Spot Check Evaluation

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REVISION HISTORY

VERSION	DESCRIPTION	ISSUED DATE
Rev. 01	Initial issue of report	May 12, 2017

1. Introduction Section

The original model (FCC ID: IHDT56WB4) and the variant model (FCC ID: IHDT56WB1) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS/ GSM/WCDMA/LTE. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS, DXX) .Part 15E (equipment class: NII) and Part 24, 27 (equipment class: PCS) test data issued test data of IHDT56WB1 references the test data of IHDT56WB4

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: IHDT56WB1).

2. Difference Section

The original model (FCC ID: IHDT56WB4) and the variant model (FCC ID: IHDT56WB1) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS/ GSM/WCDMA/LTE. The details of similarity and difference can be found in the Operating Description.

Cellular transmitter RF components are different in IHDT56WB1 to support capability for different cellular bands.

The product specification is outlined in the following table:

FCC ID			IHDT56WB4	IHDT56WB1
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-HSDPA		B5/B4/B2	B5/B2
CDMA	SO32/SO55/RTAP153.6Kbps/ RETAP 4096Bits		-	BC0/BC1/BC10
LTE (FDD)	QPSK 16QAM 64QAM		B2/B4/B5/B7/B12/B17/ B25/B26/B30/B38/B41/ B66	B2/B4/B5/B7/B12//B13/ B17/B25/B26/B66
Wi-Fi	11b/11g/11n(HT20)		2412-2462	
	11a/11n(HT20)/11n(HT40) 11ac (VHT20)/11ac (VHT40) 11ac (VHT80)		5180-5240 5260-5320 5500-5720 5745-5825	
Bluetooth	V5.0		2402-2480 MHz	
NFC	ASK		13.56 MHz	

3. Spot Check Verification Data Section

Summary of the spot check:

Test Item	Mode	IHDT56WB4 Worst Result	IHDT56WB1 Worst Result	Difference (dB)
Average Conducted Power (dBm)	802.11b	18.90	18.88	0.02
	802.11g	18.58	18.55	0.03
	11n HT20	18.62	18.61	0.01
	11ac VHT20	18.58	18.57	0.01
	BT (1Mbps)	14.81	15.67	-0.86
	BT (2Mbps)	9.22	10.14	-0.92
	BT (3Mbps)	9.25	10.17	-0.92
	BT-LE(1Mbps)	9.18	9.45	-0.27
	BT-LE(2Mbps)	9.15	9.27	-0.12
	11a, 5.2GHz	20.99	20.98	0.01
	11n HT20, 5.2GHz	20.98	20.97	0.01
	11n HT40, 5.2GHz	20.42	20.24	0.18
	11ac VHT20, 5.2GHz	20.99	20.97	0.02
	11ac VHT40, 5.2GHz	20.49	20.26	0.23
	11ac VHT80, 5.2GHz	18.40	18.34	0.06
	11a, 5.3GHz	21.17	21.05	0.12
	11n HT20, 5.3GHz	21.19	21.11	0.08
	11n HT40, 5.3GHz	20.27	20.16	0.11
	11ac VHT20, 5.3GHz	21.22	20.92	0.3
	11ac VHT40, 5.3GHz	20.31	20.03	0.28
	11ac VHT80, 5.3GHz	16.97	16.94	0.03
	11a, 5.5GHz	21.34	21.23	0.11
	11n HT20, 5.5GHz	21.29	21.20	0.09
	11n HT40, 5.5GHz	20.58	20.45	0.13
	11ac VHT20, 5.5GHz	21.41	21.13	0.28
	11ac VHT40, 5.5GHz	20.60	20.54	0.06
	11ac VHT80, 5.5GHz	21.14	21.08	0.06
	11a, 5.8GHz	21.07	20.90	0.17
	11n HT20, 5.8GHz	21.06	20.87	0.19
	11n HT40, 5.8GHz	20.50	20.30	0.2
	11ac VHT20, 5.8GHz	21.20	21.03	0.17
	11ac VHT40, 5.8GHz	20.52	20.30	0.22
	11ac VHT80, 5.8GHz	21.21	21.16	0.05
	GSM1900(GPRS)	29.46	29.43	0.03
	GSM1900(EDGE)	25.17	25.01	0.16
	UMTS B2 (RMC 12.2Kbps)	22.70	22.42	0.28
	LTE B2 (FDD - QPSK)	23.06	22.90	0.16
	LTE B4 (FDD - QPSK)	22.92	22.83	0.09
	LTE B25 (FDD - QPSK)	22.92	22.88	0.04
	LTE B66 (FDD - QPSK)	22.76	23.06	-0.3
	IMEI of test sample	353311080000163 353311080000700	353310080024918 353310080024421	
	Test date	2017/04/01~2017/04/26	2017/03/31~2017/05/04	
Radiated Spurious Emission (Band Edge. Haromic) (dBuV/m)	802.11b	53.18	53.62	-0.44
	802.11n-HT20	53.70	53.64	0.06
	BT (1Mbps)	55.60	56.08	-0.48
	BT-LE(1Mbps)	43.15	43.09	0.06
	BT-LE(2Mbps)	44.33	44.89	-0.56
	11n HT40, 5.2GHz	53.31	53.81	-0.5
	11n HT40, 5.3GHz	53.02	51.69	1.33
	11n HT80, 5.5GHz	53.73	53.80	-0.07
	11a, 5.8GHz	44.94	43.02	1.92
	GSM 1900	-52.20	-49.99	2.21
	GSM 1900 (EDGE)	-58.07	-58.80	-0.73
	UMTS B2 (RMC 12.2Kbps)	-48.22	-48.59	-0.37

	LTE B2 (FDD - QPSK)	-37.66	-40.17	-2.51
	LTE B4 (FDD - QPSK)	-42.82	-42.02	0.8
	LTE B25 (FDD - QPSK)	-39.93	-41.60	-1.67
	LTE B66 (FDD - QPSK)	-44.05	-46.00	-1.95
	IMEI of test sample	353311080000163 353311080000221	353310080024918 353310080024421	
	Test date	2017/04/08~2017/04/26	2017/04/20~2017/04/27	
NFC (dBuV/m)	RSE (30MHz to 1G)	34.18	33.09	1.09
	IMEI of test sample	353311080000163	353310080024918	
	Test date	2017/04/08	2017/04/18	

GSM/WCDMA

Maximum ERP/EIRP (W)	System	Type of Modulation	FCC ID IHDT56WB4	FCC ID IHDT56WB1
	GPRS1900	GMSK	0.9462	0.9397
	GSM1900 EDGE class 8	8PSK	0.3524	0.3396
	WCDMA Band II RMC 12.2Kbps	BPSK	0.1995	0.1854

LTE

Maximum ERP/EIRP (W)	System	Type of Modulation	BW (MHz)	FCC ID IHDT56WB4	FCC ID IHDT56WB1
	LTE B2	QPSK	20	0.2168	0.2089
		16QAM	15	0.1816	0.1683
		64QAM	20	0.1626	0.1698
	LTE B4	QPSK	20	0.2099	0.2051
		16QAM	20	0.1782	0.1706
		64QAM	20	0.1652	0.1667
	LTE B25	QPSK	20	0.1667	0.1618
		16QAM	20	0.1426	0.1346
		64QAM	20	0.1030	0.1076
	LTE B66	QPSK	20	0.2023	0.2168
		16QAM	20	0.1679	0.1706
		64QAM	20	0.1483	0.1459

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.

The unwanted, harmonics, radiated spurious emission is reported peak measurement only due to spurious lower than 20dB than the limit, 74dBuv/m,

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	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 15C (FR733129B, FR733129C)
	DSS	Bluetooth	2400~2483.5	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 15C (FR733129A)
	DXX	NFC	13.56	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 15C (FR733129D)
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 15E (FR733129E, FR733129F, FZ733129)
Part 24.27	PCS	GSM WCDMA	GSM(GPRS)1900 GSM(EDGE)1900 WCDMA B2	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 22.24.27 (FG733129-04A)
Part 24.27	PCS	LTE	LTE B2/B4/B25/B66	IHDT56WB4	Original Grant	FCC RF Test Report	IHDT56WB1	Part 22.24.27 (FG733129-04B)

End of this report