz to 1.5 GHz	2 MHz to 2.1 GHz	2 MHz to 3.2 GHz	2 MHz to 7.5 GHz
Carrier Power Accuracy	± 2 dB (nom.)			
Carrier Power Range	- 30 dBm to +20 dBm (nom.)			
Recording				
Data Packing	I = Q = 4 Byte			
Memory	60 MByte			
Length	7.5 Msample(60MB/8B)			
Length (Time units)	Samples / (Span x 1.25)			
PC Software	Analysis and Playback in Easy VSA Software			
Playback	Easy VSA, Easy IQ or SMS3000XP Signal generator			

Technical Specifications	SMS3015XP	SMS3021XP	SMS3032XP	SMS3075XP
Analog Modulation Analysis				
AM				
Modulation Rate Range	20 Hz to 100 kHz			
Accuracy	1 Hz (nom.)		Modulation rate <1 kHz	
	< 0.1% modulation rate (nom.)		Modulation rate ≥ 1 kHz	
Modulation Depth Range	5% to 95%			
Accuracy	± 4% (nom.)			
FM				
Modulation Rate Range	20 Hz to 200 kHz			
Accuracy	1 Hz (nom.)		Modulation rate <1 kHz	
	< 0.1% modulation rate (nom.)		Modulation rate ≥ 1 kHz	
Frequency Deviation	1 kHz to 400 kHz			
Accuracy	± 4% (nom.)			
Digital Modulation Analysis				
Measurement				
Modulation Type	ASK: 2ASK			
	FSK: 2, 4, 8, 16 level			
	MSK: GMSK			
	PSK: BPSK, QPSK, OQPSK, 8PSK			
	DPSK : DBPSK, DQPSK, D8PSK, π/4-DQPSK, π/8-D8PSK			
	QAM :16, 32, 64,128, 256			
Meas Length	16 to 4096			
Points / Symbol	4, 6, 8, 10,12,14,16,			
Symbol Rate	1 Ksps to 2.5 Msps, Symbol Rate* Points / Symbol < = 10 Msps			
Filter				
Meas / Ref. Filter	Nyquist, Squrt Nyquist, Gauss, Half Sine, Rectangular			
Lenght	2 to 128			
Alpha / BT	Alpha 0.01 to 1, BT 0.01 to 10			
Trace				
Trace Data	IQ Means Time, IQ Meas Spectrum			
	IQ Ref. Time, IQ Ref. Spectrum			
	Time, Spectrum			
	Symbol Error Chart, Err Vector Time, Err Vector Spectrum			
	IQ Mag Err, IQ Phase Err			
Layout	Single, Stacked 2, Grid 1*2, Grid 2*2			
Trace Formats	Log mag, Lin mag, Real, Imag			
	I-Q, Constellation, I-eye, Q-eye			
	Wrap Phase, Unwrap Phase, Trellis eye			
Symbol Error Chart				
PSK/DPSK/MSK/QA	EVM (rms EVM, peak EVM), Magnitude error Phase error, IQ offset, Carrier offset, SNR Quadrature error Gain imbalance (not support for MSK)			
ASK	ASK, Error, ASK depth, carrier offset			
FSK	FSK Error, Magnitude error, FSK deviation, carrier offset			
Inputs and Outputs				
Front Panel				
RF input, Port 2	N-type female, 50 Ω (nom.)			
TG Source, Port 1	N-type female, 50 Ω (nom.)			
USB Host	USB-A plug, Version 2.0			
Ear Phone Jack	3.5 mm			
Rear Panel				
USB Device	USB-B plug, Version 2.0			
LAN	10/100 Base, RJ-45			
10 MHz reference output	10 MHz, >0 dBm, BNC-type female, 50 Ω (nom.)			
10 MHz reference input	10 MHz, -5 to +10 dBm, BNC-type female, 50 Ω (nom.)			
External trigger input	5V TTL level, BNC-type female, 10 kΩ			
Remote Control				
Communication Interface	LAN, USB Device, USB Host (USB-GPIB adaptor)			
Remote Control Capability	SCPI / Labview / IVI based on USB-TMC / VXI-11 / Socket / Telnet			
Remote Controller	NI-MAX, Web Browser (HTML 5 Supported), Easy Spectrum Software, File Explorer (FTP)			
General Specifications				
Source	AC Voltage Range : 100-240 V, 50/60 Hz or 100-120 V, 400 Hz;			
Power Consumption	35 W			70 W
Temperature	Working Temperature : 0˚C to 40˚C, Storage Temperature : -20˚C to 70˚C			
Humidity	0˚C to 30˚C, ≤ 95% Relative Humidity, 30˚C to 50˚C, ≤ 75% Relative Humidity			
Dimensions (W×H×D)	W : 393, H : 207, D : 116.5 mm			
Weight	Net: 4.40 kg			Net: 4.70 kg

Technical Specifications	SMS3015XP	SMS3021XP	SMS3032XP	SMS3075XP
Display	TFT LCD, 1024 × 600, 10.1 inch capacitive multi-touch screen			
Storage	Internal (Flash) 256 MB, External (USB storage device) 32 GB			
Standard Accessories	Power Cord, USB Cable, CD			
Optional Accessories	Descriptions		Option No.	
Common Options and Accessories	Tracing Generator		SMS3000XP-TG	
	Advanced Measurement Kit		SMS3000XP-AMK	
	Utility Kit: N(M)-SMA(M) cable (6 GHz), N(M)-N(M) cable (6 GHz), N(M)-BNC(F) adaptor x 2, N(M)-SMA(F) adaptor x 2, 10 dB 1 W attenuator		UkitSMS3X	
	N(M)-SMA(M) cable, 70cm, 6 GHz		N-SMA-6L	
	N(M)-N(M) cable, 70cm, 6 GHz		N-N-6L	
	N(M)-BNC(M) cable, 70cm, 2 GHz		N-BNC-2L	
	N(M)-SMA(M) cable, 100cm, 18 GHz		N-SMA-18L	
	N(M)-N(M) cable, 100cm, 18 GHz		N-N-18L	
	USB-GPIB Adaptor		USB-GPIB	
Reflection Measurement Options	Tracking Generator		SMS3000XP-TG	
	Reflection Measurement		SMS3000XP-Refl	
	Reflection Bridge Kit : Reflection Bridge (1 MHz to 2.5 GHz) N(M)-N(M) adaptors X 2		RB3X25	
	50 Ω N type Male, 4.5 GHz Economic Calibration Kit : Open(M), Short(M), Match(M), Through Adapter(F-F)		F503ME	
EMI Test Options	EMI Measurement Kit: EMI Filter and Quasi Peak Detector, EMI Receiver Mode in Easy Spectrum Software		SMS3000XP-EMI	
	300 kHz to 3 GHz Near Field Probe Kit: 3 H-probes (20/10/5 mm), 1 E-probe (5 mm)		SRF5030T	
Modulation Analysis Options	Digital Modulation: ASK, FSK, MSK, PSK, QAM		SMS3000XP-DMA	
	Analog Modulation: AM, FM		SMS3000XP-AMA	
	Easy VSA Software		EasyVSA	
Electromagnetic Compatibility				
EN 61326-1 : 2013 EN 61000-3-2 : 2014	Class A (The active input power of the EUT is less than 75 W. According to EN 61000-3-2, no limits are necessary.)			
EN 61000-3-3 : 2013	Plt: 0.65 Pst: 1.00, dmax: 4.00%, dc: 3.00%; dt Lim: 3.30% dt>Lim: 500ms			
IEC 61000-4-2 : 2008	AD ± 8.0 kV, CD ± 4.0 kV			
IEC 61000-4-3 : 2006 + A1: 2007 + A2 : 2010	80 MHz to 1000 MHz : 10V/m, 1.4 GHz to 2.0 GHz : 3 V/m, 2.0 GHz to 2.7 GHz : 1V/m			
IEC 61000-4-4 : 2004 + A1: 2010	AC Line : ± 2.00 kV			
IEC 61000-4-5 : 2005	Line to Line: 1.0 kV, Line to Earth: 2.0 kV			
IEC 61000-4-6 : 2008	0.15-80 MHz :3 V 1 KHz 80% AM			
IEC 61000-4-8 : 2009	30 A/m, 50/60 Hz			
IEC 61000-4-8 : 2004	Voltage Dips : 0%/0.5P; 40%/10P; 70%/25P; Short Interruptions Test Level % UT: 0%/250P			
Safety				
IEC 61010-1:2010/EN 61010-1:2010 CAN/CSA-C22.2 No.61010-1:2012, CAN/CSA-C22.2 No.61010-2-30:2012 UL 61010-1:2012, UL 61010-2-30:2012				
RoHS				
2011/65/EU				

Subject to change

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Scientific Mes-Technik Pvt. Ltd.

B-14, Pologround, Industrial Estate, Indore 452 015, India

0731-2422330/31/32/33 **0731-2422334** **sales@scientificindia.com** **www.scientificindia.com**

ISO 9001 BUREAU VERITAS Certification NABCB QM 003

Bengaluru	080-23452635	bangalore@scientificindia.com	
Chennai	044-42054180	chennai@scientificindia.com	
Gujarat	+917567463752	gujarat@scientificindia.com	
Hyderabad	+917095228811	hyderabad@scientificindia.com	
Kolkata	+917095228811	kolkata@scientificindia.com	
Mumbai	+919850901735	mumbai@scientificindia.com	
New Delhi	+918889912554	ndelhi@scientificindia.com	
Pune	+919850901735	pune@scientificindia.com	