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Release Note

3600D/4300 Mobile Service Tester

TDMA Full Rate Burst Power Measurement

This release provides the 3600/4300 user with the ability to measure the average power of a TDMA burst transmitted by a mobile phone that may or may not be synchronized with the test set.

Summary of Changes

- TDMA Burst Power measurement function added
- Two front panel screens added
- Remote commands added

Features and capabilities

The TDMA Burst Power measurement function provides continuous measurement at a rate greater than or equal to 1 refresh per second.

Input Criteria

The mobile must be transmitting an IS-136 compliant bursted signal and the 3600D/4300 must be in Burst Power Mode.

Note: No mobile messaging is decoded during burst measurement.

Measurement Capability

If the bursting signal passes a minimum threshold, the average power of the burst envelope is displayed on the screen in user-selected units of dBW, dBm, Watts.

Additionally, the full envelope or selected sample point data is also available through the remote port or sequence program.

Theory

The 3600D/4300 employs a window search to acquire and lock onto the mobile's burst timing. The 3600D/4300 continuously monitors the burst timing and automatically adjusts to drift in the burst timing.

To access the TDMA Tuning Spectrum screen

At the Manual Mode screen press Service Mode softkey to invoke the TDMA Summary screen.

Note: If the TDMA Summary screen is not displayed, press the Service Mode soft key.

Press the Channel type key until "TDMA"is displayed. Return to the TDMA Summary screen by pressing the Return softkey.

Note: An alternate method to invoke the TDMA Summary screen:

At the Manual Mode screen, press System Setup and select "TDMA" as the Initial type. Press Return to display the Manual Mode screen and press the Service Mode softkey.

Note: This method selects TDMA as the Initial type for both Manual and Service Mode operation.

At the TDMA Summary screen, the message "No Valid Burst" may be displayed, even if the mobile bursts are active. This is a normal condition caused by the fact that the 3600D/4300 is not yet in Autosychronization Mode.

To access the TDMA Burst Summary screen

At the TDMA Summary screen, press the Tuning Mode soft-key to access the TDMA Tuning Mode screen.
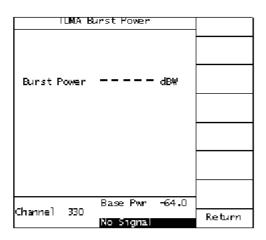
```
        TDMA Tuning Mode
┌─────────────────────────────┬──────────┐
│ Burst Power - Measures average │  Burst   │
│ power of an unsynchronized   │  Power   │
│ TDMA burst.                  │          │
│                              │          │
│ Tuning Spectrum - Displays   │  Tuning  │
│ spectrum information of an    │ Spectrum │
│ unsynchronized TDMA burst.    │          │
│                              │          │
│                              │          │
│                              │          │
│          Base Pwr   -64.0    │          │
│ Channel   330                │ Summary  │
└─────────────────────────────┴──────────┘
```

At the Tuning Mode screen, press the Burst Power softkey to invoke the Burst Power screen.

```
        TDMA Burst Power
┌─────────────────────────────┬──────────┐
│                              │          │
│                              │          │
│  Burst Power-52.3  dBW       │          │
│                              │          │
│                              │          │
│                              │          │
│                              │          │
│          Base Pwr   -64.0    │          │
│ Channel   330                │ Return   │
└─────────────────────────────┴──────────┘
```

The burst measurement is displayed as new measurements are made.

If no burst is found, the reading is displayed as all dashes along with:

```
        TDMA Burst Power
┌─────────────────────────────┬──────────┐
│                              │          │
│                              │          │
│  Burst Power   - - - - -  dBW │          │
│                              │          │
│                              │          │
│                              │          │
│          Base Pwr   -64.0    │          │
│ Channel   330                │ Return   │
│        No Signal             │          │
└─────────────────────────────┴──────────┘
```

"No Signal" (threshold not met) in the status window or "No Valid Burst" (threshold met, no valid burst found).

```
        TDMA Burst Power
┌─────────────────────────────┬──────────┐
│                              │          │
│                              │          │
│  Burst Power   - - - - -  dBW │          │
│                              │          │
│                              │          │
│                              │          │
│          Base Pwr   -64.0    │          │
│ Channel   330                │ Return   │
│        No Valid Burst        │          │
└─────────────────────────────┴──────────┘
```

New Remote Commands

MEASure:SRVMode:BURSt?

This command begins burst envelope measurements and waits for the next measurement to complete. If a valid burst is measured, the results (modulation envelope power data, average power) are copied to a buffer to allow access to the individual elements of the last burst measurement by using the (READ:SRVMode:BURSt) commands. The valid measurement status is returned by this command to indicate whether a valid burst was captured.

The 3600D/4300 must be in TDMA Spectrum/Burst Measurement Mode (CALL:SRVM:SPEC:STAT ON) prior to receiving this command or a settings conflict error −221 (return code −603) will be indicated.

Returns:

- 0 if a valid burst was detected

- 1 if minimum threshold for burst not exceeded (No signal indication)

- 2 if threshold exceeded but burst not valid (No valid burst indication)

Example:

CALL:SRVM:TYPE TDMA; BAND CELL; CHAN 330; IMM
CALL:SRVM:SPEC:STAT ON
MEAS:SRVM:BURS?
0
MEAS:POW:TRAN:UNIT DBM
READ:SRVM:BURS:POW?
-10.2
CALL:SRVM:SPEC:STAT OFF

The first two preceding commands set the unit up for TDMA Service Mode and then enter the TDMS Spectrum/Burst Measurement Mode. A burst envelope measurement is then performed on line 3, which responds with a value of 0, indicating a valid burst was received.

The average power measurement is then read from the burst measurement in dBm units (–10.2 dBm). Finally, the normal Service Mode/Measurement Mode is restored.

READ:SRVMode:BURSt:POWer [:AVERage]?

This command returns the average power from the last captured burst envelope measurement. This command must be preceded by the MEASure:SRVMode:BURSt? command to acquire the measurement. The power is reported in units selected by MEASure:POWer:TRANsmitter:UNITs.

Returns:

numeric floating point value

READ:SRVMode:BURSt:POWer:ENVelope[:DATA]?

This command returns power measurements for each sample from the last captured burst envelope measurement. This command must be preceded by the MEASure:SRVMode:BURSt? command to acquire the measurement. Measurements are taken at 41.152 microseconds intervals, with each power reported in dBW units. This provides a total capture time of approximately 6914 microseconds.

Returns:

comma-separated numeric floating point values. Number of entries indicated by READ:SRVM:BURS:POW:ENV:POIN?.

READ:SRVMode:BURSt:POWer:ENVelope: SAMPle? < index >

This command returns the power measurement for the specified sample from the last captured burst envelope measurement. Each sample represents 1 symbol/time duration, or approximately 41.152 microseconds. This command must be preceded by the MEASure:SRVMode:BURSt? command to acquire the measurement.

The power is reported in units selected by MEASure:POWer:TRANsmitter:UNITs.

Returns:

numeric floating point value

Example:

MEAS:POW:TRAN:UNIT MW
READ:SRVM:BURS:POW:ENV:SAMP? 149
890

This is an example of how to query a specific sample point of the captured burst envelope. Sample index 149 is the 150th element of the envelope array. The result (890) indicates a power level of 890 mW based on the unit selection of MW in the preceding command.

READ:SRVMode:BURSt:POWer:ENVelope:POINts?

This command returns the number of samples in the last captured burst envelope measurement. This command must be preceded by the

MEASure:SRVMode:BURSt? command to acquire the measurement.

Returns:

numeric integer value

Example:

READ:SERV:BURS:POW:ENV:POIN?
168

This example indicates that 168 samples are available for reading in the burst power array.

The sample index range for READ:SRVM:BURS:POW:ENV:SAMP would be 0 – 167.

Specifications

Average Power Range
Same as 3600D/4300 specifications

Power RangeAccuracy
Same as 3600D/4300 specifications

Width
TIA/EIA-136-270-A compliant burst width: ±206 µs

Front Panel Refresh Rate
Greater than or equal to 1.0 per second

For more information, visit **www.willtek.com**, and put us to the test.

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