

Data referencing for different Skus Template

Test Data Referencing

Justification of Test Data Referencing, for EMC/RF and SAR

Reference model: FCC ID: SS4S50F1 for the S5S7F1.

Variant model: FCC ID: SS4S50W1 for the S5S7W1..

Revision:

Version	Description	Date
1.0	Initial release	2024/11/18

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- **Product Overview**

Radio	Frequency band	FCC Rule Part	FCC ID: SS4S50F1(S5 S7F1)	FCC ID: SS4S50W1(S5S 7W1)
GSM	850, 1900	Part 22, 24	Supported	Not Supported
WCDMA	2,4,5	Part 22, 24, 27	Supported	Not Supported
LTE Band	B71,12,17,13,14,5,66,4,2,7,38,48	Part 22, 24, 27, 90, 96	Supported	Not Supported
5G NR	n71,12,13,14,5,66,2,7,41,38,48,78,77	Part 22, 24, 27, 90, 96	Supported	Not Supported
Wi-Fi	2.4GHz: 2.400 – 2.4845GHz 5GHz: 5.15 – 5.35GHz, 5.47 – 5.725GHz, 5.725 – 5.85GHz 6GHz: 5.935 GHz ~ 6.415 GHz 6.425 GHz ~ 6.525 GHz 6.535 GHz ~ 6.855 GHz 6.875 GHz ~ 7.115 GHz	Part 15C&E	Supported	Supported
Bluetooth BR&EDR &BLE	2.4GHz: 2.400 – 2.4835GHz	Part 15C	Supported	Supported

NFC	13.56MHz	Part 15C	Supported	Supported
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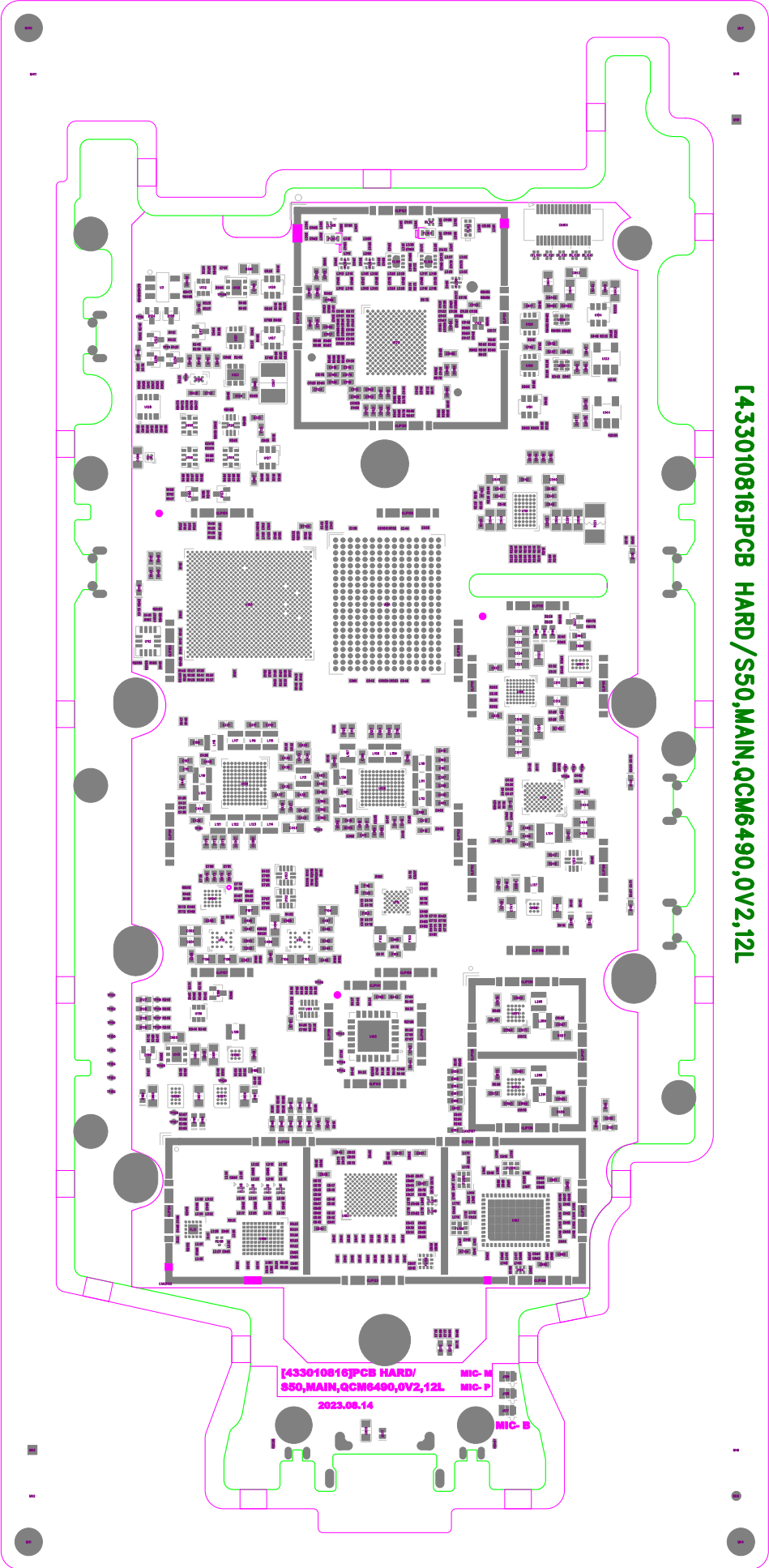
- **Comparison – Summary**

The WWAN+WIFI Spec have WWAN and WIFI module but the WIFI Only spec had removed the WWAN module.

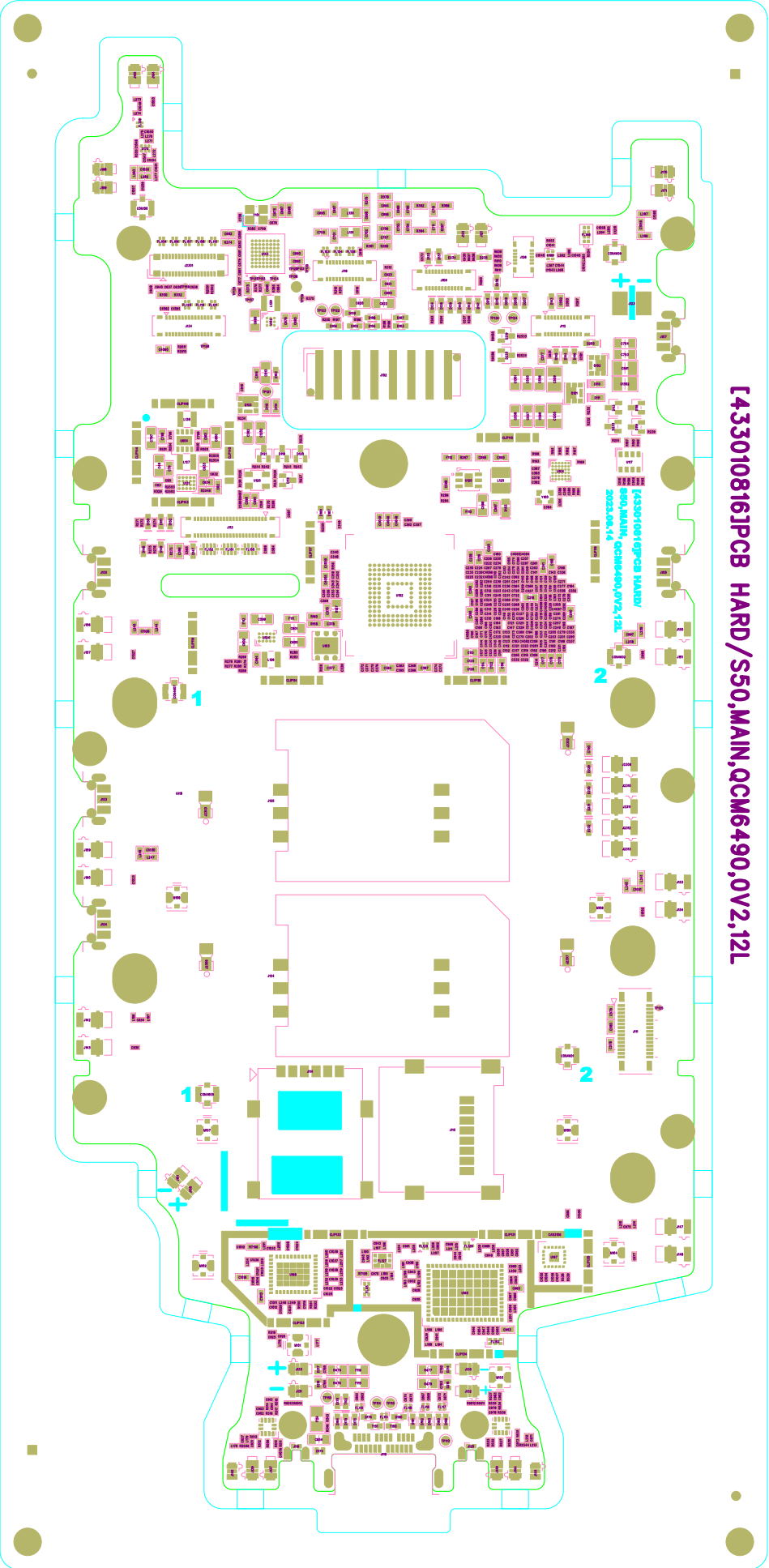
SS4S50F1(S5S7F1): WWAN+WIFI SPEC MODEL

SS4S50W1(S5S7W1): WIFI only SPEC, removed the WWAN module.

S50 FULL PART LOCATION

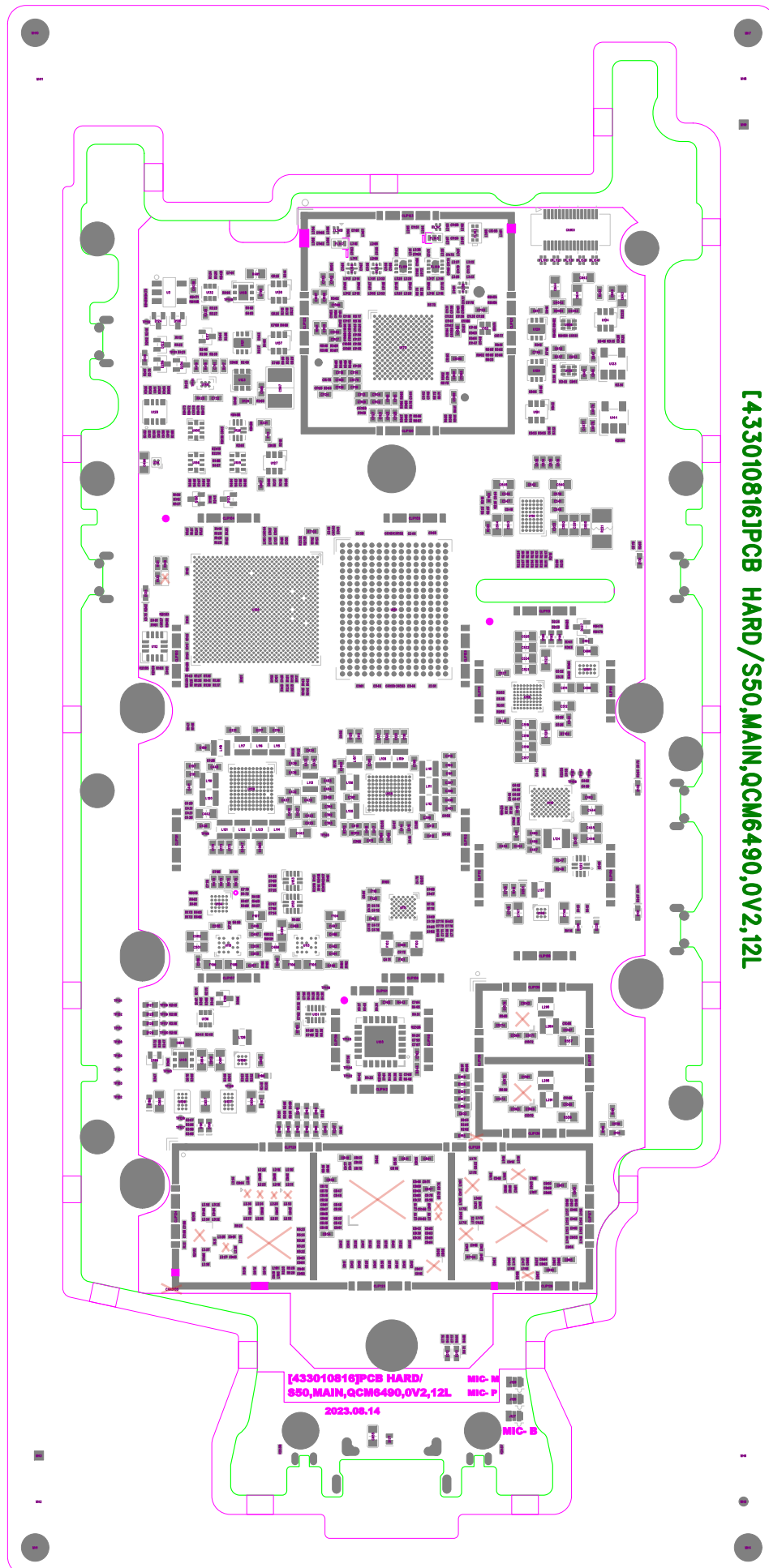


S50 FULL PART LOCATION



[433010816]PCB HARD/S50,MAIN,QCM6490,0V2,12L

S50 WIFL PART LOCATION
Handling of part X removed from FULL BOARD



● Test Strategy

- FCC ID: SS4S50F1 as reference model to conduct full test for EMC/RF, SAR.
- FCC ID: SS4S50W1 as Variant model data referencing from the reference model for EMC/RF and SAR additional NFC/EMC testing.

➤ EMC/RF/SAR spot check justification:

Reference KDB484596 D01 Referencing Test Data v02r01

- Verify the Worst-Case Configuration of the Reference Model, do spot check conducted power and RSE.
- For every exposure condition (head, body, etc) and for every transmit antenna and frequency band, spot check SAR at the highest SAR configuration found in the referenced mode. The spot-check measurements that meet the following criteria:
 - Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, may show a deviation d_{dB} from the reference data no larger than 3 dB (applicable for both field and power quantities):

$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad , (1)$$

where between V_{dB} , the variant spot-check level in dB, and R_{dB} is the corresponding measurement level in dB for the reference model.

- An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} = |C_{dB} - R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation d_{dB} from the reference data satisfies the following condition:

$$d_{dB} = |V_{dB} - R_{dB}| \leq (3 + M_{dB}/20) \text{ dB} \quad , \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad , (2)$$

$$d_{dB} = |V_{dB} - R_{dB}| = 6 \text{ dB} \quad , \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB}$$

When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB (as shown in Fig. 2):

- for $M_{dB}=0$ dB, then $d_s=3$ dB, that is when R_{dB} is right at the compliance threshold C_{dB} , thus the margin $M_{dB}=0$ and the variant can only be allowed to go lower than R_{dB} ;
- for $M_{dB}=60$ dB, then $d_s=6$ dB, i.e., the reference model data is 60 dB below the compliance threshold M_{dB} .

➤ Compliance is determined by both the spot check data and the referenced test data.

➤ Test strategy is tabulated in next page.

Reference Device	Variant Device	Reference model
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FCC ID : SS4S50F1(S5S7F1)	FCC ID: SS4S50W1(S5S7W1)	Refer to Comparison – Summary
Fully test	Spot-check	

Rule Part	Test item	Data Reference(Y/N)	Spot-check test
Part 15C For BT2.0	Number of Channels	Y	Verify one mode max power Number of Channels
	Hopping Channel Separation	Y	Verify one mode max power Number of Channels
	Dwell Time of Each Channel	Y	Verify one mode max power Number of Channels
	20dB Bandwidth	Y	Verify one mode max power Channel
	99% Bandwidth	Y	Verify one mode max power Channel
	Peak Output Power	Verify power	Verify in worst case mode(1Mbps)
	Conducted Band Edges	Y	Verify one mode max power Channel
	Conducted Spurious Emission	Y	Verify one mode max power Channel
	Radiated Band Edges and Radiated Spurious Emission	Verify RSE worse case	Verify in worst case mode/channel
	AC Conducted Emission	N	N/A (New test for variant device)
Part 15C For BLE &2.4G WLAN	6dB Bandwidth	Y	Verify one mode max power Channel
	99% Bandwidth	Y	Verify one mode max power Channel
	Peak Output Power	Verify power	BLE: Verify in worst case mode(1Mbps) 2.4G WLAN: Verify in worst case mode(802.11 B)
	Power Spectral Density	Y	Verify one mode max power Channel
	Conducted Band Edges and Spurious Emission	Y	Verify one mode max power Channel

	Radiated Band Edges and Spurious Emission	Verify RSE worse case	BLE: Verify in worst case mode/channel
	AC Conducted Emission	N	N/A (New test for variant device)
Part 15E For 5G WLAN	26dB & 99% Bandwidth	Y	Verify one mode max power Channel
	Maximum Conducted Output Power	Verify power	Verify in worst case mode
	Power Spectral Density	Y	Verify one mode max power Channel
	Unwanted Emissions	Verify RSE worse case	Verify one mode max power Channel
	DFS	Y	Verify MAX bandwidth channel
	AC Conducted Emission	N	N/A (New test for variant device)
Part 15E For 6G WLAN	AC Power Conducted Emissions	N	N/A (New test for variant device)
	Radiated Emissions	Verify worse case	Verify worse case
	In-Band Emission (Mask)	Y	Verify one mode max power Channel
	Emission Bandwidth Measurement	Y	Verify one mode max power Channel
	Maximum Power Spectral Density	Y	Verify one mode max power Channel
	Contention-based Protocol.	Y	Verify one mode max power Channel
	RF Output Power	Verify power	Verify in worst case mode
	Operational restrictions for 6 GHz U-NII devices	Y	Verify one mode max power Channel
	CBP and Inband emissions test	Y	Verify one mode max power Channel
Part 15C For NFC	20dB Spectrum Bandwidth	N	N/A (New test for variant device)
	99% OBW Spectrum Bandwidth	N	N/A (New test for variant device)

	Frequency Stability	N	N/A (New test for variant device)
	Field Strength of Fundamental Emissions	Verify power	Verify power
	Radiated Spurious Emissions	Verify RSE	Verify RSE
	AC Power Line Conducted Emissions	N	N/A (New test for variant device)
Part 15B	AC Conducted Emission	N	N/A (New test for variant device)
	Radiated Emission	N	N/A (New test for variant device)
SAR	SAR Testing	Y	verify the each frequency band worst case per Head/Body/Extremity exposure conditions