SERVICE BULLETIN DSPbR-025

Product: DSPbR Rebroadcast Repeater

Subject: Firmware 5.4.0 Release   **Date: 23rd February 2019**

Description

This Service Bulletin announces the release of baseline 5.4.0 firmware for the DSPbR Rebroadcast Repeater (DSPbR) series products.

Product Enhancements

This version 5.4.0 firmware adds several new features to the DSPbR;

i)   Trunking Extender (T-Ex).

The Trunking Extender (T-Ex) is a patented DSPbR option that provides an innovative solution for the rebroadcasting of P25 Phase 1 and Phase 2 networks in tunnel, in-building and outdoor coverage enhancement applications.

The Trunking Extender transcodes the rebroadcast P25 network donor site's Control Channel. The DSPbR-provided coverage footprint is frequency-translated to a different set of frequencies to those of the donor network site, and the transcoded Control Channel data content passing through the DSPbR makes subscriber terminals see the DSPbR as 'another' network site.

NETWORK SITE
(Donor Site)

Broadcast Control Channel

WACN	781821
SYS ID	306
NAC	363
RFSS	4
SITE ID	85

Advertised Adjacent CC's

RFSS ID	SITE ID
3	14
4	86
4	110

DSPbR REPEATER
(Rebroadcast Site)

Broadcast Control Channel

WACN	781821
SYS ID	306
NAC	363
RFSS	4
SITE ID	110

Advertised Adjacent CC's

RFSS ID	SITE ID
3	14
3	28
4	85

The use of frequency-translation prevents the occurrence of simulcast overlap between the coverage provided by the network donor site and the DSPbR. It also facilitates achieving the intra-system RF isolation required at a rebroadcast site to prevent the performance degradation that may otherwise occur if identical frequencies were used for both the uplink and downlink RF signal paths (i.e. RF feedback).

The transcoding process allows subscriber terminals to hand-over to and from the rebroadcast site coverage as they would between network sites themselves. The Trunking Extender can also be configured to broadcast specific Adjacent Control Channels to enhance subscriber terminals' mobility through the network and rebroadcast coverage areas. Frequency-translation may be configured within one frequency sub-band or across different frequency bands, creating opportunities to utilise any available spectrum in rebroadcast coverage areas - particularly with the increasing availability of multi-band subscriber terminals.

Trunking Extender Configuration

Parameters	Donor				Extender			
WACN ID	782177				782177			
System ID	306				306			
NAC Code	363				363			
RFSS ID	4				3			
Site ID	85				110			
Default Band Plan	Plan H ⌄				Plan H ⌄			
	Base Freq	B/W	Spacing	Tx Offset	Base Freq	B/W	Spacing	Tx Offset
	165.18750	12.50kHz	12.50kHz	4.60MHz	165.18750	12.50kHz	12.50kHz	4.60MHz

Advertised Adjacent Control Channels

Band Plan	No.	Rx Freq	Tx Freq	RFSS	Site
Plan H ⌄	111	166.57500	171.17500	4	85
Plan H ⌄	130	166.81250	171.41250	4	71
Plan G ⌄	221	164.81250	160.21250	3	97
Plan G ⌄	215	164.73750	160.13750	3	91
Plan G ⌄	164	164.10000	159.50000	3	92
Plan B ⌄	84	421.78750	427.28750	3	122
Plan B ⌄	88	421.81250	427.31250	3	148

Menu items shown: Introduction, Status, Configuration, Racks, Channels, Communications, Trunking Extender, System, Alarm Matrix, Maintenance, Logout, Help

The Trunking Extender functionality requires a Trunking Extender Daughter Card to be fitted to Side A of the DSP module (refer section 4.3.5 of the DSPbR User's Manual).   This card is an option that must be purchased to have the Trunking Extender functionality available for use in a DSPbR. When this optional card is fitted, it is automatically detected by the DSPbR and Trunking Extender menu items and selections will appear in the DSPbR webserver GUI.

ii)   Channels RSSI Status.

The Channels RSSI Status page displays a summary of the channels within the DSPbR system (including all channels in a multi-rack system), in both uplink and downlink directions, and includes each channel's Gating Threshold, current state (i.e. alarming, gated, or inactive) and current received RSSI level.

This page assists system commissioning and fault-finding activities. The presence of Rx desensitization, intermodulation products impacting channels, or a change in the system's noise floor can be seen, particularly if as a result of multiple channels being active simultaneously, by viewing this screen. If the number of channels in the system exceeds the screen display length, additional channel pages may be selected by the top drop-down selection field.

Channels RSSI Status

Each channel has both a Down Link (DL) and an Up Link (UL) direction. The Down Link repeats the Donor BTS signal to the Extended Coverage Area, whereas the Up Link repeats in the other direction.

Alarming   Ungated   Adaptive (Unmonitored)   Inactive Channel

1-12 [PCC] - [TC10]

Channels 1-12

	Down Link				Up Link				
Name	FE	Frequency	Gating	RSSI	Name	FE	Frequency	Gating	RSSI	Alarm
PCC	Ma-8A	413.312500	-110	-80	PCC	Ma-7B	403.600000	-110	-132	-
SCC	Ma-8A	415.312500	-110	-126	SCC	Ma-7B	403.937500	-110	-132	-
TC1	Ma-8A	413.062500	-110	-81	TC1	Ma-7B	404.100000	-110	-132	-
TC2	Ma-8A	412.650000	-110	-92	TC2	Ma-7B	404.200000	-110	-132	-
TC3	Ma-8A	417.312500	-110	-82	TC3	Ma-7B	404.300000	-110	-131	-
TC4	Ma-8A	416.062500	-110	-126	TC4	Ma-7B	404.400000	-110	-131	-
TC5	Ma-8A	415.062500	-110	-87	TC5	Ma-7B	404.500000	-110	-132	-
TC6	Ma-8A	416.812500	-110	-127	TC6	Ma-7B	404.600000	-110	-132	-
TC7	Ma-8A	416.562500	-110	-80	TC7	Ma-7B	404.700000	-110	-132	-
TC8	Ma-8A	418.812500	-110	-83	TC8	Ma-7B	404.800000	-110	-132	-
TC9	Ma-8A	412.562500	-110	-124	TC9	Ma-7B	404.900000	-110	-131	-
TC10	Ma-8A	417.062500	-110	-81	TC10	Ma-7B	405.000000	-110	-132	-

Navigation menu:
Introduction
Status
  Current Hardware
  Alarms
  Version Register
  Racks
  Channels
  Channels RSSI
  Communications
  Trunking Extender
  System
Configuration
Maintenance
Logout

Help

iii)   Introduction of an updated cellular modem.

An updated 3G/4G multi-band cellular modem is now being supplied in the DSPbR. This new firmware supports this updated modem model and is fully compatible with earlier modem models.

Upgrading to Firmware 5.4.0

Note: Please read all Service Bulletins published from the release of the firmware currently operating in your DSPbR prior to commencing an upgrade to this version 5.4.0 firmware. The upgrade to firmware version 5.4.0 requires an additional step in its upgrade process. In addition, future firmware upgrades to versions above 5.4.0 will require a transition through this version 5.4.0 before an upgrade to a later firmware version is attempted.

The required intermediate firmware version transitions are;

- Firmware below version 5.2.7 must transition through version 5.2.7 prior to attempting an update to 5.2.8 or above.

- Firmware below version 5.4.0 must transition through version 5.4.0 prior to attempting an update to a version above 5.4.0.

Note: For firmware versions below 5.2.7, other transition requirements may be required in addition to those listed above.   If you have any uncertainty regarding the current firmware revision installed in a DSPbR, or if you are uncertain about the current firmware status of the modules in a DSPbR, or their compatibility with an upgrade to a newer firmware revision, please contact RFI for assistance prior to commencing any firmware upgrade attempt.

Please refer to the Service Bulletin DSPbR-UPDATE for detailed instructions on the firmware upgrading process – including the upgrade process required for this version 5.4.0.

Cost Impact

Firmware version 5.4.0 is available to RFI customers at no charge.

Note: The availability and use of the Trunking Extender feature included in this firmware release requires the purchase and fitting of an optional Trunking Extender Daughter Card. Please contact RFI for information on this DSPbR option.

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