Release Notes

V1.2

RUGGEDCOM

WIN SAS - GW

SW Version 1.2

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WIN SAS-GW v1.2

1 General

1.1 Background & Overview

During 2014 the FCC released a Report and Order regarding the creation of the Citizens Broadband Radio Service (CBRS), a shared spectrum scheme for 150 MHz in the 3.5 GHz to 3.7GHz Band. CBRS requires the commissioning of a Spectrum Access System (SAS) which is built by Several private companies as a cloud service. Without the use of SAS, no newly deployed products Are allowed to use this band. Siemens intend to connect its WIN 3.7GHz products to SAS, through a SAS Gateway (SAS-GW). SAS gateway will be software which allows the BS to communicate with SAS service providers. The Wireless Innovation Forum is the SAS protocol creator. A collaboration Agreement with at least one SAS vendor, named federated Wireless was achieved to allow the SASGW Development. It should be noted the SW will be published as standalone SW and not part of any BS version.

The Wireless Innovation Forum defined a SAS as a system to dynamically manage spectrum access And while supporting multiple tiers of users. The method includes: at a spectrum access server, Receiving a request from a device to access a segment of spectrum; determining which tier of the Multiple tiers is associated with the request; if the request is from a second tier user and the request Does not interfere with first tier users, granting the request; and if the request is from a third tier user And the request does not interfere with first tier users and authorized second tier users, granting the Request.

First tier users comprise incumbent users, the second tier users comprise priority access users (PAL), And the third tier users comprise generally authorized access users (GAA).

1.2 Purpose

The purpose of the SAS-GW is to allow current customers as well as new customer to deploy new WIN products in the 3.55GHz to 3.7GHz band.

1.3 Definitions

SAS – Spectrum Access System SAS GW – SAS Gateway FedW – Federated Wireless FCC – Federal Communication Commission BS/BST – Base Station CPE/SS – Subscriber Station CBRS - Citizens Broadband Radio Service

CBSD - Citizens Broadband Radio Service Device PAL - Priority Access License GAA - General Authorized Access

1.4 Important details

The SAS-GW is required to support sales of RUGGEDCOM WIN products in the 3.5 to 3.7GHz band in the US.

- WIN5137-AC CPE (3550-3700 MHz)
- WIN5137-DC CPE (3550-3700 MHz)
- WIN5137-AC-IS , CPE (3550-3700 MHz)
- WIN5237-IS, CPE (3550-3700 MHz)
- WIN5237 CPE (3550-3700 MHz)
- WIN5137-V CPE (3550-3700 MHz MHz Rail)
- WIN5137-V-GPS CPE (3550-3700 MHz MHz Rail with GPS)
- WIN7237 (3550-3700 MHz) Base station

Full interoperability tests were conducted and PASS with Federated Wireless SAS Server (Support 'TS' API), version: 1.3

SAS Server is HTTPS based.

Following actions were verified: Registration (request to register for a new BS and CPE), Spectrum inquiry (ask for specific frequency), Relinquish (Give back the right to operate for specific BS or CPE), .De-registration (Remove registration from SAS, Send heartbeat (keep-alive) message from every device To SAS).

Products above fully support 150 MHz band: 3.55 to 3.7GHz.

1.5 Spectrum Channels

The spectrum, 3550 – 3700 MHz is divided to 15 10 MHz channel that can be used by a GAA devices. PAL channels are between 3550 – 3650 MHz bands.

PAL Channels:



Base station center frequency configuration on GUI:

Channel #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BST center freq	3555	3565	3575	3585	3595	3605	3615	3625	3635	3645	3655	3665	3675	3685	3695

1.6 Software Versions

SAS GW version 1.2

No.	Part	SAS GW	SAS Server	remarks
1	Software Version	1.2	1.3	FedW server
2	Ubuntu server	18 LTS		
3	apache	2.4.29		
4	MySQL	5.7.23		
5	PHP	7.2		
6	python	2.7.15		
7	Twilo			
8	Open SSL	1.1.0g		





SAS GW shall be installed in the DMZ. The SAS GW uses udp port 161 for SNMP management towards the private network.

SAS GW uses TCP port 443 for outgoing HTTPS communication with the SAS server. SAS GW can be managed with HTTPS and SSH.

3 Configuring

The SAS-GW uses the SAS API to communicate with SAS service providers. The SAS-GW uses SNMPv2/3 to communicate with the BSs. All required info to/from the CPE is delegated to the BS, to prevent intensive querying of the CPE with over the air traffic. The SAS-GW is a standalone SW running on Linux, The SAS-GW is available as a VM. MySQL Database holds all required information about: Base stations SSs Administration data: SAS Server configuration SAS-GW user information • **SNMP** configuration • Event notification: Email and SMS Logs: errors and information. Apache Webserver: User interface is browser based, served by a Webserver. Apache use OpenSSL to provide HTTPS connection. Browsers supported: Chrome IE Firefox Opera

3.1 SAS GW login page:

After installation enter to a web browser the IP of the SAS GW using format: https://sas-gw-ip/. Default user name and password: admin.

Username	Password
admin	
Submit	✓ Remember Me?
LOGIN	

Note: IP address of the SAS GW is manually configured by the system administrator. It is assumed that the SAS GW has at least 2 interfaces, and the web GUI runs on all interfaces.

3.2 User GUI home page:



BASE STATION: RUGGEDCOM WIN BS 1

CPE Name	State	SAS Status	DL CINR	UL CINR	DL RSSI	Link Uptime (d HH:MM:SS)
user8@rack6	Operational	hb_ok	28	25	-40	05:26:27

SAS ALERTS

Alert Name	State	Last Event Time	Note	Acknowledge
SAS Down	Off			
Spectrum Relinquish	оп			
BS Grant Refused or failed	on			
SS Grant Refused or failed	Off			
SS not configured	Off			

0

3.3 Settings page

Click Setup→Settings:

	onfiguration	
map_refresh_interval:	1000	
NMPv2 Read Community:	public	
MPv2 Write Community:	private	
map_source:	online	
Proxy operational status:	1	
userid:	Xm6b0s	
fccld:	1234567890123456789	
cbsdManufacturer:	SiemensRuggecom	
callSign:	callSign123	
radio Technology:	E_UTRA	
supported Spec:	802.16e	
sensingCapability:	sensingCapabilit	
twilo_sid:	AC8ce7475e01e80826ab40671b2!	
twilo_token:	7f4bf6075bc02d240f0672048ed98i	
twilo_phone_number:	+14153478683	
time_zone:	UTC-7 *	
manual_operation:	Disabled •	
sas_url:	https://developer-sc-02.federatedw	
sas_device_certificate:	/var/managers/cbsd_mgr/cbsd_har	
sas_device_key:	/var/managers/cbsd_mgr/cbsd_har	

The SAS GW communicates with the SAS server using TLS 1.2 protocol and AES256-GCM-SHA384 cipher. In order to successfully authenticate with the SAS server, configure the path of the SAS CA certificate, device certificate and device key files.

Those shall be provided by SAS service provider and uploaded the SAS GW.

The SAS GW will mutual authenticate with the SAS server in every initiation of communication, which occurs periodically every 15 seconds.

All SAS GW to SAS server communication is encrypted with AES256-GCM-SHA384 cipher.

3.4 User Accounts

For user account settings, click User→My Account. A new password can be set:

Update My Account		🗖 Base Statio
User Password SMS Alerts		
User Name:	admin	gton District
First Name:	guy	1880
Last Name:	dashli	ncisco ional
Phone: (+1xxxxxxxx)	+972546655523	life ge
Email:	guyd@wasrcm.com	188
	Apply	
		MISO 9 0 CA 237 8 9
		Q G
		292 US 101
		390.9
		Santa Clara

Configuring user SMS/Email alerts settings:

er Password SMS Alerts						CPEs
SMS Notification:	Enabled					gton District
Event Notification Registration:	SS is inaccessible BS TX turned ON	BS is inaccessible CBSD configuration problem	SS accessible again SAS Server down	BS accessible and TX OFF Database connection lost	SS TX turned ON SAS requsted spectrum relinquish. Sector is going down.	1880 vards 13
New BS was added to database BS mode is Answer Positive. Tx ys open	 New SS was added to database BS mode is Answer Negative. Tx stays open 	 BS was deleted from database CBSD was deleted upon user request 	 SS was deleted from database BS Grant refused or failed CBSD Frequency has been changed 	 New user was added to database SS Grant refused or failed CBSD SAS activity is changed. CBSD is deregistered 	User was deleted from database SS not configured	ional ife ge
	Apply					
						Iviso
						0 64
						392 US 101

Adding a user, click User \rightarrow Add user:

Register New User		
User name:		CPES Mis
Password:		gton District
Re-type Password:		75 1880 72
e Email:		vards 13 ncisco ¹³ Warm Spi
First Name:		ional ife 128 124
Last Name:		1880
Phone: (+1xxxxxxxxx)		
	Register	歇氏 /
		viso 98
		(1) ASA
		392 US 101
		390
		Santa Clara
•		

3.5 Adding a new BST

To add a new BS, use Setup→add BS:

It is possible to fetch data from the BS when it's up and SNMP configuration is set:

Create New Base S	station	e 🖉 Base Stations
General Location Antenna	SNMP	CPEs
SNMP version:	SNMPv2c • 7	ock Springs
V2c Read Community:	public ?	
V2c Write Community:	private ?	
Apply Fetch Data	Fetch Installation Parameters	Gana Janton
		- Durango
		Azzec Farmington

Insert the BS IP address and click "Fetch Data"

Create New Base S	ation	Base Stations
General Location Antenna S	NMP	Ø CPEs
BST Name:	Base Station #1	ock Springs
IP Address:	192.168.19.12	
Frequency Start [KHz]:	٤	
Frequency Stop [KHz]:	?	
Serial Number:	2	
BST Max Tx Power[dBm]:	27 ?	Grand
BST Max EIRP[dBm/MHz]:	27 ?	
SAS Control:	Enabled • ?	
Report Measurements to SAS:	Report after Grant	
CBSD Device Category:	Category A	
Apply Fetch Data	Fetch Installation Parameters	- Durango Atrec Farmington

Fetch installation parameters:

Additional option of fetching data from the CBSD is available.

This option enables fetching the installation data only, from the CBSD.

The installation parameters:

- Latitude
- Longitude
- Height
- Height Type: AGL (ground level)/AMSL (sea)
- Horizontal
- Vertical accuracy (optional)
- Indoor true/false

3.6 Editing BS information:

BST general parameters:

Update Base Station	n rack6		
General Location Antenna S	SNMP Measurements Report		
BST Name:	rack6	2	<
IP Address:	192.168.16.11	2	2 Part
Frequency Start [KHz]:	3595000	ि	Seg.
Frequency Stop [KHz]:	3605000	2	St. George
Serial Number:	43740415071	2	
BST Max Tx Power[dBm]:	26	्	line
BST Max EIRP[dBm/MHz]:	27	2	and Tyon-
SAS Control:	Enabled	2	ishant ional ument
Report Measurements to SAS:	Report after Grant	2	Carlos C
Available Channel Start [KHz]:	0	2	
Available Channel Stop [KHz]:	0	2	
CBSD Device Category:	Category A •	2	
Apply Delete			

BST location settings:

Update Base Statio	n rack6		
General Location Antenna	SNMP Measurements Report		
Location Latitude:	37.444301	?	
Location Longitude:	-118.4169991	3	2 Parts
Location Height:	0	?	Sel and
Height Type:	AGL	?	St. George
Indoor Deployment:	True	3	dul
			end sonar water water water
Apply Delete			

BST antenna settings:

Location Antenna	SNMP Measurements Report	
Antenna Azimuth:	4	
Antenna Downtilt:	0	2
Gain [dBm]:	1	2
Antenna Type:	Omni 🔻	2
Beam Width:	4	?
Model:	MTI	

Viewing Base Station measurements report:

ral I	ocation	Antenna	SNMP Me	asurements Report		Received Power		Z CPE
	Rece	eived Power:	-85		2	The received power measured and reported after the BST has a spectrum grant from the SAS. This is the average of the uplink RSSI value reported by all the BST connected		
					ļ	CPEs.		Торен
								webus
								The second se
								- Oidanama
								Dallas
								Dalas
								and a second sec

Viewing SAS registration information:

Update Base Station rac	ck6		Base Station
General Location Antenna SNMP	Measurements Report SAS Registrat	n Info	CPEs
CBSD Status:	НВ ОК	7	Range 4809A 71N
CBSD ID:	123456789012345678943740415071	7	Range 715
Grant ID:	775171310874213459	7	
Grant Expired Time:	2018-08-06T07:36:05Z	7	Range 76
Transmit Expired Time:	2018-07-30T13:19:42Z	3	
Available Channel Start [KHz]:	3650000	0	K
Available Channel Stop [KHz]:	3660000	3	
Apply Delete			

3.7 Adding a new Subscriber station

To add a new SS, user Setup \rightarrow Add SS \rightarrow Place the dot in the map where the SS installed \rightarrow click "Create":



Fill the necessary information:

Create New Subscriber Station							
General Location Antenna	Spectrum SNMP		CPEs				
CPE Name:		•					
IP Address:	aaa.bbb.ccc.ddd	?					
MAC Address:	aabbccddeeff	?	$< \lambda$				
Serial Number:		?	2 PAGY				
SS Max Tx Power[dBm]:	14	?					
SS Max EIRP[dBm/MHz]:	14	2	St. George				
SAS Control:	Enabled •	2	and the second				
Report Measurements to SAS:	Report after Grant	2	lines				
CBSD Device Category:	Category A •	2	and yon-				
Apply			jonal iment				
			STREAM A				
	Atascadero						

Editing an existing SS, click on SS→edit:

d Successfully							
neral Location A	Antenna	Spectrum	SNMP	Measurement	ts Report		
CF	PE Name:	rack6.u	iser1		?		
IP	Address:	192.16	8.16.151		?		
MAC	Address:	00:05:0	00:00:		?		
Serial	l Number:	ad1238	37443		?		
BST Max Tx Pow	ver[dBm]:	13			?		
BST Max EIRP[dB	Bm/MHz]:	14			?		13. 19.
SAS	6 Control:	Enable	ed	Ŧ	?		La construction de la construcción de la construcci
Report Measurement	s to SAS:	Report	t after Grant	t v	?		Le.
Available Channel Sta	art [KHz]:	0			?		and Tyon Ishant
Available Channel St	op [KHz]:	0			?		lonal ument
	Catagony	Caterro	orv A	•	?		3

SS location settings:

Upda	ate SS rack6.u	ser1				•
Updated Suc	cessfully					 Base Stations CPEs
General	Location Antenna	Spectrum	SNMP	Measurements Repo	n	
	Location Latitude:	37.2718	8671915633	?		
	Location Longitude:	-118.50	6774902343	?2		
	Location Height:	0		?		Sul
	Height Type:	AGL		۲ ?		
	Indoor Deployment:	True		• ?		
Арріу	Dekte					9. Series

SS antenna settings:

Upda	ite SS rack6.u	iser1				•
Updated Succ	cessfully					 ☑ Base Stations ☑ CPEs
General	Location Antenna	Spectrum	SNMP	Measuremen	s Report	
	Antenna Azimuth:	279			?	
	Antenna Downtilt:	0			?	
	Gain [dBm]:	1			?	
	Antenna Type:	Directi	ional	٣	?	
	Beam Width:	30			?	
	Model:	ANT-3			?	St. George
Apply	Delete					and yoo adaar anare Mareer

SS spectrum settings:

Upda	te SS rack6.us	ser1	
Updated Succ	essfully		
General	Location Antenna	Spectrum SNMP Measurements Report	
	Frequency Start [KHz]:	3555000	
	Frequency Stop [KHz]:	3605000	
	_		
Apply	Delete		

Viewing Suscriber Station measurment report:

Update SS rack6.user1		
	Received Power	
General Location Antenna Spectrum SNMP Measurements Rep Received Power: -58	The CPE received power measured and reported after the BST has a spectrum grant from the SAS. The measured power is the CPE downlink RSSI of the CPE.	

Viewing Suscriber Station registration inforamation:

Upda	te SS	rack6.ı	user1				e 🖉 Base Statio
General	Location	Antenna	Spectrum	SNMP	Measurements Report	SAS Registration Info	CPEs
		CBSD	Status:	HB OK		2	Ronge 4809A 71N
		с	BSD ID:	1234567890	0123456789ad12387443	9	Range 715
		G	Frant ID:	277967867	7782180059	9	
		Grant Expire	ed Time:	2018-08-06	T07:36:08Z	0	Ronge 76
	Tra	ansmit Expire	ed Time:	2018-07-30	T13:23:43Z	9	
	Available	Channel Star	rt [KHz]:	3650000		0	R.
	Available	Channel Sto	p [KHz]:	3660000		2	
Apply	D	lelete					

3.8 BST and SS parameters:

- BST name name of the base station
- IP address IP address of the device
- Frequency start the BST center frequency minus 5MHz
- Frequency stop the BST center frequency plus 5MHz
- Serial Number manufacture serial number
- BST Max TX power current TX power of the BST
- SAS control "enable" SAS control on the device, "disable" SAS control or "off the grid".
- Category device A\B –

Category A:

A lower power CBSD that meets the general requirements applicable to all CBSDs and the specific requirements for Category a CBSDs set forth in par. 96.41 and 96.43. Maximum EIRP limit is 30 dBm/10MHz

Category B:

A higher power CBSD that meets the general requirements applicable to all CBSDs and the specific requirements for Category B CBSDs set forth in par. 96.41 and 96.45. Maximum EIRP limit is 47 dBm/10MHz

- Max EIRP (read only parameter) the sum of the max TX power and the Antenna gain. The maximum EIRP is in the units of dBm/MHz
- **Height type** AGL (Height measured relative to the ground level) o AMSL (Height measured relative to the mean sea level)
- Indoor deployment Category A configuration: Whether the CBSD antenna is indoor or not. True: indoor. False: outdoor
- Report Measurements to SAS report after grant or no report at all. Default value is report after grant
- Available Channel Start [KHz] Low value of the available channel given by the SAS. Range 3550000 - 3700000 [KHz].

This parameter can be displayed only after the CBSD is registered to SAS (in the edit BS\CPE page)

• Available Channel Stop [KHz] - High value of the available channel given by the SAS. Range 3550000 - 3700000

[KHz]

- Location Latitude BST latitude
- Location Longitude BST longitude
- Location height BST installation height
- Antenna azimuth BSTs antenna azimuth
- Antenna down tilt BSTs antenna down tilt
- Gain BSTs antenna gain in dBm

- Antenna type BSTs antenna type, Omni or Directional.
- Beam width BSTs antenna beam width
- Antenna model BSTs antenna model
- SNMP Read\write community

Maximum EIRP validation:

All CBSDs must meet the maximum EIRP limit:

- Category **A** CBSD maximum EIRP is **30** dBm/10MHz
- Category **B** CBSD maximum EIRP is **47** dBm/10MHz

The EIRP is the sum of the maximum Tx power and the Antenna gain, therefore any modification of the following 3 parameters will be validated accordingly:

- Antenna gain
- Maximum Tx power
- Device Category

In case the EIRP value doesn't meet the maximum EIRP limit based on the CBSD category, warning pop up appears and the last configuration will not be saved.

Measurements report

The CBSD initiates the Registration procedure by sending a Registration Request to the SAS. The measCapability parameter in the Registration Request identifies the measurement reporting capabilities of the CBSD. The SAS responds to the CBSD with a Registration Response. The response parameter indicates whether the registration succeeded or failed. If the registration succeeded and the measReportConfig parameter is included in the Registration Response, the CBSD shall send the requested measurement report to the SAS (as indicated by the value of the measReportConfig parameter) per the defined semantics of the measurement capabilities defined below.

The measurement report requested by the SAS shall be consistent with the CBSD measurement capabilities indicated in the registration request.

Spectrum Inquiry

Spectrum inquiry request will be sent to the SAS after the CBSD finishes registration and before granting. The CBSD will NOT change its channel based on the spectrum inquiry response.

The SAS available channel bill be saved to the DB and will be displayed in the CBSD WEB GUI.

3.9 Viewing logs

To view SAS activity click on Reports→CBSD activity:

Start date:	2017/06/28 12:04	End date:	2017/06/29 12:04 Filter	
Select CBSD Type:	All		Image: 4 mining of the second sec	
			Sun Mon Tue Wed Thu Fri Sat 12:00	
Select CBSD Name:	All		4 5 6 7 8 9 10 14:00	
me	CBSD Type	CBSD Name	11 12 13 14 15 16 17 15:00	
2017-06-28 12:04:22	BS	rack2-bs4	18 19 20 21 22 23 24 16:00 25 26 27 28 29 30 1 17:00	
2017-06-28 12:04:22	BS	rack2-bs2	· · ·	
2017-06-28 12:04:22	BS	rack2-bs3	SAS response with OK	
2017-06-28 12:04:22	CPE	rack6.user2	SAS response with OK	3
2017-06-28 12:04:22	CPE	rack6.user1	SAS response with OK	
2017-06-28 12:04:22	CPE	rack6.user3	SAS response with OK	055
2017-06-28 12:04:22	CPE	rack6.user4	SAS response with OK	
2017-06-28 12:04:22	CPE	rack6.user5	SAS response with OK	
2017-06-28 12:04:22	CPE	rack6.user6	SAS response with OK	mess of
2017-06-28 12:04:22	CPE	rack6.USER7	SAS response with OK	
2017-06-28 12:04:22	CPE	user8@rack6	SAS response with OK	

To view the Error log click Reports \rightarrow Error log:

Error Log					Â	
Start date: 201	17-06-28 12:07:22	End date:	2017-06-29 12:07:22	Fitter		
Time	Sevirity Desc	scription)	
2017-06-28 12:48:21	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	pe found in the DB			
2017-06-28 12:49:42	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:50:21	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:51:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:52:38	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:53:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:54:43	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:55:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:56:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:57:37	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:58:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 12:59:42	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
2017-06-28 13:00:20	2 CP	PE mac=000500001020 is connected to BS=rack9-bs2 but cannot b	be found in the DB			
<					· · ·	

To view the system log click Reports \rightarrow System log:

			End data:	2017.05.20.12:00:45	Filter		
Start date.	2017-00-20 12:03:10		End date.	2017-00-23 12:03:10	1 MCC	_	
Time	CBSD Type	CBSD Name	Event				
2017-06-28 12:09:47	BS	RACK9-BS1	BS is ina	ccessible			
2017-06-28 12:10:20	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:11:20	BS	RACK9-BS1	BS is ina	ccessible		-	
2017-06-28 12:12:40	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:13:20	BS	RACK9-BS1	BS is ina	ccessible		-	
2017-06-28 12:14:42	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:15:20	BS	RACK9-BS1	BS is ina	ccessible		-	
2017-06-28 12:16:19	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:17:39	BS	RACK9-BS1	BS is ina	ccessible		-	
2017-06-28 12:18:19	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:19:43	BS	RACK9-BS1	BS is ina	ccessible		-	
2017-06-28 12:20:20	BS	RACK9-BS1	BS TX tu	rned ON			
2017-06-28 12:21:21	BS	RACK9-BS1	BS is ina	ccessible		-	

3.10 Viewing SS measurements

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Click on an existing BS and scroll the page down to the SS measurements table:

				/	i. A		El Corte de Madera Creek		* 🕺 • 🖬
		BASE	E STATION: RU	GGEDCOM	WIN BS 1			٥	
CPE Name	State	SAS Status	DL CINR	UL CINR	DL RSSI	Link Uptime (d HH:MM	1:SS)		
user8@rack6	Operational	hb_ok	28	25	-40	05:26:27			

3.11 SAS GW Alerts

For Viewing Alerts, click on the flashing "Active SAS Alert":



SAS alerts table located on the bottom of the page:

		SAS ALERTS		٥
Alert Name	State	Last Event Time	Note	Acknowledge
SAS Down	Off			
Spectrum Relinquish	Off			
BS Grant Refused or failed	Off			
SS Grant Refused or failed	Off			
SS not configured	On	2017-06-29 09:10:20	BS names: rack9-bs2	clear

3.12 Manual Operation

Setting manual operation, click on Setup→Settings:

map_source:	online
Proxy operational status:	1
userid:	userSiemens
fccld:	1234567890123456789
cbsdManufacturer:	SiemensRuggecom
callSign:	callSign123
radio Technology:	E_UTRA
supportedSpec:	802.16e
cbsdCategory:	а
sensingCapability:	sensingCapabilit
twilo_sid:	AC8ce7475e01e80826ab40671b2
twilo_token:	7f4bf6075bc02d240f0672048ed98l
twilo_phone_number:	+14153478683
time_zone:	UTC
manual_operation:	Answer Positive •
	Apply

Manual operation for SAS requests:

In some cases the user may choose to run the system in safe mode, for evaluation purposes or under debugging conditions. In this mode the SAS activity will be handled normally, however will not change the operation of the wireless network.

Disabled - default option.

Answer Positive - In this case the SAS GW will never stop the TX on any WIN device and answer all SAS request as if it was done. Event will be logged.

Answer Negative – in this case the SAS GW will never stop the TX on any WIN device and answer to SAS it was not done. Event will be logged.

4 Known bugs and limitations

- SNMPv3 is not implemented.
- Number of SS per BST is limited to 20 devices