



Spot Check Evaluation

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REVISION HISTORY

VERSION	DESCRIPTION	ISSUED DATE
01	Initial issue of report	Oct. 24, 2018



1. Introduction Section

The original model (FCC ID: IHDT56XN2) and the variant model (FCC ID: IHDT56XN3) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS/NFC. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS) and Part 15E (equipment class: NII) test data issued test data of IHDT56XN3 references the test data of IHDT56XN2

The original model (FCC ID: IHDT56XN2) and the variant model (FCC ID: IHDT56XN3) has identical PCB layout, antenna, SW implementation for GSM/WCDMA/LTE. Based on their similarity, the FCC Part 22, 24, 27 (equipment class: PCS) test data issued test data of IHDT56XN3 references the test data of IHDT56XN2

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: IHDT56XN3).



2. Difference Section

The original model (FCC ID: IHDT56XN2) and the variant model (FCC ID: IHDT56XN3) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS. The details of similarity and difference can be found in the Operating Description.

The original model (FCC ID: IHDT56XN2) and the variant model (FCC ID: IHDT56XN3) has identical PCB layout, antenna, SW implementation for GSM/WCDMA/LTE. Based on their similarity, the FCC Part 22, 24, 27 (equipment class: PCS) test data issued test data of IHDT56XN3 references the test data of IHDT56XN2

Cellular transmitter RF components are different in IHDT56XN3, to support capability for different cellular bands.

The product specification is outlined in the following table:

FCC ID			IHDT56XN2	IHDT56XN3
Wireless Tech	Mode		Frequency (MHz)	
GSM	GSM Voice GPRS (GMSK) EDGE (8PSK)	Multi-Slot Class 12 DTM: No	850/1900	850/1900
UMTS	AMR/RCM12.2Kbps HSDPA/HSUPA/DC-HSDP A		B5/B4/B2	B5/B4/B2
LTE (FDD)	QPSK 16QAM 64QAM		B2/4/5/7/12/17/66	B2/4/5/7/26/38/41
Wi-Fi	11b/11g/11n(HT20)		2412-2462	
	11a/11n(HT20)/11n(HT40)/		5180-5240	
	11ac(VHT20)/11ac(VHT40)/		5260-5320	
	11ac(VHT80)		5500-5700	
			5745-5825	
			*5600-5650 notched	
Bluetooth	V5.0 LE		2402-2480 MHz	
NFC	ASK		13.56MHz	



3. Spot Check Verification Data Section

Summary of the spot check:

Test Item	Mode	IHDT56XN2 Worst Result	IHDT56XN3 Worst Result	Difference (dB)
Average Conducted Power (dBm)	802.11b	19.96	19.93	0.03
	802.11g	17.90	17.88	0.02
	11n HT20	17.77	17.69	0.08
	11ac VHT20	17.70	17.65	0.05
	BT (1Mbps)	12.53	11.99	0.54
	BT (2Mbps)	10.44	9.46	0.98
	BT (3Mbps)	10.38	9.55	0.83
	BT-LE 1Mbps	7.71	7.52	0.19
	BT-LE 2Mbps	7.82	7.52	0.30
	11a, 5.2GHz	17.48	17.18	0.30
	11n HT20, 5.2GHz	17.42	17.01	0.41
	11n HT40, 5.2GHz	17.32	17.10	0.22
	11ac VHT20, 5.2GHz	17.35	16.99	0.36
	11ac VHT40, 5.2GHz	17.31	17.09	0.22
	11ac VHT80, 5.2GHz	13.67	13.51	0.16
	11a, 5.3GHz	17.59	17.06	0.53
	11n HT20, 5.3GHz	17.49	16.91	0.58
	11n HT40, 5.3GHz	17.34	17.14	0.20
	11ac VHT20, 5.3GHz	17.43	16.90	0.543
	11ac VHT40, 5.3GHz	17.33	17.11	0.22
	11ac VHT80, 5.3GHz	14.78	14.75	0.03
	11a, 5.5GHz	17.59	17.97	-0.38
	11n HT20, 5.5GHz	17.54	17.15	0.39
	11n HT40, 5.5GHz	17.77	17.70	0.07
	11ac VHT20, 5.5GHz	17.45	17.10	0.35
	11ac VHT40, 5.5GHz	17.75	17.67	0.08
	11ac VHT80, 5.5GHz	12.37	12.21	0.16
	11a, 5.8GHz	14.64	14.50	0.14
	11n HT20, 5.8GHz	15.57	15.34	0.23
	11n HT40, 5.8GHz	15.13	14.92	0.21
	11ac VHT20, 5.8GHz	15.53	15.31	0.22
	11ac VHT40, 5.8GHz	15.10	14.84	0.26
	11ac VHT80, 5.8GHz	16.72	16.60	0.12
	IMEI of test sample	355577090032556 355577090032564	355575090010432 355575090010440	
	Test date	2018/09/11~2018/10/4	2018/09/20~2018/10/09	
	Mode	IHDT56XN2 Worst Result	IHDT56XN3 Worst Result	Difference (dB)
	GSM 850	33.22	33.05	0.17
	EDGE 850	26.67	26.18	0.49
	GSM 1900	29.89	30.35	0.80
	EDGE 1900	25.76	25.87	-0.11
	UMTS B2 (RMC 12.2Kbps)	22.87	22.96	-0.09
	UMTS B4 (RMC 12.2Kbps)	23.05	23.04	0.01
	UMTS B5 (RMC 12.2Kbps)	24.29	23.94	0.35
	LTE B2 (FDD - QPSK)	22.47	22.73	-0.26
	LTE B4 (FDD - QPSK)	22.61	22.77	-0.16
	LTE B5 (FDD - QPSK)	22.69	22.72	-0.03
	LTE B7 (FDD - QPSK)	22.77	23.04	-0.27
	IMEI of test sample	355577090032572 355577090032580	355575090010150 355575090010168	
	Test date	2018/09/16~2018/09/28	2018/10/02~2018/10/05	



FCC RADIO TEST REPORT

Test Item	Mode	IHDT56XN2 Worst Result	IHDT56XN3 Worst Result	Difference (dB)
Radiated Spurious Emission (Band Edge. Harmonic) (dBuV/m)	802.11b	42.43	42.13	-0.3
	802.11n HT20	50.55	49.87	-0.68
	BT (1Mbps)	53.67	54.42	0.75
	BT-LE 2Mbps	45.60	45.14	-0.46
	11ac VHT80, 5.2GHz	47.63	45.55	-2.08
	11n HT40, 5.3GHz	50.78	50.27	-0.51
	11n HT20, 5.5GHz	65.17	63.50	-1.67
	11n HT20, 5.8GHz	50.91	50.19	-0.72
	IMEI of test sample	355577090033778 355576090002791 355577090033455 355577090033463	355575090013295 355575090013303	
	Test date	2018/09/14~2018/09/30	2018/09/25~2018/10/05	
Test Item	Mode	IHDT56XN2 Worst Result	IHDT56XN3 Worst Result	Difference (dB)
Radiated Spurious Emission (dbm)	GSM 850	-37.64	-39.07	1.43
	EDGE 850	-45.07	-46.88	1.81
	GSM 1900	-33.98	-32.84	-1.14
	EDGE 1900	-42.92	-45.66	2.74
	UMTS B2 (RMC 12.2Kbps)	-49.51	-49.14	-0.37
	LTE B2 (FDD - QPSK)	-45.74	-48.30	2.56
	IMEI of test sample	355577090033513 355577090033521	355575090013212 355575090013220	
	Test date	2018/09/18~2018/09/20	2018/09/25~2018/10/01	
	RSE (30MHz to1GHz)	32.30	34.01	-1.71
NFC (dBuV/m)	IMEI of test sample	355577090033778 355577090033786	355575090013295 355575090013303	
	Test date	2018/09/12	2018/09/25	

Conclusion:

Radiated spurious emission test against the variant model for non-cellular part based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result (power levels measured are within 1dB, and the worst case of RSE spot check verification based on the worst condition from the original model is within 3dB, and are compliance with the limits), the test data from the original model is representative for the variant model.



4. Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	Reference FCC ID	Type Grant/Permissive Change	Reference Report Title	Reference Application	Reference Report Sections
15C	DTS	Bluetooth – LE Wii-Fi	2400~2483.5	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 15C (FR890437B, FR890437C)
	DSS	Bluetooth	2400~2483.5	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 15C (FR890437A)
	DXX	NFC	13.56	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 15C (FR890437D)
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 15E (FR890437E, FR890437F)
		DFS	5470~5725	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 15E (FZ7890437)
Part 22.24.27	PCS	GSM /WCDMA	GSM 850/1900 WCDMA B2/4/5	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 22.24.27 (FG890437A)
		LTE	LTE B2/4/5/7	IHDT56XN2	Original Grant	FCC RF Test Report	IHDT56XN3	Part 22.24.27 (FG890437B)

End of this report