



Product testing (sampling before ordering)

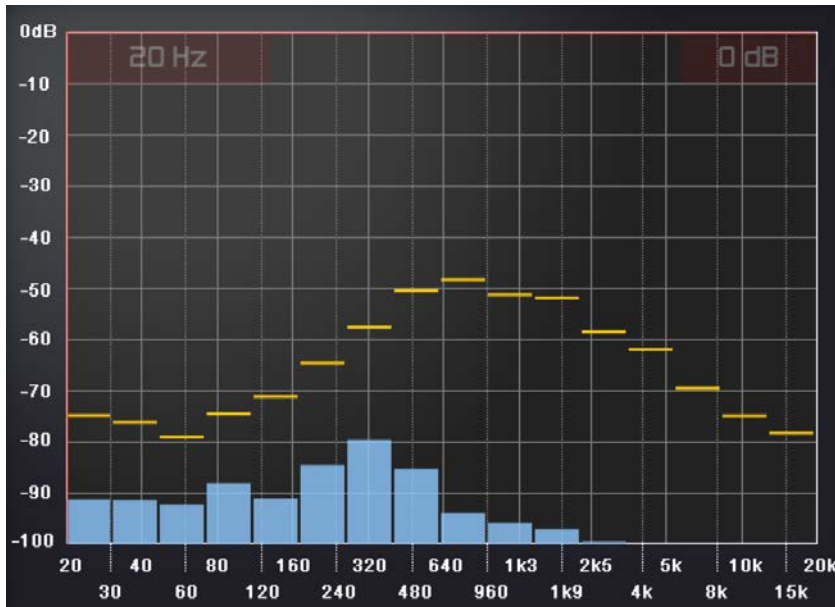
Recently, we had an order for Blue tooth S10 type speaker, headphone speaker and the water-dancing speaker. Two of the questions are surface: how good the sound quality of the speaker? How to measure it? To test our argument, good speaker should be able to deliver all sounds; we decided to measure the dB across the hearing range. This measurement can show the loudness of the speaker and the intensity of the each section of the frequency of the hearing range.

Hearing range usually describes the range of frequencies that can be heard by humans or other animals, though it can also refer to the range of levels. The human range is commonly given as 20 to 20,000 Hz, though there is considerable variation between individuals, especially at high frequencies, and a gradual decline with age is considered normal.

Frequencies and descriptions

Frequency (Hz)	Octave	Description
16 to 32	1st	The human threshold of hearing, and the lowest pedal notes of a pipe organ.
32 to 512	2nd to 5th	Rhythm frequencies, where the lower and upper bass notes lie.
512 to 2048	6th to 7th	Defines human speech intelligibility, gives a horn-like or tinny quality to sound.
2048 to 8192	8th to 9th	Gives presence to speech, where labial and fricative sounds lie.
8192 to 16384	10th	Brilliance, the sounds of bells and the ringing of cymbals and sibilance in speech.

The example result like this:



X-axis is the range of the hearing frequency in 2 folds of the 20 Hz; y-axis is intensity (dB) of the particular frequency. The highest yellow bar serves as the loudness of the speaker and the detection of the particular frequency. The profile of the yellow bars is the result of a song play at full volume.

I Test the Blue tooth mini-speaker.

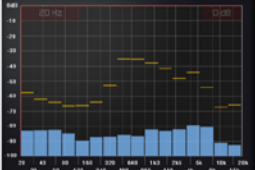
1. Functionality of the speaker

Each speaker comes with extra feature like, AUX in, hand free phone answering, TF card reading, and FM radio. FT-001 model only has one extra feature of AUX in. And TS10 model has all 4 extra features. This is the most advance system.

2. The sound quality

Based on the result of hearing range profiles measured by us. The model FT-001 is the loudest speaker. SK16 model is the worse performance speaker. The dB output is weak across the frequency range. ES054B has the best blue tooth range at 10 meters plus but it can not out put the sound at 20K Hz. TS10 is considered as the best speaker among the nine speakers. It can deliver high intensity from 320 Hz to 6K Hz.

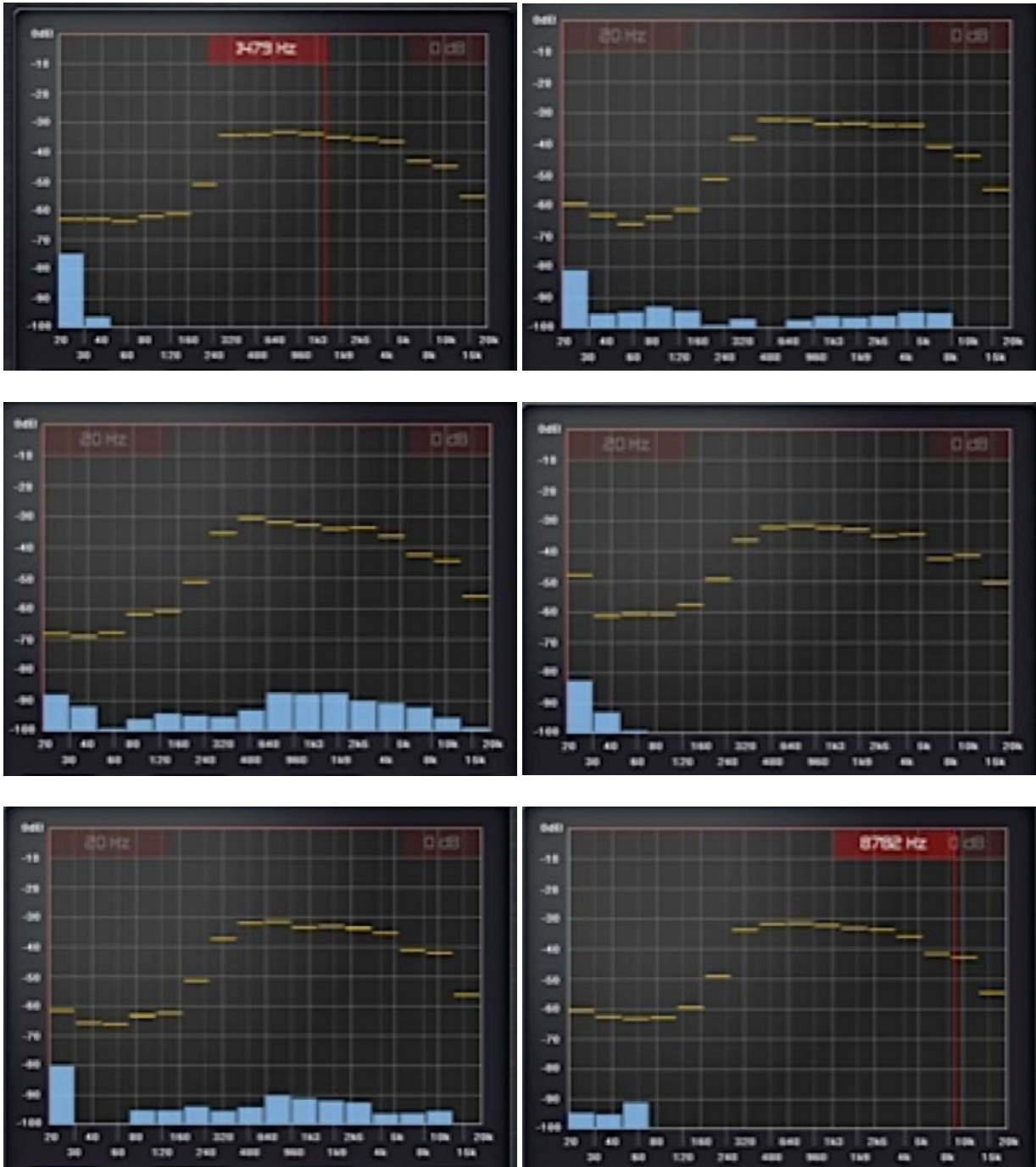
Comparison of Blue Tooth Mini-Speakers

Model	Photo	Sound Quality	Loudness dB	BT Distance Meter	AUX in	Hand free phone answering	TF Card	Radio
FT-001			-36	7	x			
FT-003			-45	7.5	x	x		
SK-10			-49	6.5	x	x		
SK-12			-48	7	x	x		
SK-16			-60	8	x	x	x	
ES054B			-51	10	x	x	x	
S10			-40	6.5	x	x	x	
TS10			-39	7.5	x	x	x	x



This measurement did help us to pick the best model TS10 from the nine suppliers. We asked this supplier to send us another 6 speakers for further study of their product.

The 6 speakers sound quality results as follow:


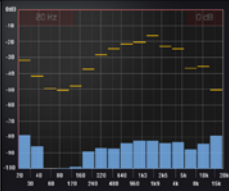

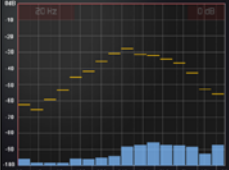

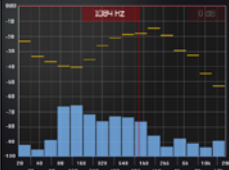

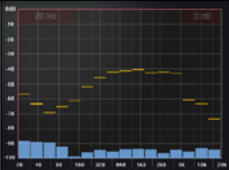




The profiles of the sound quality from these 6 speakers are very similar to each other, and considered very reproducible among the products. Again, measures the dB of hearing range frequency not only helps us to pick the right product but also visualized the sound quality of the products.


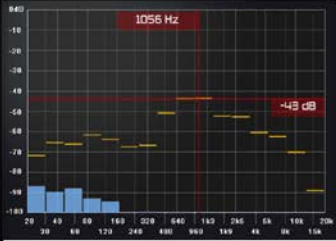

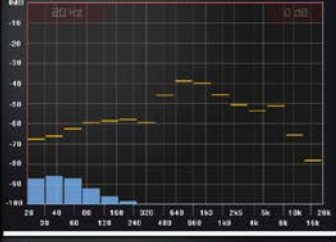

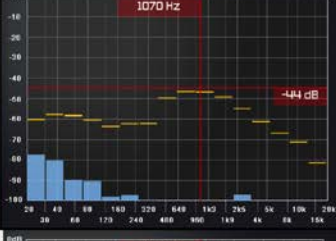

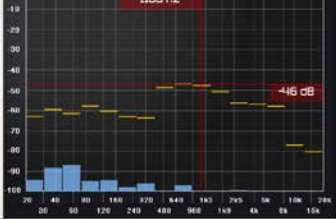
II Water Dancing Speaker.

The following is the summarized table for one none blue tooth and 3 blue tooth water dancing speakers. JW-02 is the best Water Dancing Speaker among the sample.

Model	Photo	Sound Quality	Loudness dB	BT Distance Meter	USB	AUX in	TF Card	Type	Battery included	Speaker and light Color
TX1336			-18	Non-BT	Yes	Yes	Yes	Water	Yes	1 speaker 5 lights
CT			-28	5 +	Yes	Yes	No	Oil	No Battery	2 speakers 8 lights
TX1338			-14	6 +	Yes	Yes	Yes	Water	Yes	1 speaker 5 lights
JW-02			-40	10+	No	Yes	Yes	OIL	Yes	1 speaker 4 lights

III Head phone

Again, we can easily to pick Yx-HP-849 is the better quality headphone by the profile of the hearing range.

Model	Photo	Sound Quality	Loudness dB	Phone Answering
CT			-43	Yes
OR			-39	
Yx-HP-850			-46	Yes
Yx-HP-849			-46	