Figure 1a: 1st & 2nd Normal Form (Suggestion 1)

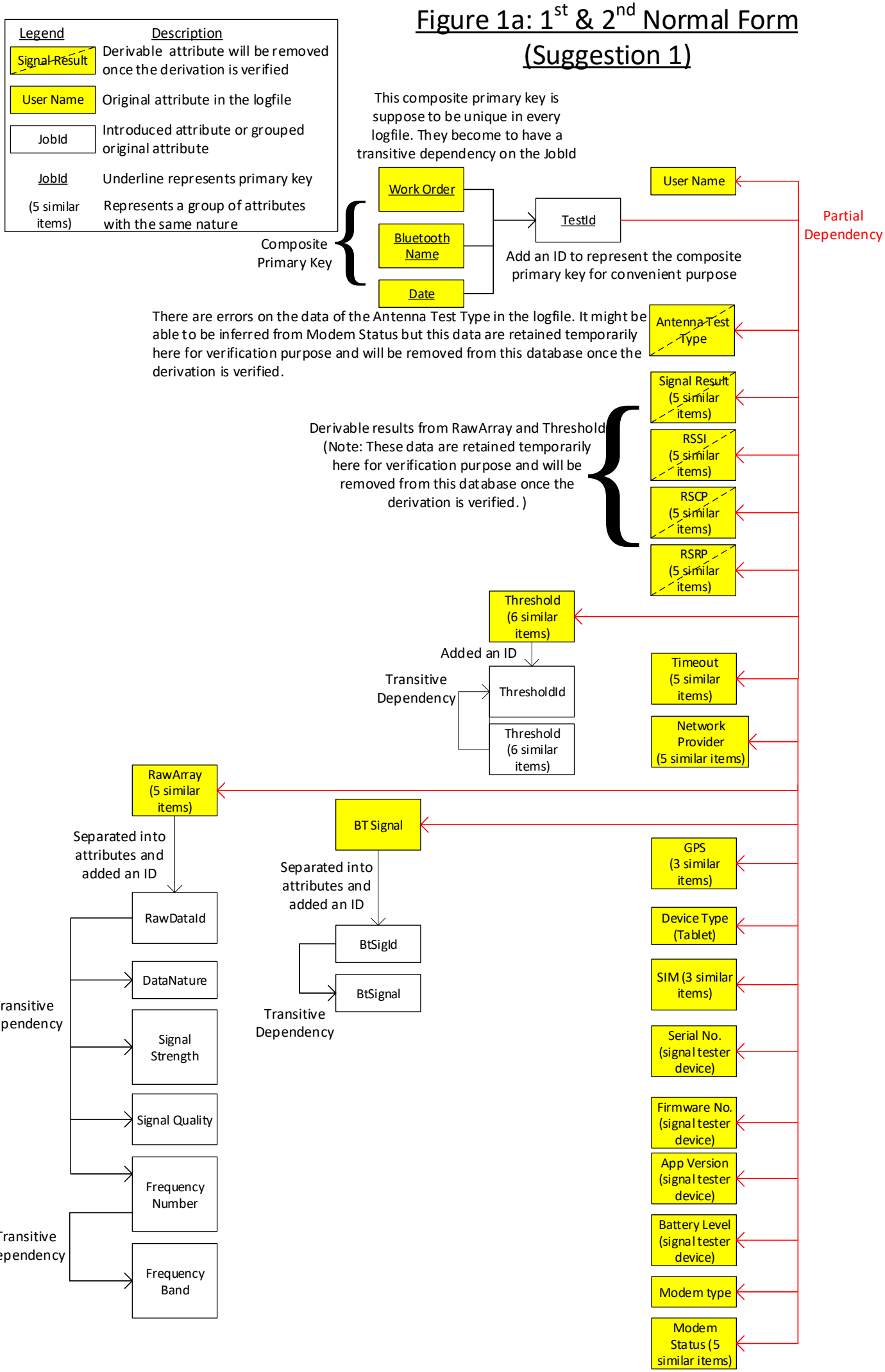


Figure 1b: 1st & 2nd Normal Form (Suggestion 2)

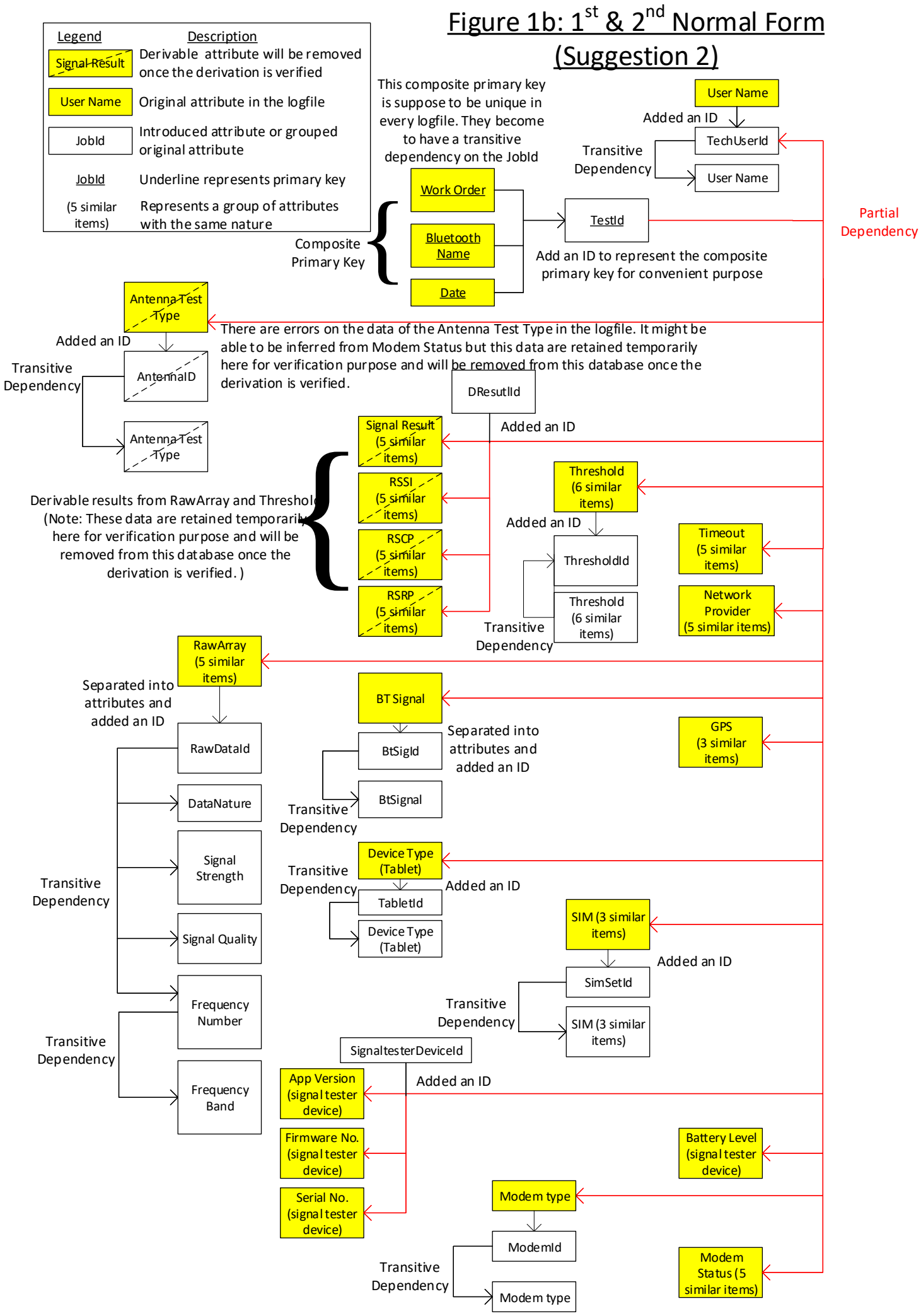


Figure 2a: 3rd Normal Form (Suggestion 1)

Legend	Description
Signal Result	Derivable attribute will be removed once the derivation is verified
User Name	Original attribute in the logfile
JobId	Introduced attribute
JobId	Underline & bold represent primary key
JobId	Italic & bold represent foreign key
(5 similar items)	Represents a group of attributes with the same nature
Test	Entity Name

Bluetooth Signal
(Data of the attribute were separated from the array of BT Signal attribute)

- **BtSigId**
- BtSignal

Job

- **Work Order**
- **Bluetooth Name**
- **Date**
- ***TestId***

Threshold

- **ThresholdId**
- Threshold (6 similar items)

Raw Data
(attributes were separated from RawArray attribute)

- **RawDataId**
- DataNature
- Signal Strength
- Signal Quality
- ***Frequency Number***

Rf

- **Frequency Number**
- Frequency Band

Test

- User Name
- **TestId**
- Antenna Test Type
- Signal Result (5 similar items)
- RSSI (5 similar items)
- RSCP (5 similar items)
- RSRP (5 similar items)
- ***ThresholdId***
- Timeout (5 similar items)
- Network Provider (5 similar items)
- ***RawDataId***
- ***BtSigId***
- GPS (3 similar items)
- Device Type (Tablet)
- SIM (3 similar items)
- Serial No. (signal tester device)
- Firmware No. (signal tester device)
- App Version (signal tester device)
- Battery Level (signal tester device)
- Modem type
- Modem Status (5 similar items)

Partial Dependency

Figure 2b: 3rd Normal Form (Suggestion 2)

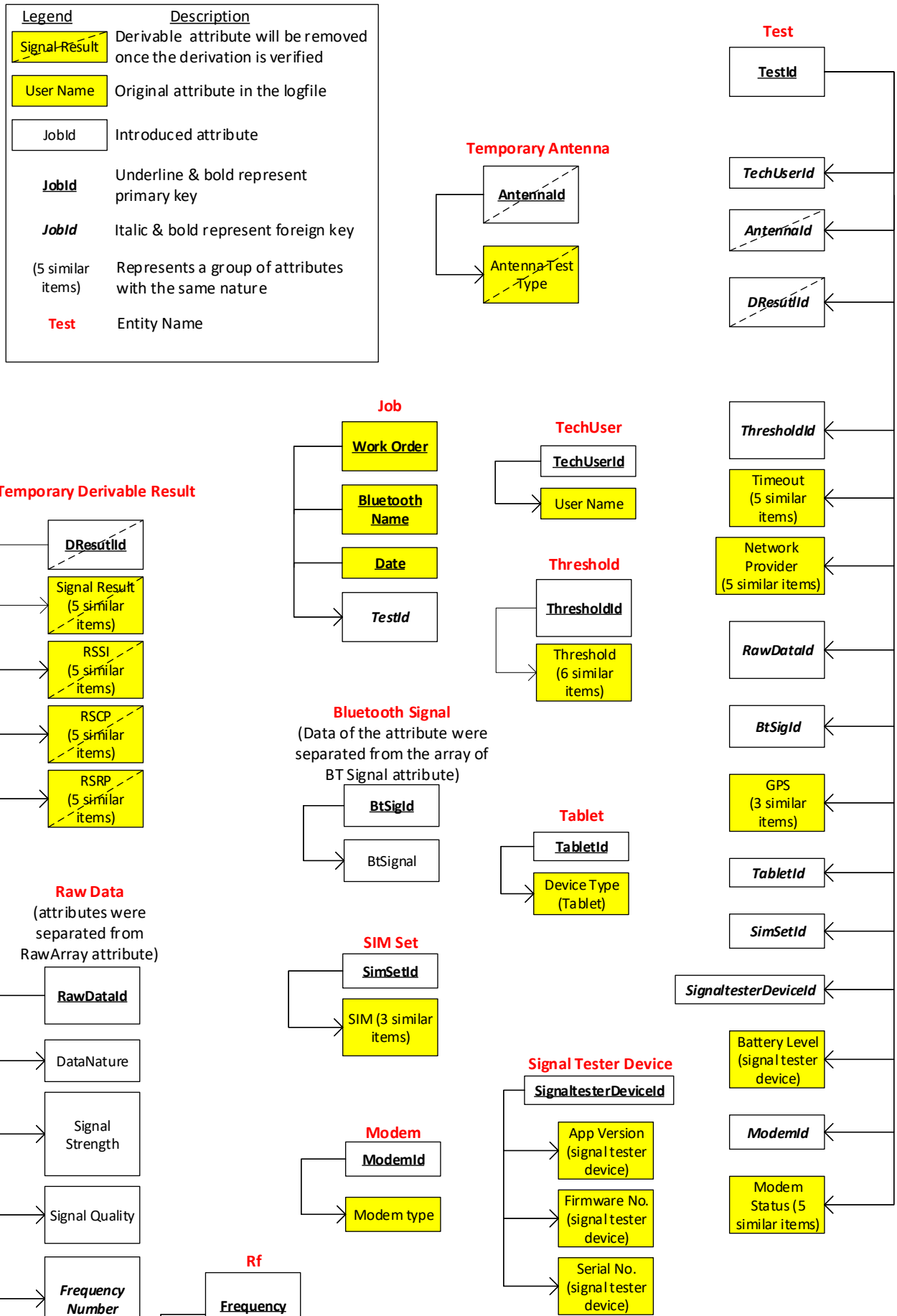
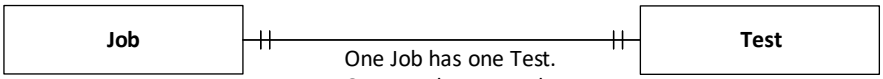
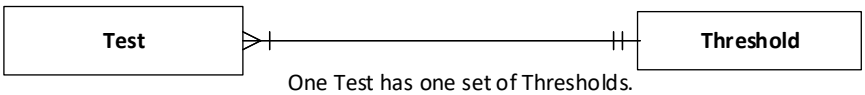


Figure 3a: Entity Relationship (Suggestion 1)

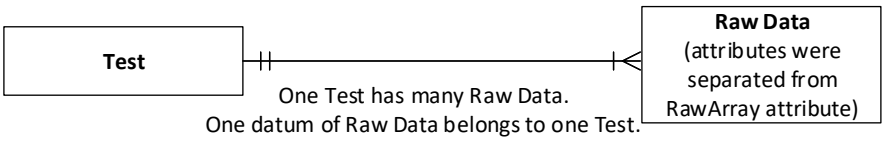


One Job has one Test.
One Test has one Job.

(Note: Job Table is used for simplify the composite primary key in the logfile showing in 1st normal form in Figure 1).

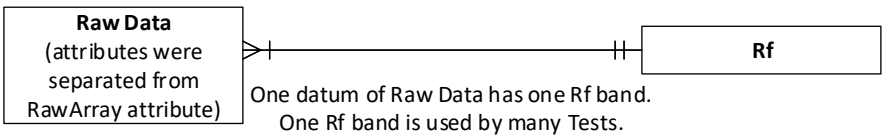


One Test has one set of Thresholds.
One set of Thresholds is used for many Tests.
Note: Threshold is a set of constant values used for determining the test result.



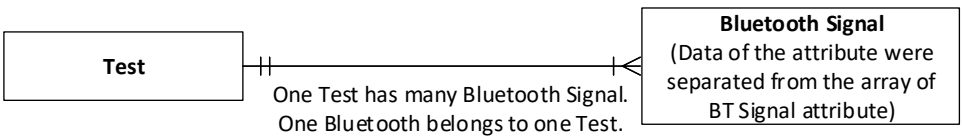
One Test has many Raw Data.
One datum of Raw Data belongs to one Test.

Note: Raw Data was a composite attribute in the datafiles and is separated into various attributes in the Raw Data Table used for determining the test result.



One datum of Raw Data has one Rf band.
One Rf band is used by many Tests.

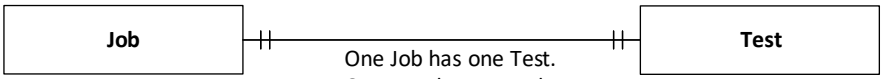
Note: Rf band is not given in the logfile but in Vector's excel file that explained the logfile.



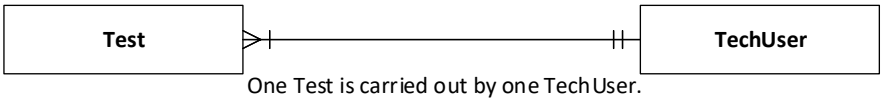
One Test has many Bluetooth Signal.
One Bluetooth belongs to one Test.

Note: Bluethooth Signal was a composite attribute in the datafiles and is separated into multiple data in the Bluetooth Signal Table.

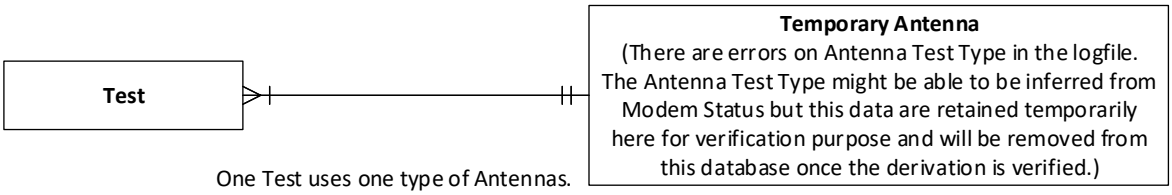
Figure 3b: Entity Relationship (Suggestion 2)



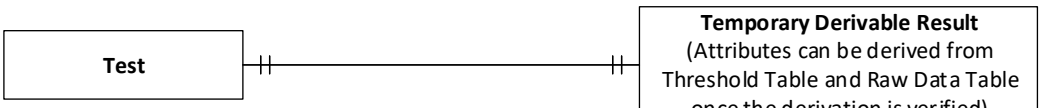
One Job has one Test.
One Test has one Job.
(Note: Job Table is used for simplify the composite primary key in the logfile showing in 1st normal form in Figure 1).



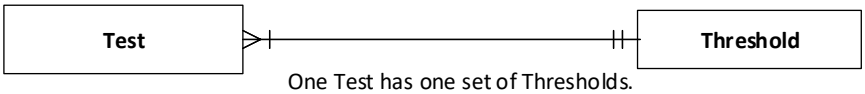
One Test is carried out by one TechUser.
One TechUser carries out many Tests.
Note: TachUser Table is used for merging with existing human resource system and avoiding anomalies in the further system development.



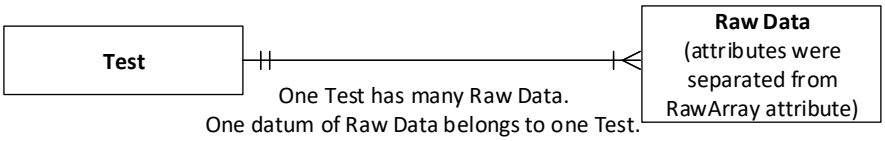
One Test uses one type of Antennas.
One type of Antennas is used in many Tests.
Note: Antenna Table is used for merging with existing inventory system and avoiding anomalies in the further system development.



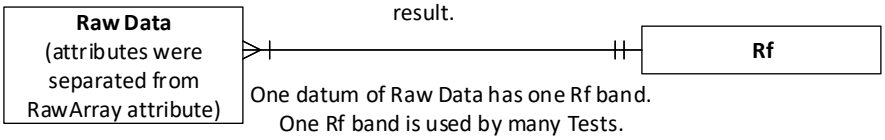
One Test has one Temporary Derivable Result.
One Temporary Derivable Result has one Test.
Note: Temporary Derivable Result will be removed once the derivation is verified, so it is temporarily separated from the test.



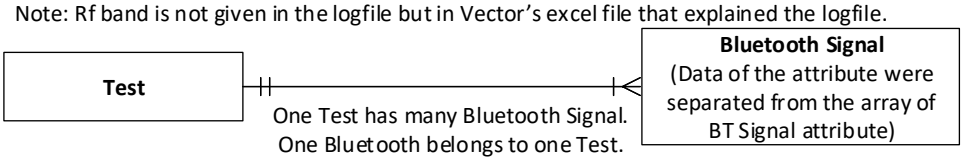
One Test has one set of Thresholds.
One set of Thresholds is used for many Tests.
Note: Threshold is a set of constant values used for determining the test result.



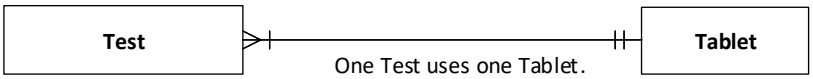
One Test has many Raw Data.
One datum of Raw Data belongs to one Test.
Note: Raw Data was a composite attribute in the datafiles and is separated into various attributes in the Raw Data Table used for determining the test result.



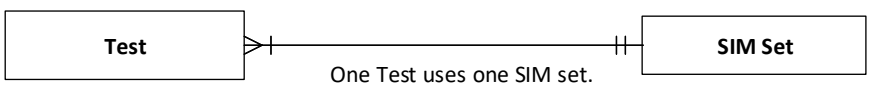
One datum of Raw Data has one Rf band.
One Rf band is used by many Tests.
Note: Rf band is not given in the logfile but in Vector's excel file that explained the logfile.



One Test has many Bluetooth Signal.
One Bluetooth belongs to one Test.
Note: Bluethooth Signal was a composite attribute in the datafiles and is separated into multiple data in the Bluetooth Signal Table.

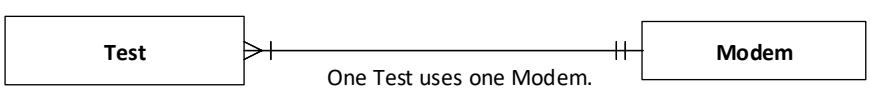


One Test uses one Tablet.
One Tablet is used in many Tests.
Note: Tablet Table is used for merging with existing inventory system and avoiding anomalies in the further system development.



One Test uses one SIM set.
One SIM set is used in many Tests.
Note: SIM Set Table is used for merging with existing inventory system and avoiding anomalies in the further system development.

One Test uses one Signal Tester Device.
One Signal Tester Device is used in many Tests.
Note: Signal Tester Device Table is used for merging with existing inventory system and avoiding anomalies in the further system development.



One Test uses one Modem.
One Modem is used in many Tests.
Note: Modem Table is used for merging with existing inventory system and avoiding anomalies in the further system development.

Figure 4a: Entity Relationship Diagram (Suggestion 1)

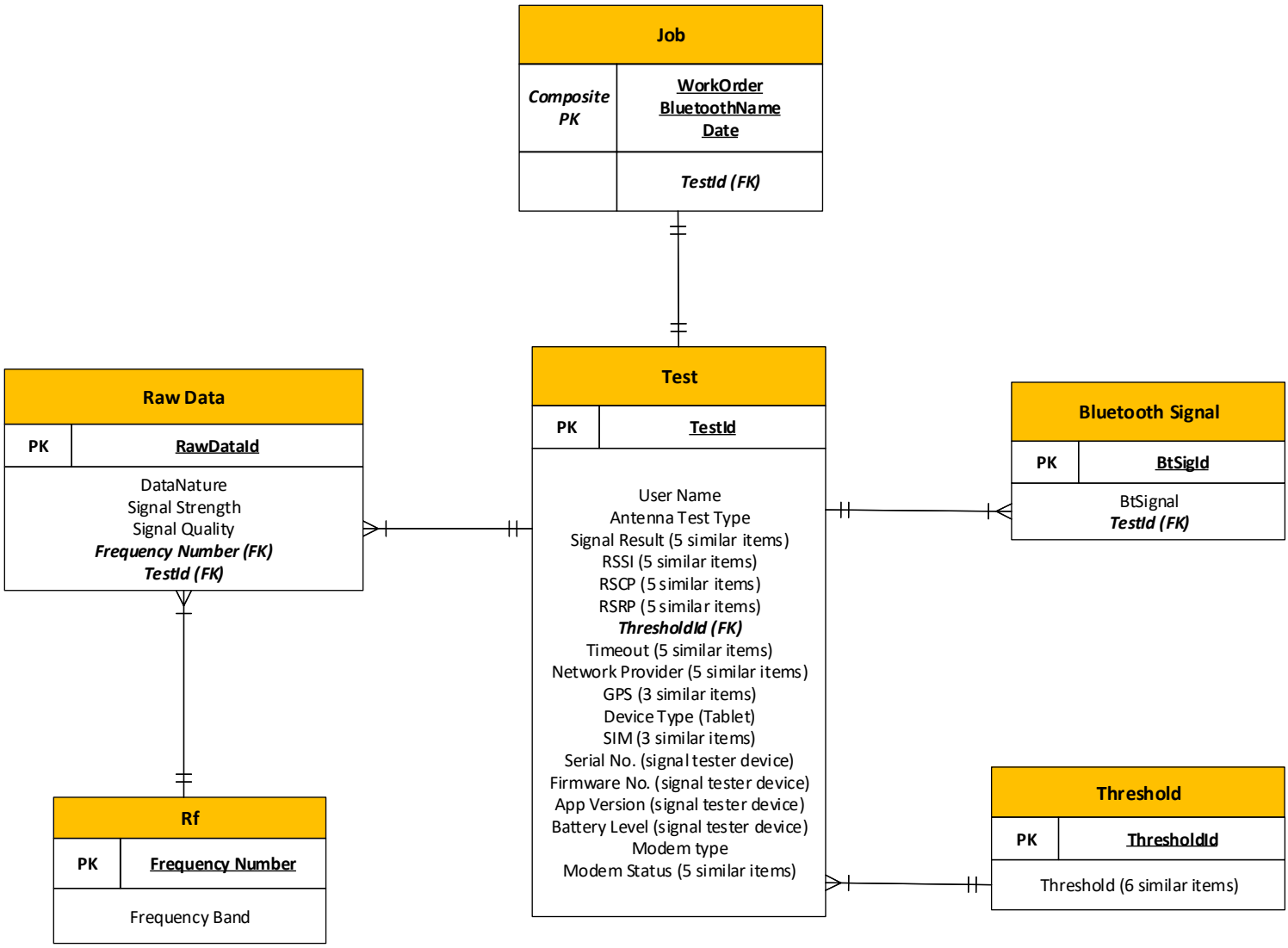


Figure 4b: Entity Relationship Diagram (Suggestion 2)

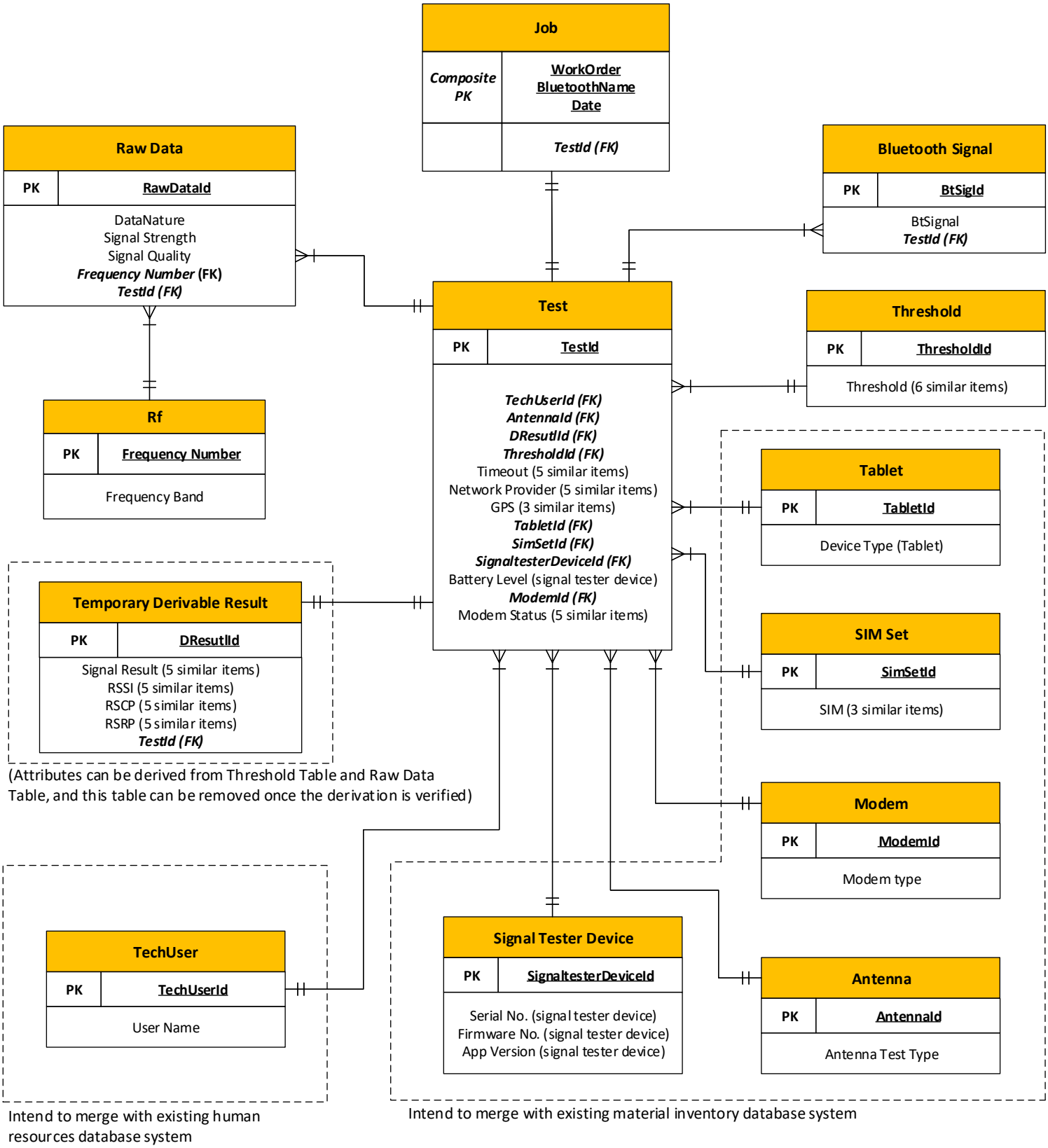


Figure 4b: Entity Relationship Diagram (Suggestion 2)